

Determinants of health and well-being among older persons in the Philippines

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Declaration

Except where otherwise indicated, this thesis is my own original work carried out during my PhD study at the Australian National University.

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Acknowledgments

It took me about four and a half years to complete this PhD journey, but this is probably the best four and a half years of my life. I made a lot of friends, committed a lot of mistakes but also achieved some success, learnt important life lessons, travelled the world, and for the first time in my life, lived very far away from home. It was not easy, but I did it, nonetheless. I did not take this journey alone and am very grateful to everyone who has helped me on this journey.

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Abstract

This thesis aims to investigate the factors associated with health and well-being of older people in the Philippines, by focusing on the role of different types of resources, including socioeconomic resources and various forms of social support. This thesis extends the literature on the health and well-being of older people in several ways. First, it goes beyond the individualistic approach of studying determinants of health by also looking at how socioeconomic resources of children also influence parental health. Second, it does not only examine how social support such as living arrangement is associated with the well-being of older people, but it also examines whether living arrangement concordance - the fit between actual and preferred living arrangement - is also related to their well-being. Third, unlike previous research that tends to aggregate different types of intergenerational support into one indicator, this research distinguishes these different forms of support and assesses how each type have different implications for the well-being of older people. Fourth, it provides evidence of variations of healthy ageing at the sub-national level, thus addressing the paucity of research on this topic, particularly in developing countries. Finally, this research is set in the Philippines, a developing country in Southeast Asia that shares the culture and values of its Asian neighbours but is also heavily influenced by Western values because of its long history of colonization. This unique culture of the Philippines provides a rich contrast to existing research that was mostly set in either Western or other Eastern societies, hence contributing to a more nuanced understanding of health and well-being of older people in a diverse cultural, socio-economic and environmental setting. Data are drawn from the 2007 Philippine Study on Ageing (PSOA) and the 2010 Philippine Census of Population and Housing (CPH).

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Chapter 1: Introduction

Population ageing, defined as an increase in the proportion of older people in the total population, is considered as one of the most important phenomena of the 21st century with significant implications for individuals, families, communities, and the society at large (Knodel & Chayovan, 2009). It also has important socioeconomic and health consequences and presents challenges for public health and economic development (Gavrilov & Heuveline, 2003). The continuing increase in the proportion of older people, particularly in developing countries, where formal support systems for older people are underdeveloped, has generated interest in their health status and their quality of life or subjective well-being. In 2007 the United Nations released the 'Research Agenda on Ageing for the 21st Century' which highlights the major and critical research areas relating to older people (United Nations, 2007). This agenda identified priorities for research that could inform policy and encouraged ageing-related research that has practical and realistic application. Some of these areas include changing family structures, intergenerational transfer systems, healthy ageing and its variation within and between countries, and quality of life and ageing in diverse cultural, socio-economic and environmental situations. In line with these research agenda, this thesis investigates the factors associated with the health and well-being of older people by focusing on the role of different types of resources, including socioeconomic resources and various forms of social support.

This thesis extends the literature on the health and well-being of older people in several ways. First, it goes beyond the individualistic approach of studying determinants of health by also looking at how socioeconomic resources of children influence parental health. Second, it does not only examine how social support such as living arrangement is associated with the well-being of older people but whether living arrangement concordance - the fit between actual and preferred living arrangement - is also related to their well-being. This is an important contribution because most research implicitly assumes that the actual living arrangement of older people is also their preferred arrangement. Third, unlike previous research that tends to aggregate different types of intergenerational support into one indicator, this research distinguishes these different

forms of support and how each type has different implications for the well-being of older people. Fourth, it provides evidence of variations of healthy ageing at the sub-national level, thus addressing the paucity of research on this topic, particularly in developing countries. Finally, this research is set in the Philippines, a developing country in Southeast Asia that shares the culture and values of its Asian neighbours but is also heavily influenced by Western values because of its long history of colonization. This unique culture of the Philippines provides an additional perspective to existing research that has mostly been set in either Western or other Eastern societies. Hence, the current study contributes to a more nuanced understanding of the health and well-being of older people in diverse cultural, socioeconomic and environmental settings.

This chapter provides a literature review on the different factors associated with the health and well-being of older people. It begins by defining subjective well-being or quality of life, and physical health which are the main dependent variables of this thesis. Based on this review, research gaps are identified, and it is then explained how these gaps are addressed in this thesis. This is followed by a discussion of the frameworks of analysis, and a statement of the overall aim of the thesis and its research questions. The final section describes the setting of the study.

1.1. Defining subjective well-being or quality of life

Subjective well-being or quality of life of older people is one of the main dependent variables in this thesis. Following prior studies, (George, 2006; Kahn & Juster, 2002) quality of life and subjective well-being are used interchangeably in this research, although some research considers subjective well-being as one component of quality of life (Lawton, 1997). Quality of life is an amorphous, multilayered, and complex concept with different and interacting dimensions including objective, subjective, macro societal, micro individual, positive and negative (Lawton, 1991; Tesch-Römer, von Kondratowitz, & Motel-Klingebiel, 2001). Given its complexity and multilayered nature, there is no agreement on its definition and measurement (Bowling, 2007; Walker & Mollenkopf, 2007). Bowling (2004) distinguished between macro (societal, objective) and micro (individual, subjective) definitions of quality of life. For the macro definition of quality of life she included the roles of income, employment, housing, education, and other living and environmental circumstances; while for micro definition she included perceptions of overall quality of life, individuals' experiences and values, and related proxy indicators

such as well-being, happiness, and life satisfaction. Following these two broad distinctions, the current research examines factors associated with subjective well-being at the micro and macro level.

At the micro level, three definitions of subjective well-being are used in this present study, namely self-rated health, life satisfaction and presence of depressive symptoms. These indicators have been used in previous research to measure subjective well-being (Deeg, 2007; Dong, Zhang, & Simon, 2014; George, 2006; Henning-Smith, 2016; Hoang, 2015; Kahn & Juster, 2002; Siedlecki, Salthouse, Oishi, & Jeswani, 2014; Sommer & Bourgeois, 2010). Health expectancy, specifically disability-free life expectancy (DFLE) is used to define the subjective well-being of older people at the macro level. Given these definitions, the following literature review focuses on the factors associated with these indicators.

1.2. Defining physical health

One of the factors that has been consistently found in the literature to influence the subjective well-being of older people is their physical health status. A variety of indicators, including chronic diseases, functional loss, and disability, are used in prior research to measure an individual's physical health. Although these health indicators have been commonly used, they are different from each other and may capture different aspects of health, hence, it is useful to distinguish these health indicators and describe how they relate to each other.

A useful conceptual model to understand these different indicators and their interrelationship is the Disablement Process proposed by Verbrugge and Jette (1994). The model theorises an individual's transition from health to disability. In this model disability is viewed as a process, rather than a static state, thus allowing potential intervention. Disability is not assumed to be the terminal state because recovery from disability and transition back to less disabled states is possible (Peek, Ottenbacher, Markides, & Ostir, 2003).

Disablement refers to “impacts that chronic and acute conditions have on the functioning of specific body systems and on people's abilities to act in necessary, usual, expected and personally desired ways in their society”, while the term process reflects the “trajectory

of functional consequences over time and the factors that affect their direction, pace, and patterns of change” (Verbrugge & Jette, 1994, p. 3). The main pathway from pathology to disability is illustrated in Figure 1.1 (Crimmins, 2004). The terminal outcome is death.

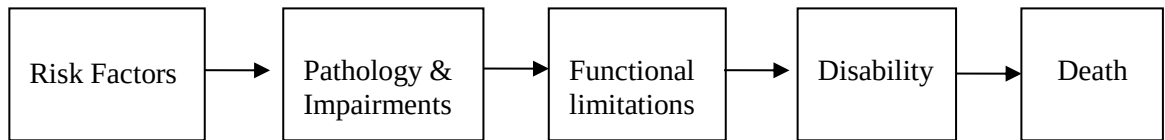


Figure 1. 1. The process of population health change

Pathology refers to biochemical and physiological abnormalities that are identified and medically termed as a disease, injury or congenital/developmental conditions, and could include osteoarthritis, lung cancer, cataracts, and mental retardations, among others (Verbrugge & Jette, 1994). Impairments are dysfunctions and abnormalities that can impact physical, mental or social functioning (Verbrugge & Jette, 1994). Pathology and impairments are usually grouped together due to the difficulty of distinguishing them in self-reported surveys (Lawrence & Jette, 1996; Lowry, 2010). It is also hard to distinguish diseases, conditions and impairment from each other because some conditions may not have clear disease patterns and may or may not have associated impairment (Crimmins, 2004; Lowry, 2010). For example, cognitive deterioration is not always associated with a recognized disease process and does not always come with impairment. Functioning limitations refer to the inability to perform certain physical or mental tasks used in daily living, such as lifting, walking, and grasping. Disability refers to the experienced difficulty in performing activities due to a health or physical problem (Verbrugge & Jette, 1994). It usually includes three domains: personal care (basic activities of daily living; BADLs or Activities of daily living or ADLs), household management (Instrumental activities of daily living or IADLs) and job (paid employment). Examples of ADLs include abilities to eat, toilet, getting in and out of bed/chair, dress, and bathe, while IADLs include abilities to prepare own meals, do light housework, manage own money, use the telephone and shop for personal items. ADLs are needed for survival, while IADLs are needed to maintain a dwelling in a given sociocultural environment (Verbrugge & Jette, 1994). It should be noted that functional limitations and disability are distinct from each other. Functional limitations refer to an individual’s capability without taking into account the situational requirements (Haber, 1990), whereas disability refers to the expression of functional limitations with reference to social environment

(Pope & Tarlov, 1991). Thus functional limitations and disability “refer to different behaviours, not to different aspects of ways of measuring the same behaviour” (Verbrugge & Jette, 1994, p. 5).

In summary, the main pathway in the disablement process is that pathology influences impairments, which lead to functional limitations that could result in disability (Peek et al., 2003; Verbrugge & Jette, 1994). However, while the model illustrates the progression of health change, an individual does not have to pass through each phase of health deterioration. Some people may suffer a heart attack, for example, and die immediately without experiencing the loss of functioning or disability (Crimmins, 2004).

1.3. Factors associated with physical health

All components of the disablement process can be affected by changes in the underlying risk factors and can be influenced by some interventions (Crimmins, 2004). Risk factors refer to an individual’s demographic, social, lifestyle, behavioural, psychological, environmental and biological characteristics that can impact the existence and severity of impairment, functional limitation and disability. They precede the onset of disease and impairments and are usually long-term or permanent characteristics of individuals (Lawrence & Jette, 1996; Verbrugge & Jette, 1994). Their main pathways are through their role in triggering the onset of pathology/impairments (Lawrence & Jette, 1996).

Several studies have examined the risk factors associated with each or a combination of these components of the disablement process (Chan & Jatrana, 2007). In general, demographic and socioeconomic characteristics of older people are associated with these components of the disablement process. Specifically, women, those in the older age groups and those who are unmarried have been shown to have a higher likelihood of reporting chronic disease, functional limitations or disability (Al Hazzouri, Sibai, Chaaya, Mahfoud, & Yount, 2011; Alexandre et al., 2014; Andrade, Guevara, Lebrão, de Oliveira Duarte, & Santos, 2011; Chan & Jatrana, 2007; Fauth, Zarit, & Malmberg, 2008; Lowry, 2010; Tareque, Tiedt, Islam, Begum, & Saito, 2017; Wheaton & Crimmins, 2016). Socioeconomic status, measured by education and income, is negatively associated with functional limitations and disability (Eguez-Guevara & Andrade, 2015; Yahirun, Sheehan, & Hayward, 2016).

As these demographic and socioeconomic characteristics of older people become increasingly recognized as important correlates of their health status, an emerging strand of research suggests that the health of an individual is not only affected by their own characteristics, but also by the characteristics of other people with whom they have relationships. For example, in Taiwan, the education of both older people and their children was negatively associated with older people's experience of functional limitations, but only children's education was associated with the severity of these limitations. The educational levels of older people and that of their children were also significantly associated with older people's mortality, but only children's education significantly predicts mortality among those who already report serious disease at baseline. These results suggest that older people's own education may play a role in preventing the onset of health problems, but not necessarily their progression (Zimmer, Martin, Ofstedal, & Chuang, 2007). The association between children's education and parental level of frailty and mortality was also observed among older people in mainland China (Bao, 2016; Yang, Martikainen, & Silventoinen, 2016). Research in other settings where levels of intergenerational support are also high is supportive of these findings in East Asian countries. For example, the education of older people and their children was also found to be associated with the presence of functional limitations among older people in Mexico (Yahirun et al., 2016). However, a subsequent analysis shows that children's education was not associated with short-term changes in functional limitations of their parents, but was associated with greater parental longevity (Yahirun, Sheehan, & Hayward, 2017). The relationship between children's education and parental health outcome also exists in countries where intergenerational obligations are not very strong. In Sweden and United States, children's socioeconomic status measured in terms of education and occupation has been found to be negatively associated with the risks of parental mortality (Friedman & Mare, 2014; Torssander, 2013; Zimmer, Hanson, & Smith, 2016).

1.4. Theories on children's education and parental health

Research has shown that the health benefits of socioeconomic status can be transmitted downward from parents to children (Bradley & Corwyn, 2002; Kuh, Hardy, Langenberg, Richards, & Wadsworth, 2002). Few studies have examined the reverse direction of transmission, from children to parents (Friedman & Mare, 2014; Torssander, 2013). These studies relied on a social network approach to health and the fundamental cause

theory to explain the association between socioeconomic status and health. Torssander (2013) and Friedman and Mare (2014) drew on the conceptual framework proposed by Berkman, Glass, Brissette, and Seeman (2000) on the role of social networks on health. This framework suggests that the web of social relationships surrounding an individual and the characteristics of those ties, enable several mechanisms, to shape the health of individuals. These mechanisms, including social support, social influence, social engagement, person-to-person contact and access to resources and material goods, individually or simultaneously then impact health by influencing health behaviours, cognitive and emotional states, and physiologic pathways related to stress responses (Berkman et al., 2000). Zimmer et al. (2016) also used a network approach based on the fundamental cause theory (Link & Phelan, 1995; Link, Phelan, Miech, & Westin, 2008) to explain the transmission of health benefits of socioeconomic status from children to parents. The fundamental cause theory states that the persistent association between socioeconomic status and health is due to the set of flexible resources - knowledge, money, power, prestige and beneficial social connections - that can be mobilized in different places and different times to prevent disease and death (Link & Phelan, 1995; Link et al., 2008). These resources can be mobilized at the individual level, as when people use resources to adopt a healthy lifestyle, or at a contextual level, as when people use resources to gain access to salutary contexts such as good neighbourhoods, safe jobs, and robust social networks (Link et al., 2008). It further argues that these resources are "transportable from one situation to another and as health-related situations change, those who command the most resources are best able to avoid risks, diseases, and the consequences of disease" (Link & Phelan, 1995, p. 87). While the fundamental cause theory mainly refers to resources of individuals, Zimmer et al. (2016) demonstrated that resources can also refer to broader social (familial) network and that the health benefits of these resources can span generations.

Children are very important actors in older people's web of social network. In countries where formal support systems are underdeveloped, family members, particularly children remain the mainstay of support for older people (Abejo, 1995; Lopez, 1991). They represent an important resource for health care, assistance with daily living and for living arrangements (Antonucci & Ajrouch, 2007). They provide different types of support to their parents such as coresidence, emotional, instrumental, material and financial. Since the lives of children and their parents are linked (Elder, 1998), children's education can be considered as a familial resource that can be mobilized when their parents suffer health

problems. When parents develop health problems, their children can provide help by assisting in purchasing health care, or in navigating the complex healthcare system (Zimmer et al., 2016). The following section discusses in detail some potential mechanisms on how children's education can influence parental health.

1.5. Mechanisms: how children's education influences parental health

Studies that examined the exact mechanisms on how children's education may influence parental health remain limited, but Torssander (2013) drawing on Berkman et al. (2000) social network theory suggested three pathways that can potentially explain this relationship. The first pathway is through the provision of social support, such as emotional, instrumental and informational support that includes giving advice or guidance to the parents on health-related concerns. Higher education facilitates people's access to the latest health knowledge and information, which could improve their ability to navigate the health care system, follow health providers' instructions, decide on the proper use of health products and adhere to healthier lifestyles (Bao, 2016). Children's knowledge and information on health-related matters become useful when older parents experience health problems. This is particularly true for older people whose access and knowledge of healthcare system are limited due to their poor socioeconomic conditions. Hence, parents may benefit from the high education of their children through the transfer of this health-related information across generations.

The second pathway is through children's social influence on their parents. For instance, highly educated individuals tend to adopt more beneficial health behaviours (e.g., not smoking) than their less educated counterparts (De Walque, 2007). Children's newly adopted health behaviour may, in turn, influence their parents' habits, for example by discouraging alcohol use and smoking and by promoting a better diet and encouraging physical activity (Friedman & Mare, 2014; Lee, Gleib, Goldman, & Weinstein, 2017; Torssander, 2013). Friedman and Mare (2014) found evidence in the United States that at least part of the association between children's education and parents' survival was due to parent's health behaviours such as smoking and exercise. In China, parents' smoking was also found to mediate the role of children's education on parents' level of frailty (Bao, 2016) but not on their mortality (Yang et al., 2016).

Finally, access to both material and non-material resources that accrue from obtaining higher education could also serve as a potential pathway by which children's education can affect parental health (Torssander, 2013, 2014). Socioeconomic resources of children would allow them to provide financial assistance for medical treatment, utilize the latest health technology and access better-quality healthcare services (Bao, 2016). Yahirun et al. (2017) found evidence that economic resources can act as a pathway that links children's education and short-term changes in functional health among older people in Mexico.

Other potential pathways could be through the better quality of care that highly educated children can provide in addition to their greater ability and availability to provide care because they are also more likely to be healthier than their less educated counterparts (Friedman & Mare, 2014). Health insurance coverage of highly educated children made available by their employment could also directly benefit their parents who can qualify as their dependents making them eligible for coverage (Lee & Chuang, 2003; Zimmer, Hermalin, & Lin, 2002a).

1.6. The relationship between physical health and subjective well-being

Health has been shown to be an important predictor of subjective well-being at all ages and the strongest predictor of well-being in old age (George, 2010). Verbrugge and Jette (1994, p. 7) argued that disability has a "powerful effect on happiness, life satisfaction, and other global well-being indicators." Succeeding studies in different settings confirmed this relationship. For example, Kim and Kim (2003) found a negative association between ADL difficulty and life satisfaction among older adults in Korea, while (Litwin, 2004) found physical disability, IADL difficulty and need for assistance as the strongest correlates of mental health among Jewish Israeli older adults. Other components of the disablement process were also found to be associated with well-being among older adults. Suthers, Saito, and Crimmins (2003) showed that among Japanese and American older adults, more physical functioning difficulties are associated with fewer positive emotions. In addition, the presence of a heart condition and arthritis is associated with negative emotions among older adults in both countries (Suthers et al., 2003). While the health status of older people has been shown to be a strong predictor of their well-being, their social relations also play an important role in their overall well-

being. The relationship between social relations and well-being is discussed in the next section.

1.7. The relationship between social relations and the well-being of older people

Social relations is an umbrella term for the social network, social support and social integration (Antonucci, Akiyama, & Sherman, 2007). It represents an important resource in old age because of older people's greater likelihood of losing physical resources and strength which in turn necessitate more need for the attention of others (Antonucci & Ajrouch, 2007). As family represents the most important form of social relations, particularly in old age (Antonucci & Ajrouch, 2007), social support from family members, in relation to older people's well-being is the main focus of this thesis.

Social support is a broad concept that includes both the structural characteristics of an individual's social network, as well as the functional aspects of social relationships (Chen & Silverstein, 2000; Fernández-Ballesteros, 2002). Structural conditions could refer to the social context in which social interactions occur, while the functional aspect could mean the provision of affect and exchange of resources, information, goods or services (Fernández-Ballesteros, 2002). Based on this conceptualization, the living arrangement has been mostly used to refer to the structural aspect of social support (Zhou & Qian, 2008), while the exchange of support has been used to represent the functional aspect (Takagi & Saito, 2013). This approach is adopted in this current study. The following section discusses how each of these indicators of social support are associated with the well-being of older people.

1.8. Living arrangements and the well-being of older people

Living arrangements are important for older people because "various household structures make very different demands on the adults in them and offer very different levels and types of resources" and these differences may have implications for the well-being of older people (Waite & Hughes, 1999, p. S136). The persons that older people live with will influence their daily social interactions (or lack thereof), as well as the availability of immediate resources (social or otherwise) (Henning-Smith, 2016). Coresidence with children is the predominant form of living arrangement among older

people in Asia (Knodel & Ofstedal, 2002). Intergenerational coresidence has been relied upon to protect the welfare of older adults, particularly in developing countries where public systems for older people are still underdeveloped (Johar & Maruyama, 2014). Given the prominence of coresidence as an important source of support for older people, several studies have examined its relationship with well-being of older people (An, An, O'Connor, & Wexler, 2008; Chen, Bao, Shattuck, Borja, & Gultiano, 2017; Do & Malhotra, 2012; Wang, Chen, & Han, 2014; Wu & Schimmele, 2008; Ye, Chen, & Peng, 2017; Zimmer, 2005). However, there is no consensus on whether coresidence with children compared with independent living promotes the well-being of older people. This lack of consensus has been partially attributed to the different classifications of living arrangements used in previous research, which restricts comparability (Ren & Treiman, 2015). Nevertheless, three general findings are prominent in the literature.

First, compared with independent living (living alone and or living with spouse only) coresidence with children is positively associated with the well-being of older people (Kooshiar, Yahaya, Hamid, Samah, & Jou, 2012; Wang et al., 2014; Zhou & Qian, 2008). For example, Wang et al. (2014) showed that among oldest old (80+) in China, those who live with a child only have higher life satisfaction than those who live with spouse only or those who live alone. In Vietnam and Thailand, those who live with their children, particularly those of culturally preferred gender have higher levels of psychological well-being compared with those who live independently of their children (Teerawichitchainan, Pothisiri, & Long, 2015). Specifically, living with married son compared with living with other children is more beneficial to the psychological well-being of older people in Vietnam. In Thailand, coresidence, regardless of the child's gender, enhances psychological well-being of older people, but living with a daughter is more advantageous than living only with a son. Several other studies (Chen & Silverstein, 2000; Do & Malhotra, 2012) also found living with children as beneficial, but they did not distinguish between older people who live independently with their spouse and older people who live alone.

Second, few studies show negative effects of coresidence with children compared with living independently (Ren & Treiman, 2015; Wang et al., 2014). Older people in China who live with grown-up children only are less happy, have less satisfaction, and are more depressed than those who live with spouse only (Ren & Treiman, 2015).

Third, some research shows that older people who live with their children are no different in terms of subjective well-being from those who live independently, particularly those who live with their spouse only (Chen & Short, 2008; Wu & Schimmele, 2008).

There are two competing hypotheses on the relationship between coresidence with children and well-being of older people: the family support hypothesis and family conflict hypothesis (Ren & Treiman, 2015; Teerawichitchainan et al., 2015). The family support hypothesis maintains that living with children is beneficial to older people because such arrangements facilitate the exchange of different forms of support, including material, financial and instrumental support, and it lessens feeling of loneliness and isolation that may be experienced by those who live alone but also by older couples who live independently (Ren & Treiman, 2015). For example, older people in Singapore who were coresiding with children reported feelings of psychological satisfaction in the maintenance of traditions, which was reinforced by a general feeling of security and belongingness (Mehta, Osman, & Alexander, 1995). Coresidence also gives individuals a strong perception of projected security (Wu & Schimmele, 2008). Projected security refers to the availability of someone who will give long-term care and assistance, which is critical for psychological well-being because it lessens the perceived threat of future problems (Ross & Mirowsky, 2002). Coresidence also provides avenues for regular social interactions with family members, and older people may obtain a sense of happiness from these interactions and self-esteem from contributing to the household (Wu & Schimmele, 2008). Finally, coresidence with children may also reflect fulfilment of filial obligations and may directly impact the well-being of older people (Chen & Silverstein, 2000).

In contrast, the family conflict hypothesis challenges the notion that heightened opportunities for social interaction afforded by coresidence will enhance intergenerational relations (Teerawichitchainan et al., 2015). It argues that coresidence may increase tension among family members and may undercut the positive effects of social interaction and intergenerational support for older people (Ren & Treiman, 2015). Some sources of tension or strain in coresidence include lack of privacy, intergenerational conflict, in-law relationship problems, and strains of caregiving (Asis, Domingo, Knodel, & Mehta, 1995; Mehta et al., 1995).

1.9. The interplay of actual and preferred living arrangements and their relationship with well-being

The environment where an individual lives and the people they live with are important in terms of social support and social relationships as they provide different opportunities for social interaction (Fernández–Ballesteros, 2002). While the preceding section has shown that there is extensive research that examines how the characteristics of this environment, measured mostly in terms of living arrangements and household composition, is associated with the well-being of older people, far less research has looked at the fit of this environment with older people's needs and preferences. Understanding this fit is important because the degree of fit between individuals' needs and their environment may be relevant to their quality of life, well-being or mental health (Carp & Carp, 1984).

1.10. Theories on the relationship between living arrangement concordance and well-being

The few existing studies that examined the fit between actual and preferred living arrangements of older people and how it is associated with their well-being are guided by the theories of person-environment fit, cognitive dissonance, and self-discrepancy theory (Guan, Li, Sun, Wang, & Wu, 2015; Sereny, 2011; Sereny & Gu, 2011).

The congruence theory of person-environment fit argues that individuals change their environment or modify their perception of needs in order to achieve a fit between their needs and environment (Kahana, 1975; Kahana, Liang, & Felton, 1980). The lack of person-environment fit is also conceptualized to be an important source of chronic stress that could trigger negative health and mental health sequelae (Caplan, 1987; Kahana & Kahana, 1996; Kahana, Lovegreen, Kahana, & Kahana, 2003). Congruence between preferences and realities is also associated with an individual's need to feel in control, which has been recognized as fundamental to well-being for people at any age (Sereny, 2011).

Closely related to the person-environment fit theory is the theory of cognitive dissonance proposed by Festinger (1957). This theory posits that dissonance exists when a person holds a pair of cognitions that do not fit together. Cognitions may include any knowledge, opinion, or belief about the environment, about oneself or about one's behaviour. The presence of this dissonance will motivate the person to reduce it by changing one of these

cognitions; failure to do so will lead to symptoms of psychological discomfort Festinger (1957).

The self-discrepancy theory maintains that individuals are “motivated to reach a condition where our self-concept matches our personally relevant self-guides” (Higgins, 1987, p. 321). Self-concept represents the attributes that you or other person believe you actually possess, while self-guides refer to the attributes that you or other people would you like to ideally possess or ought to have. It argues that when a person's actual attributes do not match his or her ideal state, the person is likely to experience dejection-related emotions such as dissatisfaction, disappointment, and sadness.

Applying these theories in terms of living arrangements, we can conceptualize older people's current living arrangements as a form of a social environment that represents their self-concept, while their living arrangement preference as a representation of their self-guide. The discrepancy between self-concept and self-guide will lead to cognitive dissonance or lack of fit between their environment and needs, which may result in negative emotional outcomes. For example, older people who are currently living with their children but would prefer to live independently may suffer disappointment that can lead to lower levels of well-being. Similarly, older people who are living alone or with spouse only but would like to coreside with children due to greater availability of support may also experience adverse emotional outcomes.

Previous research is generally supportive of the propositions of the foregoing theories. For example, research in China shows that older people in both the community and institutions whose actual and preferred living arrangement do not match are more likely to have poor self-reported health (Sereny, 2011; Sereny & Gu, 2011). Guan et al. (2015) showed that the proportion of older Chinese who reported life satisfaction is higher among those with concordant living arrangements (63.1%) compared with those with discordant living arrangements (53.0%). Meanwhile, Chen (2018) shows that older people who are living with their children and prefer to do so have lower levels of depression and higher levels of happiness than those living in any other living arrangement concordance categories.

1.11. Intergenerational exchange of support and well-being of older people

Although many studies have documented the important role of living arrangements in the well-being of older people, some researchers cautioned against equating living arrangements, particularly coresidence, with well-being (Chan, 1997; Hermalin, 2002; Ryan & Willits, 2007). Previous research suggests that while living in the same household facilitates the exchange of support across generations (Chan, 1997; Knodel & Chayovan, 1997) the household is not an adequate unit of analysis (Madhavan, Clark, Beguy, Kabiru, & Gross, 2017; Randall & Coast, 2015) because the flow of support extends beyond the household. The direction of intergenerational transfer is also not always clear when parents and their adult children live in the same household (Cohen & Casper, 2002; Smits, van Gaalen, & Mulder, 2010). Hence, it is essential to complement information on living arrangements with information on the flow of intergenerational support (Treas & Cohen, 2006). Thus, in order to capture the impact of familial support on the well-being of older people, it is crucial to include both their current living arrangements and the entire exchange of intergenerational support that flows within and beyond the household. This is important because the exchange of support between parents and children represents a dimension of intergenerational relations that reflects the extent and depth of the generations' mutual commitment (Lee, Netzer, & Coward, 1995a). The degree to which this commitment is fulfilled may influence their overall well-being, especially in a context where the concept of filial piety is very strong. In the web of intergenerational exchange, an older person can be a recipient of support, provider of support or be involved in the reciprocal flow of support with their children. Each flow of support, whether upward, downward or reciprocal, may have different implications for the well-being of older people. The implications of each flow of support for the well-being of older people is discussed in the following sections.

1.11.1. Receipt of support

Older people receive a variety of forms of support from their children, including financial, instrumental and emotional support. Previous research shows mixed findings on the impact of receiving support on well-being (George, 2006). On one hand, several studies have documented the positive role of receipt of support in the well-being of older people. Receipt of economic support is associated with better self-rated health, better psychological well-being and higher levels of life satisfaction among older people in

China and Korea (Chen & Jordan, 2018; Cong & Silverstein, 2008; Lee, Lyu, Lee, & Burr, 2014; Lee, 2017; Silverstein, Cong, & Li, 2006; Song, Li, Zhang, & Feldman, 2008). Receipt of support, particularly emotional support is also positively associated with psychological well-being of older adults in China (Krause & Liang, 1993). Lee et al. (2014) argue that receipt of support may enhance the psychological well-being of older adults because it represents evidence of respect and devotion, while (Cohen, 2004) suggests that it may buffer the relationship between stress and well-being. On the other hand, previous research also shows the detrimental effects of receipt of support from children. Lee et al. (1995a) show that receipt of support from children was positively associated with depression among older parents even when the support is needed. In China receipt of financial support was negatively associated with self-rated health among women, while among men increased receipt of instrumental support from children is associated with a deterioration of self-rated health among men (Li, Song, & Feldman, 2009). Receipt of instrumental support was also negatively associated with self-rated health among older adults in rural China (Liu, Liang, & Gu, 1995).

There are several possible explanations for these counter intuitive findings. Older parents' receipt of support from their children can violate the norms associated with the parental role, along with their diminished sense of independence by relying on children who had previously relied on them (Silverstein, Chen, & Heller, 1996). Receipt of support can also be interpreted as a loss of independence, which can demoralize the older person (Lee et al., 1995a) and may trigger feelings of low self-esteem due to inability to take care of oneself (Lepore, Glaser, & Roberts, 2008). In addition, receipt of too much help from children may emotionally hurt older people and might promote feelings of helplessness, which can lead to lower life satisfaction (Pyke & Bengtson, 1996). Finally, the possibility of reverse causation where the poor health status of older people triggers the flow of support from their children, cannot be ruled out (Silverstein et al., 1996).

1.11.2. Provision of support

Older people have also been shown to be an active provider of support to their children and not just passive recipients of support (Agree, Biddlecom, Chang, & Perez, 2002; Hoang, 2015; Laguna, 2013; Schatz, Seeley, & Zalwango, 2018). Their role as a provider of support to their children is also associated with their well-being. Most research finds a positive impact of providing support on well-being (Thomas, 2010). Provision of

financial support to children is associated with better self-rated health, lower levels of depression and higher levels of life satisfaction among older adults in Korea, China and Indonesia (Lee et al., 2014; Schwarz et al., 2010; Song et al., 2008). Provision of instrumental support improves the well-being of older adults in China (Chen & Silverstein, 2000). Providing support to children is strongly associated with higher well-being among older adults in the US (Thomas, 2010).

There are several explanations for the positive role of giving support for the well-being of older adults. Provision of support to children may improve parents' power in the family and enhance their ability to reciprocate in exchanges with children, factors that are associated with psychological health in old age (Chen & Silverstein, 2000; Lee, 1988; Stoller, 1985). Giving support to others promotes well-being by enhancing older people's subjective experience of activity, independence, self-efficacy, and sense of usefulness to others (Lowenstein, Katz, & Gur-Yaish, 2007; Schwarz et al., 2010; Thomas, 2010). In sum, providing help serves as an effective mechanism through "five distinguishable benefits to the help-provider: providing a distraction from one's troubles; enhancing a sense of meaningfulness and value of one's life; increasing perceived competence; improving mood tone, and promoting social integration" (Midlarsky, 1991, p. 240).

While most research shows the positive impact of giving support on the well-being of older people, there are a few studies that show an adverse or no effect. Lee et al. (1995a) show that the provision of support to children increases depression among parents. Krause (1995) shows that providing moderate amounts of emotional support lessen the effect of financial strain on the emotional well-being of older adults, but high levels of emotional support do not. Meanwhile, provision of support to a larger network is also associated with lower well-being (Thomas, 2010) because the provision of too much support is associated with feelings of burden and frustration (Lu & Argyle, 1992).

1.11.3. Exchange of support

Previous studies have shown that intergenerational support is not always unidirectional, but often bidirectional, although children tend to provide more support to their parents than the other way around (Frankenberg & Kuhn, 2004; Knodel, Friedman, Anh, & Cuong, 2000a; Quashie, 2015). Hence, while previous research focused mainly on the unidirectional flow of support (either giving or receiving) and how it is associated with

well-being, attention has now been directed to the exchange of support (both giving and receiving) because of its importance in family relations (Guo, Chi, & Silverstein, 2017).

Research that examines the relationship between the exchange of support and well-being is informed by two dominant theories: social exchange theory and equity theory. The social exchange theory, which is based on the economic principle of costs and rewards, argues that individuals will try to maximize rewards (both material and non-material) and minimize costs in relationships with significant others (Blau, 1964; Homas, 1961; Thibaut & Kelley, 1959). The basic premise of this theory is that the social exchange and interaction will continue as long as that interaction is rewarding; that is, perceived rewards are considered to exceed the costs to an individual (Davey & Eggebeen, 1998). The receiver is considered to be over-benefited when the benefits of the exchange exceed the costs of the exchange (more is received than given, or a person is a receiver but not giver in the exchange) (Lee et al., 2014). The individual is considered to be under-benefited when he or she gives more than he or she receives, or when a person is a giver but not a receiver in the exchange. This theory predicts that older people who receive more than they give support to their children will experience higher levels of well-being, such as lower levels of depression and greater life satisfaction (Davey & Eggebeen, 1998; Lee et al., 2014; Lowenstein et al., 2007).

The equity theory extends the social exchange theory and argues that balanced relationships contribute to higher levels of well-being (Walster, Walster, & Berscheid, 1978). If both actors in the exchange relationship are equally dependent on each other, the relationship is considered to be balanced (Lowenstein et al., 2007). Similar to social exchange theory, this perspective implies that dissatisfaction ensues when individuals received less than they provided (Davey & Eggebeen, 1998). However, in contrast to social exchange theory, relationships in which individuals perceive that they have “over-benefited” are also considered to have unfavourable outcome (Davey & Eggebeen, 1998). This perspective maintains that older people who engage in a reciprocal or balanced relationship with their children will have higher levels of well-being than those who are either over-benefited or under-benefited. This is because relative to a balanced exchanged, the under-benefited individual may feel that he or she has given too much and is not appreciated, whereas the over-benefited individual may feel he or she does not have the capacity to reciprocate (Lee et al., 2014). Equity theory does not explicitly state whether the absence of exchange is beneficial than unidirectional exchange, however,

because giving and receiving involve social interactions, it is expected that some forms of exchange are better than no exchange at all (Lee et al., 2014).

Findings from studies conducted in Western society are generally consistent with the hypothesis proposed by equity theory (Davey & Eggebeen, 1998; Lowenstein et al., 2007). Davey and Eggebeen (1998) found over-benefiting to be associated with higher levels of short and long-term depression. Lowenstein et al. (2007) showed that those who have a balanced exchange of support have higher life satisfaction than those who over-benefited, but have lower life satisfaction than those who under-benefited. However, the differences in life satisfaction across these three groups disappeared when physical health was controlled for.

Research conducted in Asian countries showed mixed results regarding the relationship between the reciprocal flow of support and well-being of older adults. The equity theory is generally supported in studies conducted in Korea and Malaysia. Older people in Korea who both provided support to and received from support their children were more satisfied with their lives and were less likely to be depressed compared with those who received support only (Kim & Kim, 2003; Lee et al., 2014). Also, life satisfaction was marginally lower among those who only give than those who only receive (Kim & Kim, 2003). Among older Malaysians life satisfaction was highest among those who have an exchange of support with their children, followed by those with unidirectional flow of support (either received only provided assistance only), and the lowest life satisfaction was reported by those who did not have any exchange of support with their children (Ng & Hamid, 2013). In contrast, older adults in Hong Kong and China who reported balanced exchange of support are no different from those who over-benefited in terms of life satisfaction, although older people in Hong Kong who under-benefited in terms of financial support reported higher life satisfaction than those who over-benefited (Chen & Jordan, 2018; Li, Fok, & Fung, 2011; Peng, Kwok, Law, Yip, & Cheng, 2018).

Although there are inconsistencies on the impact of the exchange of support on the well-being of older adults, previous studies agree that that absence of exchange is detrimental to the well-being of older people (Chen & Jordan, 2018; Kim & Kim, 2003; Peng et al., 2018). The negative impact of the lack of support, particularly instrumental support, may be partly attributed to the lack of sense of engagement and the loneliness it generates (Peng et al., 2018). The absence of exchange may also indicate that the older person does

not have any children living nearby and thus more predisposed to feeling lonely and dissatisfied with their lives (Peng et al., 2018).

1.12. Health expectancy as a macro-level indicator of quality of life or subjective well-being

This section discusses the factors associated with health expectancy, a macro-level indicator of subjective well-being.

1.12.1. Life expectancy and health expectancy

The past several decades saw an improvement in mortality in most countries, and this improvement has brought to the fore the issue of whether gains in longevity are healthy ones. As the size of the older population continues to increase both in absolute number and proportion, particularly the oldest old, it becomes critical not only to measure the quantity of life based on life expectancy, but also to assess the quality of remaining life to monitor whether the additional gains in life expectancy are healthy ones. Dr. Hiroshi Nakajima, former Director-General of the World Health Organization (WHO) states that "increased longevity without quality of life is an empty prize, i.e., health expectancy is more important than life expectancy." (World Health Organization (WHO), 1997, p. v). Health expectancy has been developed to address this issue as it combines mortality and disability indicators into a single measure to summarize the state of a population's health (Robine & Ritchie, 1991). It can be used to compare health across populations, monitor changes in population health and identify and quantify inequalities in health within populations (Gutiérrez-Fisac, Gispert, & Solà, 2000; Murray, Salomon, & Mathers, 2000; Pongiglione, De Stavola, & Ploubidis, 2015). Health expectancy refers to the "analysis of both healthy and unhealthy years of life where health can be defined along various dimensions" (Saito, Robine, & Crimmins, 2014, p. 210). Depending on how health is defined, there are several terms used to describe healthy years, including disability-free life expectancy (DFLE) (Tareque, Begum, & Saito, 2013) active life expectancy (ALE) (Cruz, 2007), healthy life years (Jagger et al., 2008) and healthy life expectancy (Yong & Saito, 2009). The current study focuses on functional difficulty and uses DFLE as a specific indicator of health expectancy.

Existing evidence shows women to have a longer life expectancy and more healthy years in absolute numbers than men (Burgio, Murianni, & Folino-Gallo, 2009; Yong, Saito, & Chan, 2011). While women enjoy longer life expectancy and life in a healthy state, they also spend higher proportion of their remaining life with chronic diseases, disability, mobility limitations, cognitive impairment, and depression (Andrade et al., 2011; Apinonkul, Soonthorndhada, Vapattanawong, Aekplakorn, & Jagger, 2015; Cheung & Yip, 2010; Cruz, 2007; Jitapunkul, Kunanusont, Phoolcharoen, Suriyawongpaisal, & Ebrahim, 2003; Zimmer, 2006)). In some settings, however, women were also found to have shorter DFLE both in both numbers and proportions (Tareque et al., 2013). Earlier estimates of health expectancy of older people in the Philippines generally agree with the global pattern that women outlive men, but women can expect to live a greater proportion of their remaining years in a disability state (Cruz, 2007; Cruz, Saito, & Natividad, 2007; Lamb, 1999; Ofstedal, Zimmer, Cruz, Chan, & Lin, 2002). For instance, in 1996 a 60-year-old Filipino male could expect to live another 16.8 years but 4.3 years or 26.7 percent of these remaining years could be lived in an inactive state. Among women, life expectancy at age 60 was 19 years and 6.4 years or 33.7 percent of remaining life years were expected to be spent in disability (Cruz, 2007).

1.12.2. Factors associated with health expectancy

Geographic variation in health expectancy within and across countries has been recently documented in some developed countries (Fouweather et al., 2015; Jagger et al., 2008; Minagawa & Saito, 2018). Research investigating the factors associated with health expectancy mostly relies on ecological analysis to examine how macro-level factors are associated with geographic differences in health expectancy within and across countries (Fouweather et al., 2015; Minagawa & Saito, 2018). One of the consistent findings in these studies is the important role of socioeconomic conditions, including poverty, unemployment, educational attainment, access to healthcare and urbanization, in population health. For example, an analysis of inequality in healthy life years (HLYs) in 25 European countries in 2005 found positive associations between gross domestic product and expenditure on elderly care with HLYs for both men and women. Also, long-term unemployment was negatively associated with HLYs at 50 years, while life-long learning was positively associated with HLYs at 50 years among men (Jagger et al., 2008). A similar analysis comparing 2005 and 2010 data found material deprivation to be the only significant factor explaining variation in EU countries for both 2005 and 2010.

Long-term unemployment was still a significant factor among men, but only in 2010 (Fouweather et al., 2015).

Socioeconomic factors, along with lifestyle factors such as smoking and drinking, also play a prominent role in explaining geographic variation in health expectancy within countries. For example, illiteracy rate, unemployment rate and proportion of smokers in the population, were the main factors associated with the geographic difference of DFLE in Spain (Gutiérrez-Fisac et al., 2000). Similarly, (Wohland et al., 2014) found low social class, unemployment and lack of qualifications, as well as excessive drinking and smoking, to be the main drivers of regional disability-free life expectancy (DFLE) and life expectancy with disability (DLE) in England. Other research highlights the importance of social support in explaining geographic variations in health expectancy in some countries. For example, (Fukuda, Nakamura, & Takano, 2004) found negative associations between health expectancy at age 65 and proportion of older person living alone and divorce rate in Japan. A subsequent study in Japan confirmed the negative association between living alone and disability-adjusted life expectancy at age 65 (DALE65), along with a positive impact of the number of household members on health expectancy (Kurimori, Fukuda, Nakamura, Watanabe, & Takano, 2006).

1.13. Research Gaps

The preceding sections have reviewed relevant literature on factors associated with the health and well-being of older people. It has also provided the most relevant theoretical background on how different types of resources, including socioeconomic resources and various forms of social support. This section highlights the gaps in the literature and how they are addressed in this thesis.

1.13.1. The influence of children's education on parental health

Although there are studies that examine the influence of children's education on parental health, most of these studies focused on one or two components of the disablement process, particularly physical functioning, to demonstrate the impact of children's education on parental health. For example, Zimmer et al. (2002a) and (Yahirun et al., 2016) used functional limitations to measure the health status of older people. Other studies used mortality which is the terminal outcome in the disablement process (e.g.

Friedman & Mare, 2014; Torssander, 2013; Zimmer et al., 2016). Bao (2016) used a frailty index that captures several components of the disablement process, including chronic diseases, ADL difficulty, IADL difficulty, depressive symptoms, self-reported health, and obesity but does not include functional limitations. Bao (2016) did not distinguish the role of children's education on each component of the disablement process.

The focus of previous research on functional limitations as a measure of health status could be due to its important role as mediator between impairment/pathology and disability (Fauth et al., 2008; Femia, Zarit, & Johansson, 2001; Lawrence & Jette, 1996; Lowry, 2010; Peek et al., 2003). While this approach provides insight into how children's education influences parental health, it is equally important to examine whether children's education also influences the two health outcomes that functional limitations are supposed to mediate, i.e., impairment/pathology and disability. Although some studies allude to the role of children's education in preventing the onset of health problems, very few have examined children's education in relation to older people's experience of chronic disease, which is a precursor of other health limitations. This gap is addressed in this thesis by using a more comprehensive definition of health to capture indicators that correspond to different stages of the disablement process. Investigating the role of children's education with all components of the disablement process could help us identify the exact mechanisms by which older people can benefit from the socioeconomic resources of their children. It can also help us understand whether the influence of children's education on parental health is dependent on the stage in the disablement process in which the older parents are in.

1.13.2. The role of social support in the well-being of older people

Although many studies have addressed the effect of different aspects of social support on the well-being of older people, our understanding of the association of living arrangements and intergenerational support with well-being remains incomplete in three respects.

First, while there are extensive studies on the relationship between living arrangements and well-being of older adults the results remain inconsistent, due in part to the different classifications used to define living arrangements, which hamper comparability across

studies. Another reason for the inconsistent results could be the omission of important variables in the analyses. Most studies assumed that older people's actual living arrangements are also their preferred arrangements. However, research shows that the actual and preferred types of living arrangements of older people do not always converge. For example in urban China, more than a third of older people did not actualize their preferred living arrangements (Logan & Bian, 1999). Another study in China shows that about 16 percent of older adults have living arrangement discordance: 6 percent live independently but prefer coresidence with children while 10 percent coreside with children but prefer to live independently (Sereny, 2011). A recent study in China indicates that 46 percent of older Chinese have living arrangement discordance (Chen, 2018). In Orissa, India nearly 23 percent of older people are not living in their preferred type of living arrangement (Panigrahi, 2009). Research in the Philippines indicates that although the majority of older people coreside with their children, a significant proportion of them would prefer to live independently, either alone or with spouse only (Natividad & Cruz, 1997). Despite the presence of studies that show a lack of concordance between the actual and preferred living arrangements of older people, very few studies examine how this lack of concordance is associated with their well-being. Further, these studies are all conducted in societies characterized by a patrilineal kinship system, while parallel analysis in societies characterized by a bilateral family system, which is another dominant family system in Asia, is lacking. The differences in kinship systems that govern traditional living arrangements and exchange of support in Asian societies highlight the need to complement the studies based on patrilineal kinship systems with parallel studies in societies with bilateral family system, so as to add the "cultural nuances" needed to comprehensively theorize the relationship between coresidence and well-being in developing Asia (Teerawichitchainan et al., 2015, p. 107).

Second, although there are also extensive studies on the relationship between intergenerational support and well-being in old age, the results are far from consistent. Aside from contextual differences, one factor that could explain these inconsistent results is the fact that the indicator used to measure the pattern of intergenerational exchange neglects the distinctions between different types of support (Peng et al., 2018). Most research on intergenerational support usually distinguish three types of support: emotional, financial and instrumental (e.g., Chao, 2011; Chen & Silverstein, 2000) but existing studies that relate the exchange of support to well-being focus only on one or two types of support (e.g., Chen & Jordan, 2018; Lee et al., 2014) or combine different types

of support into one variable (Davey & Eggebeen, 1998; Kim & Kim, 2003; Lowenstein et al., 2007). Respondents are then classified into over-benefited, under-benefited, reciprocal or no exchange of support by comparing how many types of support they receive and provide (Peng et al., 2018). For example, the respondent is classified as over-benefited when the number of types of support he or she receives exceed what he or she provides. A respondent is also considered as over-benefited when he or she received any form of support but did not provide any form of support.

This existing operationalization of exchange of support suffers from two weaknesses. First, focusing only on one aspect of support does not capture the diversity of support that flows across generations and may underestimate the important role played familial support in the well-being of older people. Second, previous research assumes that the different types of support are tradable and substitutable, but in reality, the importance of different types of support may be perceived differently by older people (Peng et al., 2018). For example, previous research shows that Chinese adult children are compensating for the inadequacy of emotional support by increasingly using financial support (Lee & Kwok, 2005). However, studies also show that elderly Chinese least expect financial support from their children but ascribe more importance to emotional support than material support (Dong, Chang, Wong, & Simon, 2012). Different types of support also have different impacts on the well-being of older people. For example, emotional support, which reflects belongingness to a caring network, may have more profound effects on psychological well-being than instrumental support because the former is dependent on having close family members or friends whereas the latter can be obtained from far less personal sources (Wu & Schimmele, 2008).

Third, previous research also shows that intergenerational support is not only dependent on the characteristics of the older persons, but also conditioned by the characteristics of their children (Cunningham, Yount, Engelman, & Agree, 2013; Logan, Bian, & Bian, 1998; Quashie, 2015). While previous studies have recognized the importance of looking at the needs of both actors in the exchange process (Lowenstein et al., 2007) and how the characteristics of children could also impact parental well-being (Peng et al., 2018), most existing research that examines the relationship between exchange of support and parental well-being ignores the characteristics of children.

While some research has examined children's characteristics in relation to the exchange of support and parental well-being, these characteristics are mostly limited to the sex or migration status of the child (Hoang, 2015). Other important characteristics of children such as age, education and marital status, which have been shown to be associated with the intergenerational exchange of support are largely unexplored in relation to their impact on parental well-being. For example, highly educated children tend to have more resources and can provide more financial and material support to their parents, while low educated children may require help from their parents. Compared with married children, unmarried, separated and divorced children are less likely to give material support to their parents (Quashie, 2015).

The foregoing research gaps are addressed in this thesis in three ways. First, instead of relying mainly on the actual living arrangements of older people as an indicator of social support, this research also examines their living arrangement concordance and how it is related to their well-being. Second, in examining the relationship between the exchange of support and well-being of older people, this thesis distinguishes different types of support and how each type of support is related to older people's well-being. Third, in addition to the personal characteristics of older people, the characteristics of their children are also examined in relation to parental well-being.

1.13.3. The role of socioeconomic resources in explaining health expectancy

Overall, there is growing research documenting the role of socioeconomic, lifestyle and social support factors in explaining geographic variation in health expectancy. However, most of this research is conducted in developed countries, where structural factors and cultural context are different from developing countries. Existing studies examining geographic variation in health expectancy in developing countries (Apinonkul, Soonthornthada, Vapattanawong, Jagger, & Aekplakorn, 2016; Nguyen, Saito, Phan, & Nguyen, 2012; Reyes-Beaman et al., 2005) are mostly descriptive. Very few studies have empirically examined the correlates of geographic variation in health expectancy in developing countries. To date, no study has examined the factors associated with regional variation in the health status of older people in the Philippines, despite the increasing availability of data and the growing number and proportion of older Filipinos. Except for the life tables published at the regional and provincial level and the annual reports of the

Department of Health on the top causes of morbidity and mortality, there is no detailed analysis that focuses on the health of the adult population. Existing analyses on health at the subnational level heavily focus on maternal and child health (Collas-Monsod, Monsod, & Ducanes, 2004; Quintos, 2016). This focus on maternal and child health is understandable given the relatively high fertility and high maternal mortality in the country. To address this gap, this thesis describes regional variation in DFLE among older people in the Philippines and examines the factors associated with this regional variation. This research complements existing research on the role of socioeconomic resources in the health expectancy of older people in developed countries by providing evidence from the perspective of a developing country.

1.14. Frameworks of analysis

This thesis examines the factors associated with the health and well-being of older people, using the framework shown in Figure 1.2. Drawing from the fundamental cause theory (Link & Phelan, 1995; Link et al., 2008), this research focuses on the role of different types of resources in explaining inequality in health and well-being in old age. These resources do not only refer to socioeconomic resources including education and income but other forms of resources such as social support (Henning-Smith, 2016). Social support is conceptualized to include the structural characteristics of the individual's social network as well as the functional aspects of this social relationship (Fernández-Ballesteros, 2002). The structural characteristics are measured by older people's living arrangements, while the functional aspect is measured by exchange of support with children. Following previous research, I add a network approach to the fundamental cause theory and argue that not only do the personal resources of the older people matter but also those people they have a relationship with, particularly their children (Zimmer et al., 2016), who are an important part of their social network.

The two main dependent variables in the present study are physical health and subjective well-being of older people. Some research used physical health as an indicator of well-being, but they are examined separately in this research as physical health is an important determinant of subjective well-being. Subjective well-being represents a broader concept that not only taps into the physical health of older people but also captures other aspects of well-being such as emotional and mental well-being. Bowling (2004) distinguished

between macro and micro definitions of subjective well-being. This approach is adopted in this research by examining how these resources influence the subjective well-being at the micro and macro level.

Since physical health has been consistently shown to be a strong determinant of well-being in old age (Kim & Kim, 2003; Lee et al., 2014), this thesis investigates the factors associated with physical health and then examines its relationship with well-being in subsequent analysis. This study focuses on the role of children's education in parental health, controlling for older parents' individual characteristics, including their living arrangement. Education of children represents a familial resource that can benefit older people through several mechanisms, including social support, social influence and access to resources. However, as pointed out earlier, previous studies mainly used one or two components of the disablement process to measure physical health. This is addressed in this research by using different health indicators that correspond to the different stages of the disablement process to examine whether the relationship found between functional limitations and children's education also extends to impairments and disability, controlling for the individual characteristics of older people and that of their children.

Social support is another form of a resource that can impact the well-being of older people. Two types of social support, including living arrangements and intergenerational exchange of support, are the main focus of the present study. Previous studies have shown that the living arrangements of older people can influence their subjective well-being, either positively or negatively. The greater availability of different types of support in a co-residential arrangement can positively impact the well-being of older people, but the presence of conflicts and lack of privacy in the household can negatively affect the well-being of older people. The current study recognizes these different impacts of living arrangements on older people, but it also argues that not only does the actual living arrangement matter, but whether this arrangement corresponds with older people's preferred arrangement also has an impact on the well-being of older people. It is hypothesized that lack of concordance between the actual and preferred living arrangements of older people will have a negative impact on their well-being, because it may reflect older people's or their children's lack of resources to have living arrangement concordance. For example, older people may prefer to live independently from their children, but their unstable economic condition may motivate them to live with their children for support. They may also want to live away from their children, but their

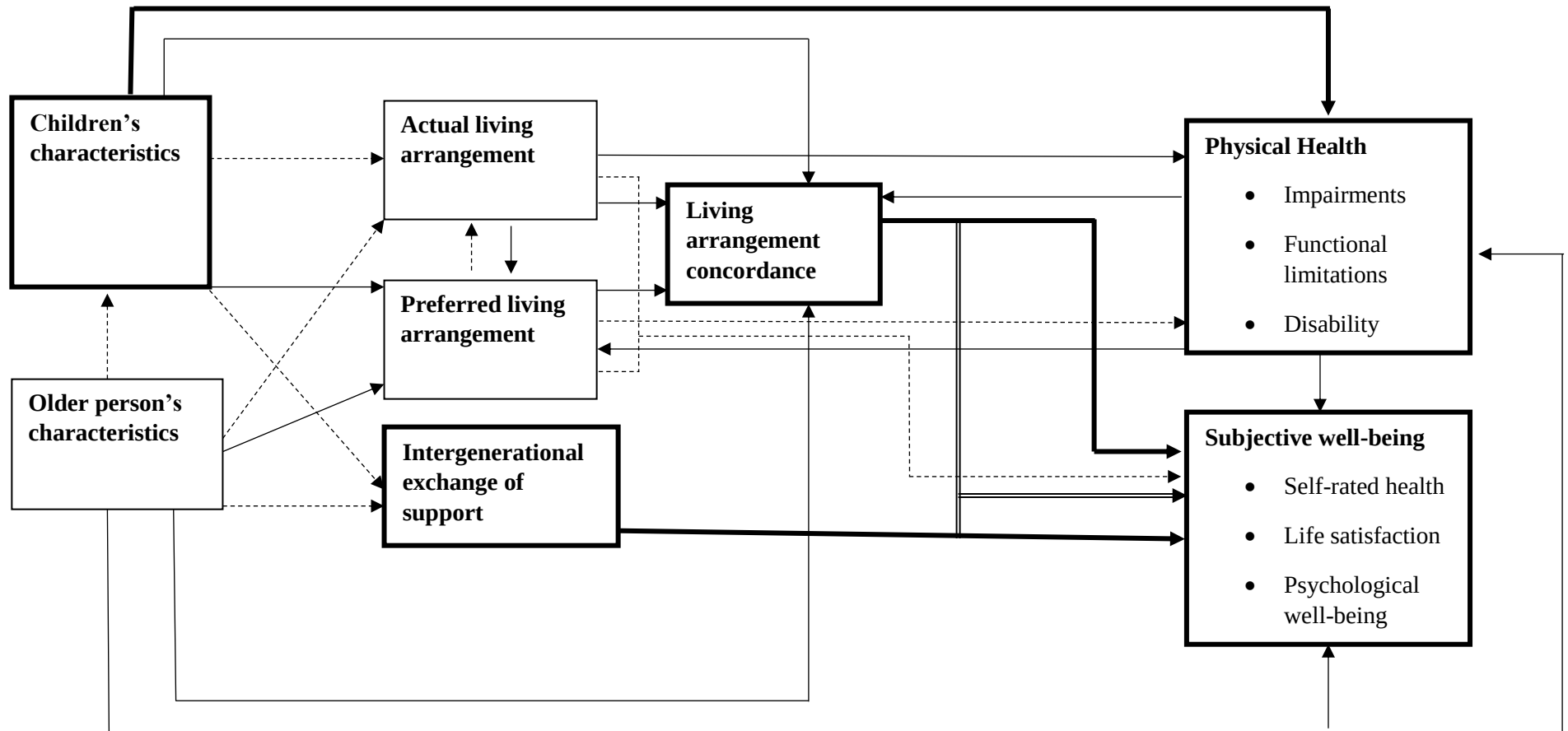
children's financial difficulty may force them to accommodate them in their own household. It is acknowledged that older people's characteristics, including their physical health and the characteristics of their children, will also be associated with their living arrangement concordance. The influence of these different factors will be empirically tested in this research, but they will not be the main focus of the study.

Although the type of household that older people live in and whether living in this household type corresponds to their preference can affect their well-being, the household is not an adequate unit of analysis because the flow of support can extend beyond the household. This is addressed in this research by looking at the intergenerational exchange of support within and beyond the household, controlling for older people's living arrangement concordance, their personal characteristics, their health status and the characteristics of their children. However, unlike previous studies that focused only on unidirectional (either giving or receiving only) flow of support, this research considers the bidirectional flow of support. To capture the diversity of types of support that flow between children and parents but also cognizant that these types of support are not substitutable, distinction is made between these different types of support. The intergenerational flow of these different types of support are assumed to be influenced by the characteristics of older people and that of their children, but these relationships will not be empirically tested in this research.

It is also hypothesized in this research that the impact of living arrangement concordance on the well-being of older people will be moderated by the presence or absence of exchange of support. For example, an older person may not be living in their preferred living arrangement but may be receiving different types of support from children living outside their household. In this case, the negative impact of a lack of living arrangement concordance may be buffered by the flow of intergenerational support.

Although the framework shows the different relationships between the variables, only a subset of key relationships is the main focus of this thesis. These relationships are represented by heavy arrow lines in Figure 1.2 to distinguish them from the other relationships.

Figure 1. 2. Framework of analysis for micro-level determinants of health and well-being



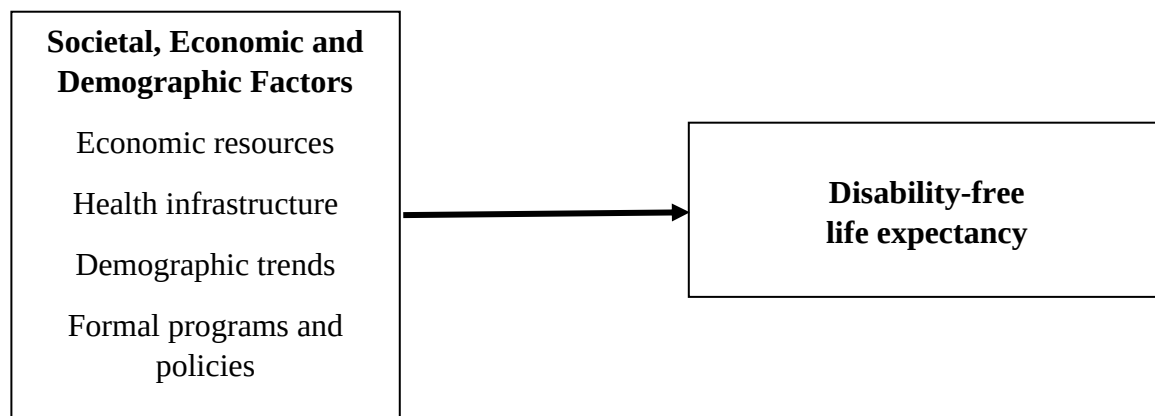
Legend

- Thick solid line** The relationship is the focus of the study
- Thin solid line** The relationship is tested but not the main focus of the study
- Double line** Represents interaction effects
- Dashed line** The relationship is hypothesized but not empirically tested

To complement the first part of the analysis on micro-determinants of health and well-being, the second part of the analysis focuses on the role of macro-level socioeconomic resources in disability-free life expectancy (DFLE) of older people at the subnational level. In doing so, we get a more comprehensive picture of the factors associated with health and well-being among older Filipinos at the national and sub-national level.

The primary dependent variable in this analysis is disability-free life expectancy (DFLE). The focus of this research is on the role of macro-level socioeconomic factors in DFLE at the regional level. The relationship between socioeconomic resources on DFLE is conceptualized in Figure 1.3. Several indicators of socioeconomic resources, including poverty incidence, educational attainment, and living arrangements are hypothesized to explain regional variation in DFLE, based on the predictions of fundamental cause theory. Other factors such as policies and programs designed to promote the well-being of older people in the country will also impact DFLE, but they are not empirically tested in this analysis due to data limitations.

Figure 1. 3. Relationship between macro-level factors and health expectancy



In summary, this thesis is guided by the predictions of the fundamental cause theory which states that the health and well-being of older people is driven primarily by resources. In this research, resources are not limited to the resources of older people, but also of that of their children. Chapter 4 focuses on children's education, as a proxy of this type of resource, and examines its association with parental health. In settings where there is strong intergenerational support, just like in the Philippines, children's education can serve as a familial resource that can benefit all members of the family including that of the parents. It is expected that education of children will be positively associated with the health status of their parents, not only because

higher education translates to higher income, but it also means that they have access to knowledge and information that are beneficial to the health of older people.

Another type of resource that is examined in this research is social support, which is the focus of chapters 5 and 6. Social support is defined in terms of its structural and functional aspects. Chapter 5 focuses on the structural aspect while Chapter 6 focuses on the functional aspect. The structural aspect is measured in terms of living arrangement and is conceptualized as a household resource that may have significant implications for the well-being of older people. To extend the fundamental cause theory, it is hypothesized that the influence of this household resource on well-being is dependent on whether this available resource is aligned with the preferred or perceived to be the ideal resource of older people. The expected relationship between the concordance of the available resource (actual living arrangement) and preferred or ideal resource (living arrangement preference) is guided by person-environment fit, cognitive dissonance, and self-discrepancy theories. The functional aspect of social support is measured in terms of the transfer of resources across generations. Since different types of resources may have different meanings and require different forms of delivery, it is expected that their impact on well-being will also vary. Hence, to add another dimension to the fundamental cause theory, I distinguish between different types of resources that are exchanged between older parents and children, and the direction of this exchange; and examine their associations with parental well-being. The expected relationship between different types of intergenerational support and older people's well-being is informed by the social exchange and equity perspective theories.

To complement chapters 4, 5 and 6, which examine the association between individual and household-level resources on health and well-being of older people, chapter 7 examines the role of macro-level resources on the well-being of older people at the regional level. Different types of resources, such as children's education and living arrangement as examined in the previous chapters, are also used in this chapter, in addition to broader socioeconomic indicators such as poverty incidence and regional gross domestic product.

1.15. Research aim and research questions

Overall, this study aims to identify the role of individual and familial forms of resources in the health and well-being of older people in the Philippines. Five major questions are derived from the conceptual frameworks. These research questions address how different forms of resources are associated with the health and well-being of older people. The first four research questions focus on the role of personal and familial resources on health and well-being at the micro level, while the last question addresses the role of social and economic resources in the well-being of older people at the macro-level.

1. What is the role of children's education in the physical health status of older people?

This research question investigates the influence of children's education on parental health, controlling for individual characteristics of older people and their children. Based on previous research, children's education which represents a form of a familial resource will be associated with the health status of their elderly parents through various mechanisms.

For example, highly educated children have better knowledge of healthcare practices and available technology to address health problems of their elderly parents. They also adopt healthier behaviours that can influence their parents to adopt healthier lifestyles. Previous research has also shown that older people's health is also influenced by their own demographic and socioeconomic characteristics, their living arrangements and exchange of support with children. Given this, the roles of these factors on older people's health are examined simultaneously with children's education, to assess whether the relationship between children's education and parental health persists when other factors are also considered. This research also examines whether the influence of children's education on parental health is similar across parents with different levels of education. One of the mechanisms on how children's education can impact parental health is through changing the unhealthy behaviours of their parents. This is tested in this research by examining how children's education is also related to smoking, drinking and exercise habits of their parents.

2. How is living arrangement concordance associated with the well-being of older people?

This question investigates whether concordance between preferred and actual living arrangements of older people is associated with their well-being, controlling for older people's individual characteristics and health status. Drawing from the predictions of person-environment fit, cognitive dissonance and self-discrepancy theories, it is expected that older people whose actual living arrangements match their arrangements have higher levels of well-being than those who have discordant living arrangements.

3. What is the role of the intergenerational exchange of support in the well-being of older people?

This research question examines whether different patterns of exchange of support are associated with the well-being of older Filipinos. Specifically, it investigates whether older people who are both recipients and providers of support have higher levels of well-being than those who are recipients only, providers only or are not involved in any exchange of support. Since different types of support have different meanings and different implications, four types of support are distinguished in the current study: financial, material, instrumental and emotional support. The characteristics of both the children and older people, including the latter's living arrangements are controlled for in the analysis. Drawing from the equity theory it is expected that those who are both providers and recipients of support have higher levels of well-being than those who are recipients only or providers only. Based on previous studies, older people who are not involved in any form of support with their children are hypothesized to have the lowest levels of well-being among the four patterns.

4. Does exchange of support moderate the relationship between living arrangement concordance and well-being of older people?

This question assesses whether the exchange of support has a moderating effect on the relationship between living arrangement concordance and the well-being of older people. It is hypothesized that older people who do not have their preferred living arrangement may still experience positive well-being if this lack of concordance is accompanied by an exchange of support from their children.

5. How are socioeconomic factors associated with DFLE of older Filipinos?

This research question looks at the role of macro-level socioeconomic resources in geographic variation in DFLE in the Philippines. Specifically, it investigates whether the level of education, poverty incidence, labour force participation rate, regional gross domestic product (GDP) can explain the variation in DFLE across the 17 regions of the country. Based on the fundamental cause theory, these socioeconomic resources are expected to explain the regional variation of DFLE in the Philippines.

1.16. Setting of the Study

This study is conducted in the Philippines, a developing country in Southeast Asia that has experienced a gradual but steady increase in the number and proportion of older people. Concomitant with the growing phenomenon of population ageing in the country is a host of demographic and socioeconomic changes that may challenge the living arrangement and provision of intergenerational support to the older people, and eventually their health and well-being. These changes include increasing life expectancy, declining fertility, educational expansion and the growing mobility of young people. These demographic and socioeconomic factors will be discussed in detail in chapter 3. These changes can influence the health and well-being of older people through various pathways. For example, declining fertility, educational expansion, increasing employment of women and increasing migration of young people may reduce the pool of available family members who can take care and provide support to the older people (Costello, 1994; DaVanzo & Chan, 1994; Natividad & Cruz, 1997; Zimmer & Kwong, 2003).

Like most Asian countries, the family is the mainstay of support for older people in the Philippines (Asis et al., 1995; Council, 2010; Knodel & Chayovan, 2012; Knodel, Friedman, Si Anh, & Cuong, 2000b; Natividad & Cruz, 1997; Ofstedal, Knodel, & Chayovan, 1999; Sung, 2001). The Filipino family acts as a support system that “provides social security, old age pensions . . . , care for the sick, home for the aged” (Castillo, 1977, p. 103; Lopez, 1991) and this support system remains prevalent over time (Asis et al., 1995; Cruz, Abalos, Lavares, Natividad, & Saito, 2009; Cruz & Camhol, 2014; Domingo & Asis, 1995; Laguna, 2013; Natividad & Cruz, 1997).

The presence of strong intergenerational support for older people in the Philippines is largely influenced by the concept of filial piety. Children in the Philippines are expected to have a sense of “utang na loob”, an “immeasurable and eternal” debt of gratitude for their parents for giving them life and providing them care while growing up (Hollnsteiner, 1970, p. 72). Those who fail to repay this “utang na loob” is sanctioned by “hiya”, or “the uncomfortable feeling that accompanies awareness of being in a socially unacceptable position, or performing a socially unacceptable action” (Lopez, 1991; Lynch, 1970, p. 16). This strong filial obligation towards older people is also present in other Asian countries. However, unlike most Asian countries the Filipino version of filial piety is not guided by the strict principles of filial piety based on Confucian philosophies (Chao & Tseng, 2002; Laguna, 2013). Instead, Filipinos’ interaction with each other is guided by the idea of “smooth interpersonal relations”, expressed by desiring social harmony and yielding one’s individual interests to the will of the majority (Chao & Tseng, 2002; Lynch, 1970). These Filipino values come into play when older people decide with whom they live with and whether they live in their desired living arrangement preferences. These values will also dictate the flow of intergenerational support.

The type of family kinship system in the Philippines also sets it apart from earlier studies on the well-being of older people that were mostly conducted in predominantly patrilineal societies. Social organization in the Philippines is characterized by a bilateral kinship system, separated into generations whose core unit is centered on the nuclear family composed of parents and their children (Lopez, 1991). It is important to examine the role of intergenerational support in different family systems because the patterns of support are different depending on the prevailing family system, and this could have important implications for the well-being of older people. For example, although both patrilineal and bilateral family systems value the authority of older people, there is some evidence that in bilateral family systems authority of the older people is relatively weak and emotional connections may be more important in maintaining close intergenerational relationships than authority is (Mason, 1992). In this situation, familial support for older people may be more persistent in societies where intergenerational ties are more anchored in emotions rather than in authority, at a time when the traditional arrangements are challenged by forces of industrialization, urbanization or migration (Mason, 1992).

Aside from its unique culture and the several demographic and socioeconomic changes sweeping the country, the Philippines is also characterized by vast geographic social and economic inequality. These regional inequalities may influence the subjective well-being of older people through differential access to health care services and other forms of support.

Although the Philippines shares some cultural similarities with its Asian neighbors, its cultural landscape is also influenced by Western values due to its rich history of colonization under the Spanish and American regimes. Some consider the Philippines the "most westernized nation in Asia" hence it provides the "setting for a clash of Eastern and Western values," including "group restraint vs. individual entitlements," "social responsibility vs. personal choice" (Mendoza, 2001, p. 13). This rich cultural heritage, along with the demographic and socioeconomic changes sweeping the country, makes the Philippines an ideal setting to study the factors associated with the health and well-being of older people. It is important to identify the factors associated with the well-being of older people in different cultures because these factors could be different depending on the dominant cultural orientations and values (Diener, Suh, Lucas, & Smith, 1999; Schwarz et al., 2010; Takagi & Saito, 2013).

The next chapter provides a discussion of the data and methods used in this thesis to answer the five research questions of this thesis.

Chapter 2: Data and Methodology

Chapter 1 showed that the limited research that examined the influence of children's education on parental health has mostly focused on a single indicator of health. It also showed that while there is mounting research examining the relationship between different forms of social support such as living arrangements and exchange of support and subjective well-being, this research suffers some limitations. Previous studies on living arrangements fail to incorporate the living arrangement preference of older people, while existing research on the exchange of support does not distinguish the different types of support and how they impact older people's well-being. Finally, research that examines the factors influencing health expectancy of older people is mostly conducted in developed settings, whereas parallel analysis in developing countries, where the pace of population ageing is much faster, remain lacking. The current chapter describes the data and methods to address these research gaps.

2.1. Data Sources

Data for this thesis are drawn from two sources: the 2007 Philippine Study on Ageing (PSOA), and the 2010 Census of Population and Housing (CPH) of the Philippines.

2.1.1. The 2007 Philippine Study on Ageing (PSOA)

The 2007 PSOA is a cross-sectional survey, conducted by the University of the Philippines Population Institute (UPPI) and Nihon University Population Research Institute (NUPRI). The survey was conducted using a structured questionnaire adopted from the multi-wave Nihon University Japanese Longitudinal Study of Ageing (NUJLSOA). Its main aim was to examine the health status and well-being of older people and its determinants. It employed a multi-stage sampling design with the provinces as primary sampling units, the barangays (villages) as secondary sampling units and the older people as the ultimate sampling units.

This complex sampling design was taken into account in the analysis, and robust standard errors were used. The study covered seven provinces, 78 barangays and 3,105 individual respondents aged 60 years or older. Interviewers for the survey were instructed to make several callbacks when the selected respondents were not available for interview during the first visit,

contributing to the survey's high response rate of 94%. Other national surveys in the Philippines such as the National Demographic and Health Survey (NDHS) have about 98% response rate, so PSOA's high response rate is not unexpected (Philippine Statistics Authority & ICF International, 2014).

The survey was originally envisioned to be longitudinal, so older respondents (70 years and more) were oversampled. Sampling weights were calculated to take into account the multistage sampling design of the study and the oversampling in the older age groups. The weights were applied to the survey data so that it will conform to the distributions of older Filipinos based on the 2000 census, although they were scaled down to revert the number of respondents back to the original sample size (Cruz et al., 2016). The data used in the analysis are weighted to nationally represent the older population in the country.

Aside from collecting extensive socio-demographic and health information on older persons, the survey also collected basic information on the co-resident and non-coresident children of the respondent, including their demographic and socioeconomic characteristics, and exchange of support with their parents. Out of the 3,105 respondents, 2,912 provided information on their living children, resulting in 16,023 children records. Children with 'don't know' or 'no information' on age (675 cases) and sex (76 cases) were declared to have missing cases.

The PSOA data is used in chapters 4,5 and 6 although different sub-samples are used depending on the particular analysis. In chapter 4 only respondents with at least one child aged 25 years are included in the analysis (2832 cases). In the regression models only respondents with valid responses for all the variables in the model are included (2749 cases). In chapters 5 and 6 only respondents who are widowed and currently married with at least one living child are included in the analysis (2670 cases). Proxy respondents are excluded from the analysis (169 cases). Similar to chapter 4, only respondents with valid responses for all the variables in the model are included in the analysis (2549 for self-rated health, 2552 cases for life satisfaction and 2517 for psychological well-being).

2.1.2. The 2010 Census of Population and Housing (CPH)

The 2010 CPH is the 13th census of population and the 6th census of housing that was conducted in the Philippines since the first population census was undertaken in 1903 (National Statistics Office [NSO], 2010). It is also the first census in the country that included several questions on functional difficulty. Similar with previous censuses conducted by NSO, the 2010 CPH was designed to take stock of the total population and housing units in the country and to collect information about their characteristics (National Statistics Office [NSO], 2012). Persons enumerated in the 2010 CPH included 1) those who were present at the time of visit and whose usual place of residence was the housing unit where the household lived, 2) family members who were overseas workers and who had been away at the time of the census for not more than five years from the date of departure and were expected to be back within five years from the date of the last departure, 3) those whose usual place of residence was the place where the household lives but were temporarily away at the time of the census due to various reasons, such as being on vacation, working or attending school in some other place but comes home at least once a week, confined in a hospital for not more than six months, among others, 4) boarders/lodgers of the household or employees of household-operated businesses who did not usually return/go to their respective homes weekly, 5) citizens of foreign countries who had resided or were expected to reside in the Philippines for at least a year from their arrival, except members of diplomatic missions and non-Filipino members of international organizations, 6) Filipino balikbayans with usual place of residence in a foreign country but have resided or were expected to reside in the Philippines for at least a year from their arrival, and 7) persons temporarily staying with the household who had no usual place of residence or who were not certain to be enumerated elsewhere (National Statistics Office [NSO], 2012).

To obtain the population count and data on basic characteristics of the household population and housing units, a combination of enumeration and sampling of households was implemented. Households that were non-sampled were interviewed using the Common Household Questionnaire (CPH Form 2) while the sampled households were interviewed using the Sampled Household Questionnaire (CPH Form 3). Depending on the size of the city/municipality the sampling rate or the proportion of households selected as sample households was either 100% or 20%. For city/municipality that has 500 households or lower all the households were taken as samples, while those with more than 500 households only

20% of the households were taken. A systematic cluster sampling was implemented to minimize the enumerator's selection bias for municipalities with a 20% sampling rate (NSO, 2012). The data used in this thesis are derived from the 20% sample households. This dataset contains 18,824,651 individual records of all household members, but the analysis is limited to older people aged 60 years and over (1,272,993 cases). The data was weighted to represent the older national population. The full census was also used in the study particularly in describing the demographic and socioeconomic characteristics of older people in chapter 3.

2.1.3. Strengths and weaknesses of 2007 PSOA and 2010 CPH

One of the main strengths of the 2007 PSOA is its rich information on the health and well-being of older people, and the availability of detailed exchange of support between older people and their children. However, although the survey is a nationally representative sample of older people in the Philippines, its sampling design does not permit an analysis beyond the national level because it only covered few provinces to represent the entire country. This limitation is addressed by using the 2010 CPH that has wider geographic coverage. While the health indicators in the census are limited compared with the 2007 PSOA, these indicators already "provide a consistent and complete conceptualization of disability" (Leonardi, Bickenbach, Ustun, Kostanjsek, & Chatterji, 2006, p. 1220), which is the primary interest in this research. Although both data sets are quite dated, findings derived from these data are still relevant in the current setting as the characteristics and situation of older Filipinos have not dramatically changed in the past decade, particularly in terms of marital status and children ever born (Hermalin, Ofstedal, & Tesfai, 2007). To validate this, the basic characteristics of older people based on the 2017 National Demographic Health Survey (NDHS) are presented in table 2.1. It shows that although there are changes in the characteristics of older people between 2010 and 2017, these changes are not substantial. For example, the proportion of older women only slightly increased from 55.8% in 2010 to 56.6% in 2017, while the proportion currently married declined from 61.8% in 2010 to 58.9% in 2017. Although there is a significant improvement in the educational profile of older Filipinos in the last 10 years, this compositional change will have little impact on the currency of the results, because education is not significantly associated with their health status; this is shown in this thesis and in earlier studies (Cruz et al., 2007; Zimmer, Natividad, Ofstedal, & Lin, 2002b)

Table 2. 1. Characteristics of older Filipinos based on 2010 Census and 2017 NDHS.

Indicators	2010 Census	2017 NDHS
Age group		
60-69	59.7	60.7
70-79	29.6	28.2
80+	10.7	11.1
% female	55.8	56.6
Place of residence		
Metro Manila	10.9	13.7
Other urban areas	29.4	28.8
Rural area	59.7	57.4
Marital status		
Never married	6.2	5.2
Currently married	61.8	58.9
Widowed	30.5	32.8
Divorced/separated	1.5	3.1
Education		
No grade completed	5.7	4.1
Below primary	30.7	26.4
Primary completed	32.2	33.4
Secondary completed	19.9	36.1
University completed	11.4	-

Note: For 2017 NDHS the last categories for education are grouped together since they were not distinguished from each other in the data set.

Table 2.2 compares the two datasets in terms of age-sex structure and the proportion with self-care difficulty and mobility restrictions. Although there are slight differences in the questions, these two indicators are somewhat comparable in terms of capturing self-care difficulty and mobility restrictions. It shows that the proportion of older people under 65 years old is higher in the 2010 census whereas the proportion in the 65-69 age group is lower in the 2010 census compared with the 2007 PSOA. Very minimal differences are observed between the two sources in terms of age-sex distribution at older age groups (70+). In both data sources there is a higher proportion of men than women in the 60-69 age groups whereas the pattern is reversed starting age 70. Given the much-detailed questions in the 2007 PSOA, the proportion who reported self-care and mobility limitations is much higher in PSOA than in the census although the sex pattern is similar in both sources. It should be noted that although both data sets are nationally representative, they have different sampling design and sample size. The larger

coverage and sampling size of the census permits analysis at the regional level, while analysis of the 2007 PSOA is only stable at the national level.

Table 2. 2. Comparing 2007 PSOA and 2010 CPH based on age structure and proportion with self-care and mobility limitations

	2007 PSOA			2010 CPH		
	Men	Women	Both sexes	Men	Women	Both sexes
Age structure						
60-64	35.8	29	31.8	38.5	33.5	35.7
65-69	30.5	27.8	28.9	24.7	23.5	24.1
70-74	17.2	18.1	17.8	17.8	18.7	18.3
75-79	8.7	11.5	10.3	10.4	12.1	11.3
80-84	4.8	8	6.7	5.3	7.2	6.4
85+	2.9	5.6	4.5	3.3	5.1	4.3
% with self-care difficulty	5.6	7.9	6.9	1.9	2.2	2.0
% with difficulty in walking or climbing steps	25.7	38.4	33.1	5.8	6.4	6.1

2.2. Dependent variables for micro-level analysis

The main dependent variables in this thesis are physical health and subjective well-being of older people. The first set of analysis focuses on the determinants of health and well-being at the micro-level using the 2007 PSOA. The following section discusses how physical health and subjective well-being are measured at the micro-level.

This thesis uses several indicators of physical health that correspond to the different stages of the disablement process, including pathology/impairments, functional limitations, and disability. To measure the first stage of the disablement process, the presence of chronic disease is used as an indicator. For functional limitations, the experience of 10 mobility indicators is used. Finally, difficulty in performing ADLs and IADLs are used to measure disability. These physical health indicators are used as the main dependent variables in chapter 4 but they are also used as predictors of subjective well-being in chapters 5 and 6.

2.2.1. Physical health indicators

a. Chronic diseases

Chronic health conditions examined in the analysis include angina, myocardial infarction and others, cancer, cerebrovascular disease (haemorrhage, infarction, stroke, etc.), high blood pressure, diabetes and respiratory illness (chronic, such as asthma, emphysema). Respondents were asked if they have each of these conditions and they are answerable by "yes", "no" and "don't know" Those who answered “don’t know” were declared as missing cases. Respondents who reported at least one of these diseases are coded as “1” and “0” if otherwise.

b. Functional limitations

A composite measure, based on the Nagi (1976) measures of mobility limitations is used. There are 10 items considered in this measure and they include the following:

1. Walk 200 to 300 meters
2. Climb 10 steps without resting
3. Stand (go without sitting) for two hours
4. Continue to sit for two hours
5. Stoop or bend your knees
6. Raise your hands above your head
7. Extend arms out in front of you as if to shake hands
8. Grasp with your fingers or move your fingers easily
9. Lift an object weighing approximately 10 kg
10. Lift an object weighing approximately 5 kg

For each of the following items, the respondents were asked if they find the activity difficult. The answers included "yes," "no" or "not sure." Those who answered “not sure” were treated as missing cases in the analyses. Respondents who reported difficulty in at least one activity is considered to have functional limitations.

c. Activities of daily living (ADL)

Ability to perform ADLs is the most widely used disability indicator and is related to personal care activities including bathing, dressing, and going to the toilet, among other indicators (Deeg, Verbrugge, & Jagger, 2002). The ADLs considered in this study include the following:

1. Take a bath/shower by yourself
2. Dress
3. Eat
4. Stand up from a bed or chair; sit down on a chair
5. Walk (around the house)
6. Go outside (leave the house)
7. Use the toilet

For each of these activities, the respondents were asked if they find it difficult to do the activity due to their health or physical state. This question was answerable by "difficult," "no difficulty" and "not sure." Those who answered "not sure" were treated as missing cases in the analyses. Respondents who have difficulty in at least one of the seven activities are considered to have ADL difficulty.

d. Instrumental activities of daily living (IADL)

Ability to perform IADLs is also commonly used disability indicator that measures more complex activities that are necessary to live independently (Lawton & Brody, 1969). The original indicators include using the telephone, shopping, preparing a meal, cleaning the house, doing the laundry, using transportation, taking medication, and handling finances (Deeg et al., 2002, p. 209). For IADL, the following activities are considered in the analysis:

1. Prepare own meals
2. Leave the home to purchase necessary items or medication
3. Take care of financial matters such as paying utilities (electricity, water)
4. Use the telephone
5. Dust, clean-up and other light housework
6. Take the bus or the jeepney or public transport to leave home

7. Take medication as prescribed

The series of questions used in IADL were the same with that of ADL, but in the first question, an additional response was included: "Do not perform activity due to another reason." Those who reported that they do not perform the activity due to another reason were considered to have no difficulty. Respondents who reported difficulty in at least one of the seven items are considered to have IADL difficulty.

2.2.2. Subjective well-being indicators

Chapters 5 and 6 examine factors associated with subjective well-being of older people, focusing on the role of living arrangement concordance, and intergenerational support, respectively. Subjective well-being is captured by three indicators, including self-rated health, life satisfaction, and psychological well-being. These indicators have been used in previous research to measure subjective well-being (Chen & Jordan, 2018; Gaymu & Springer, 2010; Hoang, 2015; Katz, 2009; Williams, Zhang, & Packard, 2017).. Using multiple indicators to conceptualize well-being offers a more comprehensive view of psychological health (George, 2006). Although life satisfaction and depression may represent the extreme ends of the psychological well-being continuum, there is growing evidence that they are distinct constructs and could be the result of different processes (see Cheshire, Barlow, & Powell, 2010, p. 1676). A recent study also shows that they capture different aspects of life for older adults (Williams et al., 2017). Depression assesses depressive symptoms (negative affect, lack of negative affect, feelings of marginalization, and somatic problems), while life satisfaction assesses cognitive judgment on the present quality of life (Silverstein et al., 2006). Hence, both constructs are examined in this study.

a. Self-rated health

Self-rated health is a widely used indicator to measure and monitor the health of the population (Zimmer, Natividad, Lin, & Chayovan, 2000). It is not only simple and easy to capture, but it has also been found to be a better predictor of mortality than the patient's medical records or their report of medical conditions (DeSalvo, Bloser, Reynolds, He, & Muntner, 2006; Idler &

Benyamini, 1997; Mossey & Shapiro, 1982). It can also reflect dimensions of health not captured in other single health indicators (Tareque et al., 2015).

Self-rated health is used as a subjective well-being indicator rather than as a physical health indicator because it reflects more than physical health and includes overall well-being. Although self-rated health can capture the impact of physical health indicators, it cannot be exactly located in the continuum of the disablement process. To measure self-rated health the following question was asked: “In general, how would you describe your state of health?”. The available responses were: ‘very healthy’, ‘healthier than average’, ‘of average health’, ‘somewhat unhealthy’, ‘very unhealthy’ and ‘not sure’. Following previous research (Chan & Jatrana, 2007; Sereny, 2011; Zunzunegui, Beland, & Otero, 2001) those who answered ‘very healthy’ and ‘healthier than average’ were coded as 1 (healthy), while ‘of average health’, ‘somewhat unhealthy’ and ‘very unhealthy’ were coded as ‘0’ (unhealthy/average health). Those who answered not sure were excluded from the analysis.

b. Life satisfaction

Life satisfaction refers to the cognitive component of subjective well-being (Kim, Hisata, Kai, & Lee, 2000; Pinqart & Sorensen, 2000). Life satisfaction of older people in this study was measured by a single-item question. Assessing life satisfaction through a single-item indicator is one of the most common approaches in measuring subjective well-being (George, 2010), but it does not necessarily mean that it is less inferior than the multi-item measures in terms of validity and reliability (Diener et al., 1999). Life satisfaction was measured in the current study by asking the respondents whether they are satisfied with their present life. The possible responses to this question were: (1) Yes, very satisfied, (2) Yes, somewhat satisfied, (3) No, not satisfied. These three categories were used in the analysis rather than combining them into satisfied and not satisfied because doing so would result in a lack of variability in the responses, as about 90 percent of the respondents will be classified as satisfied. Sensitivity analysis also shows that those who are somewhat satisfied and very satisfied are significantly different from each other in terms of education, perceived socioeconomic status and physical health conditions, providing a compelling reason to treat them separately rather than grouping them together.

c. Psychological well-being

Psychological well-being was measured in the study by using 12 depressive symptoms that were based from the 20-item CES-D scale developed by the Centre for Epidemiological Studies to screen for depressive symptoms among the community-dwelling population (Radloff, 1977). The entire CES-D scale is comprised of items designed to represent three domains: positive and negative emotional states and depressive symptoms (Cruz, Natividad, Gonzales, & Saito, 2016; Suthers et al., 2003). The 12-item version of the scale has been tested and was found to be as valid as the 20-item version in depression screening (Cruz et al., 2016). The short version was used in PSOA because the latter takes a considerable amount of item in the survey (Cruz et al., 2016). The 12-item CES-D was also used in comparable surveys in Japan and Singapore. The items are as follows:

1. My appetite was poor
2. I felt depressed
3. I felt that everything I did was an effort
4. My sleep was restless
5. I felt happy
6. I felt lonely
7. I felt that people were unfriendly
8. I enjoyed life
9. I felt sad
10. I felt that people disliked me
11. I could not get going
12. I felt hopeful about the future

Each item was read to the respondent, who was then asked if he/she felt that rarely/not at all (1), sometimes (2), or often (3). The negatively worded items were reverse coded so that higher scores mean higher levels of psychological well-being. The possible score ranges from 14 to 36. The 12 items registered a Cronbach's Alpha of 0.73, indicating good internal consistency. Respondents who were too ill or too incapacitated and hence required a proxy (169 cases) to answer the survey questions were not asked the questions on life satisfaction and psychological well-being.

Factors associated with these different indicators of health and well-being outcomes are examined separately in each chapter of this thesis. Chapter 4 examines the role of children's education in the physical health of older people, while chapters 5 and 6, examine the role of living arrangement concordance and exchange of intergenerational support, respectively in older Filipinos' well-being. The next section describes the operationalization of these main independent variables.

2.3. Main independent variables for micro-level analysis

2.3.1. Children's education

Children's education is the main independent variable in chapter 4. Education has been shown to be relatively stable over time and is a reliable indicator of socioeconomic status (Zimmer et al., 2002). Following previous studies, the educational attainment of the most educated child is used to capture the available family resource through children (Bao, 2016; Zimmer et al., 2002; Zimmer et al., 2007; Torssander, 2014). This approach has at least two advantages. First, there is a strong correlation [Intraclass Correlation Coefficient (ICC) = 0.53] between the educational attainments of all adult children of the older people so that the educational attainment of the most educated is a good proxy for the education of all children. Second, the health of the older person is likely to be impacted by someone who can provide the greatest resources, and this is represented well by the most educated child (Zimmer et al., 2002a; Zimmer et al., 2007). Focusing only on one child per older person also eliminates the problem of clustering of children within their parents that can potentially introduce problems in the calculation of standard errors (Friedman & Mare, 2014). In cases where there is more than one child with the highest education in the family, a random selection was used to identify which child to include in the analysis. Following prior studies, only children aged 25 years and over are included in the analysis as they are assumed to have completed their education around this age (Friedman & Mare, 2014; Yahirun et al., 2016).

2.3.2. Living arrangement concordance

Chapter 5 focuses on the role of living arrangement concordance in the well-being of older people. Living arrangement concordance was constructed by comparing the actual living

arrangement and living arrangement preference of older people. Construction of living arrangement variable is relatively straightforward because it is based on the presence or absence of certain family members in the older people's household roster. The main interest here is whether the older people are living independently (either alone or with spouse only) or coresiding with their children. Following previous studies, living arrangement preference in the study is captured by asking respondents what they think is the best living situation or arrangement (Chen, 2018; Logan & Bian, 1999). This operationalization also fits Zsembik (1996, p. 71) definition of living arrangement preference as "that which she or he likes best from among a set of available and acceptable residential alternatives." However, unlike previous research that used a single question to capture living arrangement preference, the current study used several questions that ask all respondents what they think is the best living arrangements for 1) older couples, 2) widow, and 3) widower. Depending on the sex and marital status of the 'anchor' respondent, four pre-coded responses were read to the respondents. These include a) live by themselves/herself/himself, b) live by themselves//herself/himself, but near one or more children, c) rotate residence among children and 4) live with a child. These four categories were retained in the descriptive analysis, but for ease of interpretation and due to the relatively small number of cases for some categories, these categories were dichotomized in the multivariate analyses. Specifically, the first and second categories were combined to refer to independent living, while the third and fourth categories were also grouped together to refer to coresidence.

After constructing the variables for actual living arrangement and living arrangement preference, living arrangement concordance was then derived. Since the three variables for living arrangement preference were sex-and marital status-specific, I only chose the question that is appropriate for each respondent. For example, if the respondent is currently married, I considered his or her response to the question pertaining to older couples and compared it with his or her actual living arrangement. I did the same procedure for respondents who are widows and widower. By comparing their preferred and actual living arrangements I came up with a single variable with four mutually exclusive categories: 1) independent living concordance (prefer to live independently and are doing so), 2) independent living discordance (prefer to live independently but are living with children or other people), 3) coresidence concordance (prefer to live with children and are doing so), and 4) coresidence discordance (prefer to live with children but are not living with at least one child). This variable was also used as one of

the key independent variables in analyzing the factors associated with the well-being of older people. An open-ended question was also asked among all respondents on what they think is the best living arrangement for an older person who has never been married. This question was used only in the descriptive analysis to show the preferred living arrangement for never married older Filipinos.

2.3.3. Intergenerational exchange of support

Chapter 6 examines the role of exchange of intergenerational support in the well-being of older people. Intergenerational exchange of support was measured using two questions:

1. *In the past year, did you receive any form of support from [child]?*
2. *In the past year, did you give any form of support to [child]?*

Those who answered “Yes” to these questions were asked a follow-up question: “*What type of support did you receive from/give to [child]?*” Pre-Coded responses were then read to the respondents allowing them to give multiple responses. These responses include financial, help with food/meals, help with material goods, help with self-care, help with transportation, companionship, help with shopping/errands, consultation/advice for troubles, taking care of grandchildren and others. These types of support were grouped into broad categories, adopting the categories used by Laguna (2013). These categories include financial support, material support (help with material goods), instrumental support (help with food and meals, help with self-care, transportation/getting around, shopping/errands), and emotional (companionship/advice for troubles). One of the strengths of using these indicators is that we are able to distinguish between different types of support instead of using an aggregate measure of support. This is important because different types of support may have different meanings for older people and have different implications for their well-being. However, the intensity and frequency in the exchange of these types of support are not collected in the survey, hence each of type of support are measured as binary variables (yes vs. no).

Next, I aggregated information relating to each help and support to and from the multiple children that older parents reported to and created four mutually exclusive categories based on previous studies (Lee et al., 2014; Peng et al., 2018). These include 1) giver only of support, 2)

receiver only of support 3) exchanger (both recipient and giver of support) and 4) non-exchanger (neither recipient nor giver of support).

2.3.4. Other independent variables for micro-level analysis

Several variables that have been shown to be associated with the health and well-being of older people are also controlled for in the analysis. Unlike most studies that used only the characteristics of older people, this thesis also explores how demographic and socioeconomic characteristics of older people's children influence parental health. This section how these characteristics are operationalized.

Characteristics of older people include:

- a. Age refers to the chronological age of older people as of their last birthday and is treated as a continuous variable in the analysis. A quadratic function of age is included in the regression model.
- b. Sex is coded as male versus female.
- c. Marital status is categorized as currently married and not currently married. The former refers to both the legally married and living together, while the latter includes the never married, widowed, divorced and separated.
- d. Socioeconomic status is measured by educational attainment and perceived income adequacy.
 - a. Educational attainment refers to the highest educational level that the respondent completed and was coded as 1) below primary, 2) completion of at least primary education.
 - b. Perceived income adequacy is derived from a question asking the respondent to assess their ability to meet their household expenses considering the income of all household members and all the expenses for maintaining the whole household. Responses included 1) there is enough (income), with money left over, 2) just enough to pay expenses, with no difficulty, 3) some difficulty in meeting expenses and 4) considerable difficulty in meeting expenses. These categories were recoded into 1) at least enough income, 2) some difficulty and, 3) considerable difficulty.

- e. The number of living children refers to the total number of living (both biological and adoptive) children that the respondent has. It was treated as a continuous variable in all the analyses.
- f. Current place of residence is categorized into urban and rural.
- g. Health-related behaviours. Three health-related behaviour indicators are used in the study: smoking, alcohol use and exercise habits.
 - a. Smoking status of the respondent is categorized into current smoker or otherwise.
 - b. Alcohol use is classified into current drinker or otherwise.
 - c. Exercise habit is categorized into having daily exercise or otherwise.
- h. Childhood characteristics of older people. Some characteristics of older people during their childhood years were also controlled for in the analyses of their physical health, including their experience of poverty and self-rated health.
 - a. Childhood poverty is captured through the following question: “Now think about your family when you were growing up, from birth to age 16. Would you say your family during that time was pretty well off financially, about average, or poor? The responses were dichotomized into poor or otherwise (pretty well-off/about average).
 - b. Childhood health status is captured through the following question: “Consider your health while you were growing up, from birth to age 16. Would you say that during that time you were: (1) very healthy, (2) healthier than average (3) Of average health, (4) somewhat unhealthy, (5) very unhealthy, (6) not sure. The first and second categories were grouped together to refer to “healthy” while categories 3, 4 and 5 are lumped together to refer to "unhealthy/average health." Those who reported "unsure" were declared as missing cases.

Aside from the educational attainment of older people’s children, several demographic and socioeconomic characteristics of children are also controlled for in the analysis.

Characteristics of older people’ children include:

- a. Age refers to children's age as of their last birthday and is treated as continuous in the analysis. A quadratic function of age is included in the regression model.
- b. Sex is categorized into male and female.
- c. Marital status refers to current marital status and is classified into married or unmarried. Married includes both those who are legally married and those who are currently cohabiting with their partner. Unmarried includes those who are never married and formerly married.
- d. Residential location of the child is also included because physical proximity facilitates the efficient mobilization of resources thus it is likely that a coresident child is more influential in terms of providing additional resources, knowledge and health-related advice to older people, relative to those who live elsewhere (Zimmer et al., 2002a; Zimmer et al., 2007). Those who live in close proximity to their parents are also more able to provide instrumental and material forms of support. This variable is categorized into living in the same household, living next door, same town, other town and living overseas.

Note that the preceding variables were used only in chapter 4 where the main focus was on the role of adult children's education in parental health. Since the educational attainment of older people's children is highly correlated only the highest educated child was selected to represent the socioeconomic resources of all the children. Chapters 5 and 6 look at how living arrangement concordance and exchange of support influence the well-being of older people. Since living arrangement concordance and exchange of support can be influenced by all the children of older people, the analyses took this into account. Instead of just selecting one child per respondent, the characteristics of all children are aggregated per respondent. Hence the following aggregate measures of children's characteristics are used in chapters 5 and 6.

- a. Mean age of the children. A quadratic function of children's average age is included in the model.
- b. Sex composition of older people's children is classified into 1) both sons and daughters, 2) all sons, and 3) all daughters.
- c. The marital status composition is dichotomized into whether the older person has at least one unmarried child or all children are married.

- d. The educational composition is classified into whether the older person has 1) no child with a college education, 2) some children with a college education, and 3) all children with a college education.
- e. Work status composition is dichotomized into whether the older person has 1) at least one child who is not working and 2) all children are working.

2.4. Method of analysis for micro-level analysis

Univariate analyses are employed to describe the profile of the respondents and their children. Multivariate analyses are used to simultaneously examine the influence of the independent variables on the health and well-being of older persons. Except for psychological well-being, all of the dependent variables in the analysis have two categories, hence binary logistic regression models are used. Ordinary least squares regression is used to examine the factors associated with psychological well-being of older people. Separate regression models are employed for each of the dependent variables used in the study, and the analyses are stratified by sex.

2.5. Dependent variables for macro-level analysis

The second part of the analysis examines the role of macro-level socioeconomic resources in health expectancy of older people. Health expectancy refers to the “analysis of both healthy and unhealthy years of life where health can be defined along various dimensions” (Saito et al., 2014, p. 210). Depending on how health is defined, there are several terms used to describe healthy years, including disability-free life expectancy (DFLE) (Tareque et al., 2013), active life expectancy (ALE) (Cruz, 2007), healthy life years (Jagger et al., 2008) and healthy life expectancy (Yong & Saito, 2009). Health expectancy or disability-free life expectancy (DFLE) to be specific, is the dependent variable used at the macro-level analysis. To calculate DLFE among Filipino older persons, the prevalence-based life table or the Sullivan Method is used. This method requires data on the age and sex-specific health status of the older population and the age-specific mortality data by sex. Data on health status are derived from the functional difficulty indicators available from the 2010 CPH. Functional difficulties experienced by people may have been due to their health condition, which could refer to diseases or illnesses,

other health problems that may be short or long lasting injuries, mental or emotional problems, and problems with alcohol or drugs [National Statistics Office (NSO), 2010]. Difficulty is usually manifested when a person is doing an activity with increased effort, discomfort or pain, slowness, or changes in the way he/she does the activity (NSO, 2010). These functional difficulty measures are based on the International Classification of Functioning, Disability and Health (ICF) developed by the World Health Organization (World Health Organization [WHO], 2001), that "provides a consistent and complete conceptualization of disability" (Leonardi et al., 2006, p. 1220). In addition to the self-care activities and mobility limitations that have been used to define health status in earlier studies, the functional difficulty indicators used in the current study also capture other disability dimensions, including visual, aural, cognition, and intellectual/developmental (Loeb, Eide, & Mont, 2008), thus capturing multiple dimensions of health. Indicators on functional difficulty were captured by the question *"Does ____ have any difficulty/problem in ____?"*

1. walking or climbing steps
2. self-caring (bathing or dressing)
3. seeing, even when wearing eyeglasses
4. hearing, even when using a hearing aid
5. remembering or concentrating
6. communicating using his/her usual language

These questions are answerable by "Yes" or "No". From these six indicators, a composite measure is created indicating whether the older person has at least one difficulty or not. Thus, a healthy or active state means no difficulty in performing activities of daily living; and absence of sensory, cognitive and speech impairment.

The mortality data to compute DFLE are derived from the life tables prepared by the Philippine Statistics Authority. DFLE at the national and regional level are computed in this study.

2.6. Independent variables for macro-level analysis

Chapter 7 focuses on the role of several socioeconomic factors in explaining regional differences in DFLE in the Philippines. These socioeconomic factors include poverty incidence, regional per capita GDP, the percentage of older people with at least secondary

education, percentage of young people with at least secondary education, labour force participation rate, and place of residence. Social support indicators such as the proportion of older people who are currently married, the proportion of older Filipinos who are living alone and living with children are also examined. Finally, health-related factors such as doctor-to-population ratio and health insurance coverage are also used as predictors. The proportion of older people is also controlled for in the analysis. Table 2.1 describes how each of these variables are operationalized and their data sources.

Table 2. 3. Macro-level indicators explaining DFLE in the Philippines

Measures	Operationalization	Source
Socioeconomic factors		
Poverty incidence	The proportion of families/individuals with per capita income/expenditure less than the per capita poverty threshold to the total number of families/individuals (Philippines Statistics Authority, Accessed on 3 January from https://psa.gov.ph/poverty-press-releases/glossary)	Calculated by the Philippine Statistics Authority (formerly National Statistics and Coordination Board or NSCB) from the 2009 Family Income and Expenditure Survey (FIES)
Per Capita GDP	Gross Regional Domestic Product (GRDP) is the aggregate of gross value added (GVA) of all resident producer units in the region. It includes regional estimates on the three major sectors including their sub-sectors namely: Agriculture, Fishery and Forestry; Industry Sector; Mining and Quarrying, Manufacturing, Construction, Electricity, and Water; Service Sector; Transport, Communication and Storage Trade, Finance Ownership of Dwellings and Real Estate Private Government Services. (Philippine Statistics Authority Accessed on 3 January 2018 from http://nap.psa.gov.ph/grdp/TechnicalNotes.asp).	Calculated by the Philippine Statistics Authority (formerly National Statistics and Coordination Board or NSCB) based on 2010 data
Education of older people	% of Filipinos aged 60+ with at least secondary education	Calculated from 2010 CPH
Education of young people	% of Filipinos aged 25 to 40 years with at least secondary education	Calculated from 2010 CPH
Employment	% of Filipinos aged 60+ who are in the labour force	Calculated from 2010 2010 Labour Force Survey (LFS)
Urban population	% of the population living in an urban area	Calculated from 2010 CPH
Social support indicators		
Marital status	% of Filipinos aged 60+ who are currently married	Calculated from 2010 CPH
Living alone	% of Filipinos aged 60+ who are living alone	Calculated from 2010 CPH

Measures	Operationalization	Source
Living with children	% of Filipinos aged 60+ who are living with children	Calculated from 2010 CPH
Health-related factors		
Health insurance	% of Filipinos (de facto HH population) aged 60+ covered by any health insurance	Calculated from 2008 National Demographic and Health Survey (NDHS)
Doctor to population ratio	Number of doctors per 100,000 population	Calculated from 2010 CPH
Older population	% of Filipinos aged 60+	Calculated from 2010 CPH

2.7. Method of analysis for macro-level analysis

Univariate and bivariate analyses are used to describe the profile of the regions and the prevalence of functional difficulty, respectively. Previous analysis on the correlates of DFLE have mostly used linear regression (Gutiérrez-Fisac et al., 2000), but this method does not take into account the standard errors in the calculation of DFLE. To address this issue, meta-regression models are used to consider the uncertainty of DFLE estimates (Wohland et al., 2014). Since standard meta-regression models are prone to suffer from substantially inflated false positive rates due to few observations and many correlates, permutation tests were conducted to adjust the p for multiplicity (Higgins, Thompson, Deeks, & Altman, 2003). The 17 regions of the Philippines is the unit of analysis.

Chapter 3. Older persons in the Philippines: A demographic and socioeconomic profile

3.1 Introduction

Population ageing refers to “the process of structural transformation from a youthful population with a large proportion in childhood or young adulthood to a mature population with increased proportions at middle and older ages” (Booth, 2018, p. 431). By convention, 60 or 65 years are arbitrarily used as the threshold ages to categorise the ‘older age’ group (Victor, 2010). In most developed countries the chronological age of 65 years has been used as the cut-off age for defining older people, to approximate the retirement ages (Ananta & Arifin, 2009) but in developing countries, including the Philippines age 60 is commonly used as the cut-off (Abalos, Saito, Cruz, & Booth, 2018; Cruz et al., 2016). A country is usually considered to be an ageing society when the proportion of older people aged 65 years and over to the total population exceeds 8 to 10 percent (Gavrilov & Heuveline, 2003).

As will be later shown in this chapter, the age structure of the Philippine population is slowly shifting toward the older age groups due to declining fertility and improving longevity. Although the ageing phenomenon in the Philippines is at an early stage compared with other Southeast Asian countries, it is important to understand how the different demographic processes play out to produce the ageing situation in the country and to describe the individual characteristics and the household conditions of older Filipinos. Older people comprise the fastest growing segment of the Philippine population, and their share relative to the total population is expected to further increase as a result of past demographic events. However, the unfolding of the ageing phenomenon in the Philippines is occurring in the near absence of formal support system for older people (Kinsella & Phillips, 2005; Natividad, Saito, & Cruz, 2014) and the lack of health infrastructures to cater for their healthcare needs. Thus a careful assessment of the key characteristics of older persons is very important for the development of policies and programs by the government, civil society organisations and the private sector (Knodel & Chayovan, 2009). Although there are earlier studies that have examined the demographic and socioeconomic characteristics of older Filipinos (e.g., Biddlecom & Domingo, 1996; Morada, Morada, & de Guzman, 1986; Natividad, 2000), most of these are quite dated. Given the recent changes in the demographic and socioeconomic landscape that

have swept the Philippines in the past decades, including declining fertility, improvement in mortality and increasing international labour migration, it is important to examine how these changes influence the characteristics and conditions of current generation of older Filipinos, using more updated data. There is also a dearth of studies in the Philippines that track changes in the characteristics of older Filipinos, despite the availability of cross-sectional data across different periods. To address this gap, this study also examines trends in the characteristics of older Filipinos using comparable data. Looking at trends in the characteristics of older Filipinos will improve our knowledge of the characteristics of future cohorts of older Filipinos, and thus can help us better prepare for their needs.

This chapter is broadly divided into two sections. The first section presents some basic demographic indicators in the Philippines in order to understand the ageing phenomenon in the country. The second section provides a national portrait of the Filipino older persons focusing on their demographic and socioeconomic characteristics, and household conditions. Findings from this chapter provide context to the overall results of this thesis. Trends in the characteristics of older Filipinos are also examined in this section. Whenever available, indicators are disaggregated by age, sex, place of residence and marital status in order to identify which specific segment of the older population faces greater vulnerability. Data are mainly drawn from the 1990, 2000 and 2010 Philippine Census of Population and Housing (CPH), and the 2013 National Demographic and Health Survey (NDHS). A more detailed description of these data can be found elsewhere (Minnesota Population Center, 2018; National Statistics Office [NSO], 2010; Philippine Statistics Authority & ICF International, 2014).

3.2 The demographic setting

Table 3.1 presents an overview of the demographic profile of the Philippines for the past five decades, starting in 1970. The table shows that the Philippine population has more than doubled from 36.7 million in 1970 to 92.3 million in 2010. During the last five decades, the country's population growth rate declined from 3.0% in 1970 to 1.9 % in 2010. If this growth rate persists, the Philippine population will double in the next 36 years.

The steady increase in the Philippine population has been driven by the country's high fertility rate. Although the total fertility rate (TFR) in the country has already declined from 6 births per woman in 1970 to 3 births in 2013, the decline has been slow. In 2017, the TFR was 2.7

(Philippine Statistics Authority (PSA) & ICF, 2018). This declining fertility along with increasing migration will have implications for the availability of kin than can provide care to older people. However, some studies show that contrary to expectations, smaller family size and migration of children do not always negatively impact the well-being of older people (Knodel, 2014; Knodel et al., 2000a). Given this above replacement fertility, the Philippines stands out as one of the countries with high TFR in the Southeast Asian region, along with Timor Leste, Lao People's Democratic Republic (PDR) and Cambodia as shown in Table 3.2. A lack of a clear and consistent population policy has been cited as one of the reasons for the slow decline in the country's fertility rate (Herrin, 2002). The high fertility of the country resulted in an age structure that is predominantly young (Natividad, 2000). This is seen in the country's population pyramid shown in Figure 3.1. The country's age structure still follows a pyramidal shape, with a broad base indicating a large number of children resulting from the country's long history of high fertility and its slow decline. The indent in the middle starting at ages 20 to 24 could be due to the emigration of young people to other countries to search for better employment opportunities. The narrow shape at the peak of the pyramid reflects the low level of life expectancy in the past decades and its slow improvement in recent years, resulting in a small proportion of Filipinos advancing to old age. The youthful composition of the country's age structure is also evident in the dependency ratio that shows the number of young dependents (0-14) and old dependents (65 and above) to the total working-age population (15-64). The decline in the young dependency ratio from 89 in 1970 to 53 young dependents in 2010 reflects the steady decline in fertility. In contrast, the number of old dependents has been increasing, albeit slowly from 5 dependents in 1970 to 7 dependents in 2010.

To a lesser extent, the improvement in mortality has also contributed to the country's population growth. Over the last five decades, life expectancy at birth in the Philippines has improved, although the improvement has been more substantial among women than men. Life expectancy at birth among Filipino men increased from 54.2 years in 1970 to 66.9 years in 2010 or a gain of almost 13 years in half a century. For women, the increase is much larger, from 57.2 years in 1970 to 73.0 years in 2010, a gain of 15.8 years (Flieger & Cabigon, 1994; Philippine Statistics Authority, 2010). Over time, the female advantage in life expectancy has doubled from three years in 1970 to six years in 2010. Life expectancy at age 60 also moderately increased, but similarly, the increase is more notable among older women than older men. Compared with other Southeast Asian countries (Table 3.2) life expectancy at birth among Filipino men is higher than their counterparts in Cambodia, Lao PDR and Myanmar,

but lower than their counterparts Timor-Leste, Thailand, Vietnam, Malaysia, Brunei Darussalam and Singapore. A similar pattern is observed among Filipino women as they occupy an intermediate position in terms of life expectancy across Southeast Asia.

Table 3. 1. Selected demographic indicators for the Philippines, 1970-2010

	1970	1980	1990	2000	2010
General Indicators					
Total population ¹	36,684,486	48,098,460	60,559,116	76,504,077	92,335,118
Growth rate % pa	3.03	2.71	2.35	2.34	1.90
	1973				
	National Demographic Survey (NDS)	1983 NDS	1993 NDS	2003 NDHS	2013 NDHS
Total fertility rate ²	6.0	5.1	4.1	3.5	3.0
Dependency ratio ³					
Total	94	83	76	69	60
Under 15	89	77	70	63	53
65 and above	5	6	6	6	7
Life expectancy ⁴					
At birth					
Males	54.2	59.8	62.8	65.0	66.9
Females	57.2	63.4	66.4	70.3	73.0
At 60					
Males	16.3	16.5	17.0	17.9	16.4
Females	17.1	18.2	19.0	20.1	20.1
Indicators of Population Ageing					
Median Age	16.7	18.1	19.2	20.5	23.1
Ageing index ⁵ (60+/0-14)	0.10	0.13	0.13	0.16	0.20
Population aged 60 and over					
Both sexes	1,646,485	2,541,837	3,187,967	4,565,560	6,241,326
Male	817,069	1,263,076	1,496,517	2,095,026	2,759,749
Female	829,416	1,305,761	1,691,450	2,470,534	3,481,577

1 United Nations Statistics Division (2018)

2 Concepcion (1991) cited in National Statistics Office [NSO] and Macro International Inc. [MI] (1994); National Statistics Office [NSO] and ICF Macro (2009); Philippine Statistics Authority [PSA] and ICF International (2014).

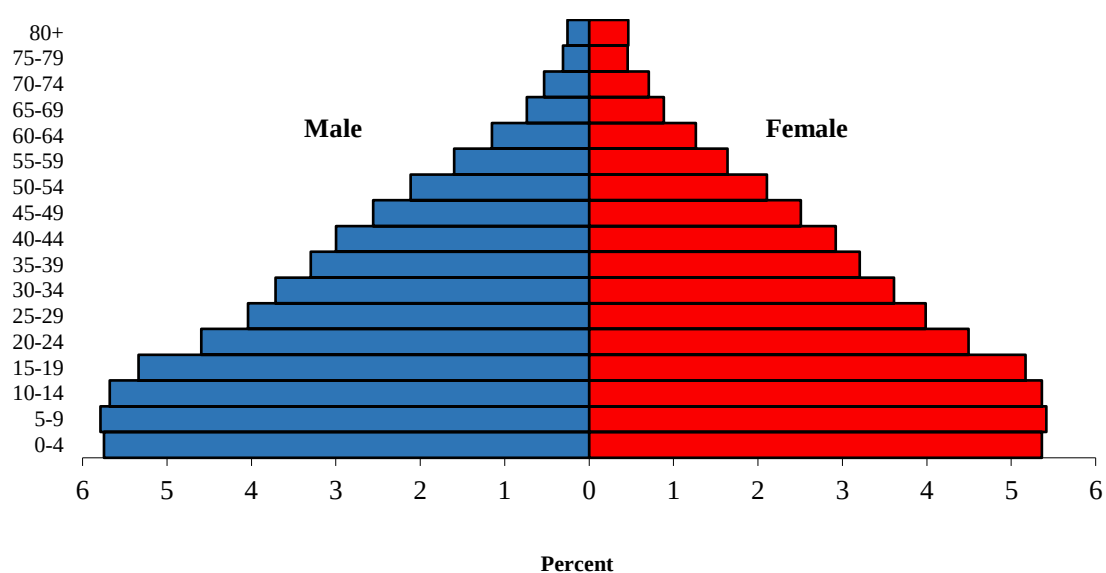
3 Calculated by the author based on UN data

4 Natividad (2000); Cabigon (2009); PSA (2010a)

5 Calculated by the author based on UN data

	1970	1980	1990	2000	2010
Proportion of population aged 60 and over					
Both sexes	4.5	5.3	5.3	6.0	6.8
Male	2.2	2.6	2.5	2.7	3.0
Female	2.3	2.7	2.8	3.2	3.8
Sex ratio (60+)	98.5	94.7	88.5	84.8	79.3

Figure 3. 1. Population pyramid of the Philippines, 2010



Source: 2010 Philippine Census of Population and Housing (CPH).

Table 3. 2. Demographic trends in Southeast Asia

	Life expectancy at birth						% of population 60 or older	
	Total fertility rate		Male		Female			
					1970	2005		
	1970 -	2005	1970	2005	1970	2005		
	1975	-	1975	-	1975	-		
Southeast Asian countries	1975	2010	1975	2010	1975	2010	1970	2010
Brunei Darussalam	5.5	1.8	66.5	75.1	69.4	78.4	5.6	5.4
Cambodia	6.2	3.1	35.3	62.7	40.7	67.4	4.3	5.9
Indonesia	5.3	2.5	54.8	65.6	57.1	69.8	5.5	7.4
Lao People's Democratic Republic	6.0	3.4	45.6	61.8	48.5	64.5	5.1	5.6
Malaysia	4.7	2.2	64.2	71.6	66.8	76.1	5.4	7.9
Myanmar	5.7	2.6	49.4	62.2	54.4	66.3	6.1	7.5
Philippines	6.0	3.3	59.6	64.8	63.3	71.5	4.9	6.5
Singapore	2.8	1.3	66.0	78.7	72.8	83.7	5.7	14.1
Thailand	5.1	1.6	58.2	69.8	63.3	76.6	5.4	12.9
Timor-Leste	5.5	6.5	39.2	65.2	40.7	67.6	4.3	5.1
Viet Nam	6.3	1.9	52.7	69.7	63.5	79.7	8.1	8.9

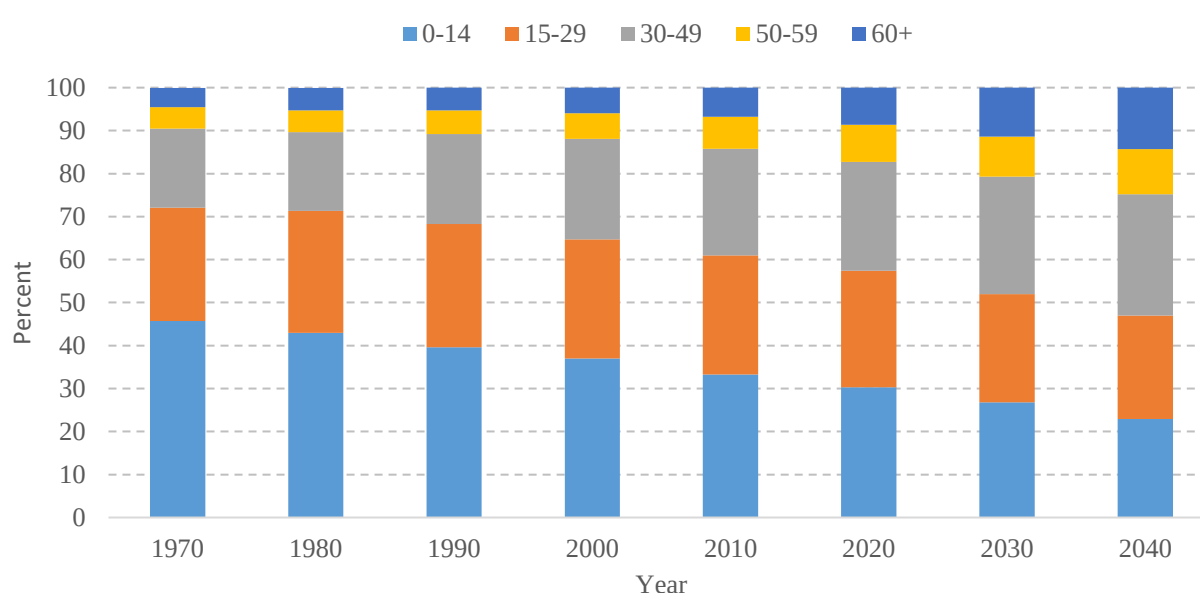
Source: United Nations (2017)

3.3 Ageing of the Philippine population

Although the Philippine population is still comparatively young, it is slowly ageing, as evidenced by the increasing median age from 16.7 years in 1970 to 23.1 years in 2010. The ageing index, defined as the ratio of older people aged 60 and over to persons under age 15 (Knodel & Chayovan, 2009) also points to the slow but steady ageing of the Philippine population. Due to declining fertility and increasing life expectancy, the proportion of Filipinos age 60 years and over has continued to increase over time, as is with most countries in Southeast Asia, notably Thailand and Singapore. Similarly, the absolute number of older Filipinos has also increased over the years. However, while the increase in the percentage of Filipino older persons was modest, from 4.5 % in 1970 to 6.8 % in 2010, the increase in absolute number was more dramatic. In 1970 there were only 1.6 million Filipino older persons, but in 2010 this number had increased to 6.2 million. Older Filipino women continue to outnumber older men, due to the former's longer life expectancy than the latter. The steady decline in sex ratio at older ages reflects the much greater improvement in longevity among older women than older

men. If the decline in fertility and the improvement in longevity continue, the proportionate share of the Filipino older persons will continue to increase, while the share of the younger segment of the population will continue to decline over time, as can be seen in Figure 3.2. The Philippine Statistics Authority [PSA] (2010b) projected that in 2035 the proportion of Filipinos age 60 and over will reach 12.8%, while the proportion age 65 and over will reach 8.9% of the total population. By then the Philippine population will be considered an ageing society, based on the definition proposed by Gavrilov and Heuveline (2003).

Figure 3. 2. Distribution of the Philippine population by age group, 1970-2040



Source: 1970 to 2010 are based on CPH. Figures for 2020 onwards are based on projections by PSA (2010b) using the medium assumption.

Given the heterogeneity in the demographic profile of the 17 regions of the Philippines, it is not surprising that the proportion of older persons in the country also varies at the regional level. As can be seen in Table 3.3, Ilocos region registered the highest share of older persons at 9%, followed by Western Visayas (8.7%) and Eastern Visayas (8.2%). The outmigration of young people from these areas in search for employment opportunities in more urbanized regions such as the National Capital Region (NCR) may have contributed to the relatively high share of older Filipinos in these regions. This inflow of young migrants to NCR rendered the age structure of this region relatively young, making the presence of the older population less

visible than in other regions. On the other extreme is the Autonomous Region of Muslim Mindanao (ARMM) whose share of the older persons in 2010 was only 2.9%. The relatively low proportion of older population in ARMM could be driven by the joint effect of lower life expectancy and higher fertility rate in this region. Except for ARMM, there was higher proportion of female than male older persons in all regions of the Philippines, largely due to the longer survival of women than men. Similarly, except for ARMM, the share of older population was also higher in rural than in urban areas in all regions of the country. This phenomenon could be explained by the growing tendency of Filipino youth to move from rural to urban areas, leaving their elderly parents or grandparents in the rural areas.

Table 3. 3. Percentage of older Filipinos aged 60 years and over by sex, place of residence and region, 2010

	Total	Sex		Type of place of residence	
		Men	Women	Urban	Rural
Region I - Ilocos Region	9.0	7.5	10.5	8.2	9.1
Region II - Cagayan Valley	7.3	6.3	8.2	6.9	7.3
Region III - Central Luzon	7.0	6.0	8.0	6.5	7.5
Region IVA - CALABARZON	6.2	5.2	7.1	5.5	7.2
Region IVB – MIMAROPA	6.6	5.9	7.4	5.3	7.0
Region V- Bicol	7.4	6.3	8.5	7.1	7.4
Region VI - Western Visayas	8.7	7.3	10.1	7.9	9.1
Region VII - Central Visayas	7.8	6.9	8.8	6.2	9.0
Region VIII - Eastern Visayas	8.2	7.3	9.2	7.0	8.3
Region IX - Zamboanga Peninsula	6.2	5.7	6.7	5.8	6.4
Region X - Northern Mindanao	6.3	5.7	6.8	5.9	6.5
Region XI - Davao	6.3	5.9	6.7	6.0	6.6
Region XII - SOCCSKSARGEN	5.3	4.9	5.6	5.2	5.3
National Capital Region (NCR)	5.8	4.9	6.5	5.8	0.0
Cordillera Administrative Region (CAR)	6.9	6.1	7.7	5.3	7.5
Autonomous Region in Muslim Mindanao (ARMM)	2.9	3.0	2.7	3.0	2.9
Region XIII – Caraga	6.9	6.3	7.6	6.6	7.0
Philippines	6.8	5.9	7.6	6.0	7.4

Source: 2010 Philippine Census of Population and Housing (CPH).

3.4 Demographic and socioeconomic characteristics of older Filipinos

Similar to the overall population, the age structure of Filipino older population is also relatively young. Table 3.4 shows that about 6 in 10 older persons in the Philippines are in their 60s, while around 11% are 80 years and above. There is little change in the age structure of the older Filipinos over time, although it is worth noting that the share of the oldest old has slowly increased. There is a greater share of men than women who are in their 60s, while there is a higher concentration of women than men in older age groups, reflecting higher male mortality after age 60 (Knodel & Chayovan, 2009).

Majority of older Filipinos live in rural areas, and the proportion living in rural areas increased since 1990. The relatively high concentration of older people in rural areas could be due to selective outmigration from these areas, particularly among young people (Costello, 1994). While little sex difference exists in the spatial distribution of Filipino older persons, a more striking pattern is noted when it comes to age. Specifically, the proportion of older Filipinos who live in Metro Manila and other urban areas declines with advancing age, while the proportion who live in rural areas increases with age.

The marital status of older people represents an important aspect of family structure that significantly impacts their living arrangements, support systems and well-being (Concepcion & Perez, 2006). For example, a longitudinal study among older adults in China shows that being married is associated with better psychological well-being and physical health (Williams et al., 2017). Meanwhile, unmarried older persons are less likely to be financially secure and may not receive as much care when they become ill compared with those who have a spouse (Mujahid, 2006). Given the relatively young age composition of older persons in the Philippines, it is not unexpected that majority of older Filipinos are currently married, although the proportion has slightly declined from 64.2% in 1990 to 61.8% in 2010. Currently married includes those who have legally married and those who are in cohabitation. However, given the preponderance of older men to remarry compared with older women, the proportion of men (79.7%) who are currently married are nearly twice higher than women (47.6%). The proportion who are currently married decreases with advancing age, while the proportion who are widowed steadily rises with age. Moreover, while there are more men than women who are currently married, the reverse is true among the widowed. For instance, the share of older Filipinos who are widowed is nearly three times as high among older women (43.2%) as older

men (14.6%). The overall proportions of older Filipinos who are widowed remain unchanged over the past two decades, partly reflecting the slow improvement in male mortality at older ages in the Philippines. Aside from the higher remarriage rates of men, other factors that could explain the sex difference in marital status include the relative longevity of women and spousal age differences: the husband is usually older increasing the likelihood that the husband will die earlier than the wife (Abenoja, 1990; Knodel & Ofstedal, 2003; Knodel, Ofstedal, & Hermalin, 2002; Mehio-Sibai, Beydoun, & Tohme, 2009; Mujahid, 2006; Sobieszczyk, Knodel, & Chayovan, 2003). For example, age at marriage for Filipino men in 2010 was 27.0 years, while it was only 24.4 years for Filipino women or a difference of almost three years (Abalos, 2014). This age difference is slightly higher compared with that of Malaysia (2.1 years) and Singapore (2.4 years) but lower than that of Indonesia (3.4 years) and Thailand (3.5 years) (Jones, 2008). Men's tendency to delay marriage could be due to the heavy cost of marriage commitment and responsibility that comes with it (Mercado, 1990). Since husbands are usually expected to be the primary provider of the family, women may feel less pressure compared with men and may, therefore, get married, even at an early age (Mercado, 1990).

Only a small proportion (6.2%) of Filipino older persons are never married, reflecting the universality of marriage in the country. Non-marriage is higher among women, those in their 80+ and those living in Metro Manila. The higher non-marriage rates among older women than older men could be due to the greater acceptability of remaining single among women (Rodell, 2002). Being a spinster is not deemed shameful in the Filipino culture whereas men who remain a bachelor in old age may be subject to some ridicule for not being a man (Rodell, 2002). Certain family obligations of women during their younger years, such as taking care of their siblings or staying home most of the time to help out in household chores, may have also limited their socialisation compared with their male counterparts, (Mercado, 1990) and eventually their marriage prospects. Since divorce is not legal in the Philippines and other measures to legally dissolve marriage are expensive, only a negligible proportion of older Filipinos are divorced and separated, although this proportion has been increasing over time (Abalos, 2017).

Over the last two decades, the educational profile of older Filipinos has significantly improved. The proportion with no schooling declined from 19.6 % in 1990 to 5.7 % in 2010, while those with secondary education increased from 9.6% to 19.9%. This improvement in education has important implications for older Filipinos' economic activities, health status, lifestyle, and other behaviours. The educational profile of older persons in the Philippines also differs by

demographic characteristics. A slightly higher proportion of older women than older men has below secondary education, while proportionally more men (23.1%) than women (17.5%) completed secondary education. The relatively high level of education among Filipino men than Filipino women could be attributed to the slight preferential treatment given to boys relative to girls in pursuing higher education in the past (Abenoja, 1990; Mercado, 1990; University of the Philippines Population Institute [UPPI], 1981)). This norm is motivated by the belief that girls can start to contribute in the household at an earlier age and that women stay at home as care-takers for the children (de Guzman, Go, & Yordan, 1995). However, this sex difference is likely to fade given the improvement in the educational participation of women in recent years. The younger cohorts of older Filipinos completed a much higher level of education compared with the older cohorts. The educational profile of future cohorts of Filipino older persons is also expected to improve even more given the expansion of educational opportunities in the Philippines in the past decades (Biddlecom & Domingo, 1996; Hermalin et al., 2007). This improvement in the educational profile of future cohorts of older Filipinos suggests that family support will be linked more to the needs of the older persons and less related to custom (Biddlecom & Domingo, 1996).

Differences in educational attainment are not only apparent across cohorts, but also across the place of residence. Filipino older persons living in Metro Manila and other urban areas have better educational profile compared with their rural counterparts. For example, the proportion who completed secondary education is nearly thrice higher among older persons in Metro Manila (39.2%) than those in rural areas (13.9%). Outmigration of those with higher level education to urban areas such as Metro Manila due to better employment opportunities could explain this educational difference by place of residence. Easier access to educational facilities and services in urban areas could also contribute to higher levels of education of those living in urban areas. Meanwhile, the never married older Filipinos have the highest proportion who did not finish schooling, but they also have the highest proportion who completed tertiary education, compared with the currently married.

Literacy rate in the Philippines has always been high due to its liberal definition, which is the ability to read and write a simple message (de Guzman et al., 1995). Parallel with the improvement in educational attainment is the increase in the literacy rate of older Filipinos from 78.1% in 1990 to 93.2% in 2010. This increase is a reflection of the several changes in the social and political milieu during their younger years that corresponded to middle and later

part of the American occupation in the Philippines (1898-1942), where universal basic schooling up to primary level was encouraged as part of its education policy (Natividad, 2000). Older men and women do not differ much in terms of literacy, while a higher proportion of those in their 60s is literate compared with the oldest old. Since a higher proportion of the never married did not complete schooling, their literacy rate is relatively low compared with the currently married and formerly married.

Table 3.4 also includes the characteristics of the future cohorts of older Filipinos (e.g. age 50-59 in 2010 will be 60-69 in 2020) to see the extent of demographic and socioeconomic change in the composition of future older people. It shows that a higher proportion of future older Filipinos will live in urban areas and have higher educational attainment than the current cohorts of older Filipinos. This implies that future generations of older Filipinos will have improved health being, given the positive association between health and education (Zimmer & Amornsirisomboon, 2001), although some earlier studies in the Philippines did not show significant association between education and health (Cruz et al., 2007; Zimmer et al., 2002b).

3.5 Household characteristics of older Filipinos

The household, particularly in developing countries, is considered the most crucial institution for older people (Zimmer & Kim, 2001). It represents the institution where economic and other goods are distributed (Thornton, Chang, & Sun, 1984) and serves as the main venue for the expressions of age, gender, kinship and economic roles (Zimmer & Kim, 2001). The number of individuals in a household is influenced by a host of demographic factors, including the prevailing fertility and mortality rates, marriage timing, risk of marital dissolution and remarriage (Bongaarts, 2001). A household in the Philippine context is usually defined as “a social unit consisting of a person living alone or a group of persons who sleep in the same housing unit and have a common arrangement in the preparation and consumption of food” (NSO 2010: 20). Table 3.5 presents some household characteristics of older Filipinos including their household size, household headship rate, and living arrangements. These indicators provide a glimpse of the sources of social support available to older Filipinos.

Household size is the most basic indicator of the extent to which older people live in isolation or in a dense social environment (Domingo & Casterline, 1992). Table 3.5 indicates that the household size of older Filipinos slowly declined from 4.9 in 1990 to 4.4 in 2010, partly a

reflection of the slow fertility decline in the country. Household size does not widely vary between older men and women but tends to decline with age. The decline in household members as the older person grows older could be due to widowhood or the moving out of the older Filipino's children from parental abode to form their own household. Household size is higher in urban than in rural areas, possibly due to the relatively high cost of living in urban areas, motivating household members to pool resources and to maximise economy of scale instead of forming their separate households.

Household headship, to some extent, reflects an individual's status in the family or the household (Cruz et al., 2009). It also indicates how important a household member is and the degree of power he or she has in controlling and allocating the family's economic and social resources (Phua, Kaufman, & Park, 2001). The 2010 CPH defines household head as "an adult person, male or female, who is responsible for the organisation and care of the household, or who is regarded as such by the members of the household" (NSO 2010: 76). However, in reality, household headship in the traditional Filipino family is bestowed on the breadwinner who is usually the husband/father (Medina, 2015). Thus, it is not unexpected that 81.1% of households in the Philippines in 2013 were headed by men (Philippine Statistics Authority & ICF International, 2014). Although women also contribute substantially to the household, men are usually ascribed the headship position in most data collections, due to the patriarchal view that men are the providers of the family, while women serve as its nurturers (Torres, 1994). Women only become the head of household when the husband is absent mostly due to widowhood, but to a lesser extent could also include marital separation and temporary separation due to labour migration, military service or incarceration (Medina, 2015; Torres, 1994). The low prevalence of female-headed household in the country could also be due to the social stigma against female-headed household, particularly those headed by separated and unmarried lone mothers (Chant, 1997).

Table 3. 4. Demographic and socioeconomic characteristics of older persons in the Philippines, 1990-2010

Indicators	2010														
				Sex		Age group				Type of place of residence			Marital Status		
	1990	2000	2010	Male	Female	50-59	60-69	70-79	80 +	Metro Manila	Other urban areas	Rural area	Never married	Currently married	Formerly married
Age group															
60-69	60.9	60.7	59.7	63.2	56.9	-	-	-	-	64.0	62.0	57.8	57.2	68.4	43.5
70-79	29.7	28.6	29.6	28.2	30.8	-	-	-	-	26.9	28.3	30.8	29.6	26.0	36.7
80+	9.3	10.7	10.7	8.6	12.3	-	-	-	-	9.1	9.7	11.4	13.2	5.7	19.8
% female	53.1	54.1	55.8	-	-	50.2	53.2	57.9	64.4	57.9	56.3	55.2	69.1	43.0	77.9
Place of residence															
Metro Manila	9.9	-	10.9	10.4	11.3	13.3	11.7	9.9	9.3	-	-	-	13.8	10.6	10.9
Other urban areas	36.5	-	29.4	29.1	29.6	32.7	30.5	28.1	26.8	-	-	-	29.8	29.0	29.9
Rural area	53.6	-	59.7	60.6	59.1	54.0	57.8	62.1	63.8	-	-	-	56.4	60.4	59.2
Marital Status															
Never married	5.6	5.1	6.2	4.3	7.6	6.3	5.9	6.1	7.6	7.8	6.3	5.8	-	-	-
Currently married	64.2	63.6	61.8	79.7	47.6	81.7	70.7	54.1	32.8	60.0	61.1	62.4	-	-	-
Widowed	29.3	30.0	30.5	14.6	43.2	9.5	21.5	38.6	58.7	29.6	30.9	30.5	-	-	-
Divorced/Separated	0.9	1.3	1.5	1.4	1.6	2.4	1.9	1.2	0.8	2.5	1.7	1.3	-	-	-
Education															
No grade completed	19.6	10.5	5.7	5.2	6.2	2.6	4.1	6.6	12.2	0.8	4.0	7.5	7.9	4.5	7.7
Below Primary	40.8	35.3	30.7	30.1	31.2	18.5	26.7	35.2	40.9	10.3	24.2	37.6	26.2	29.0	35.0
Primary completed	24.5	32.8	32.2	30.5	33.5	31.4	33.6	32.0	24.7	25.1	31.3	33.9	28.3	32.4	32.5
Secondary completed	9.6	15.8	19.9	23.1	17.5	33.4	22.6	17.1	12.5	39.2	25.0	13.9	21.4	21.6	16.4
University completed	5.6	5.6	11.4	11.1	11.6	14.2	12.9	9.0	9.7	24.5	15.5	7.0	16.2	12.5	8.4
% Literate	78.1	81.0	93.2	93.5	93.0	96.7	95.0	92.1	86.3	-	-	-	92.0	94.5	91.2

Source: 1990, 2000 and 2010 Census microdata

Older people in the country command high regard from the younger generation and they occupy a special place of honour (Medina, 2015) thus it is not surprising that majority of older Filipinos still retain headship over their household, as shown in Table 3.4. Headship rate among older Filipinos is more than twice as high among men (88.5%) as women (36.9%) and tends to decline with increasing age. The declining headship rate with advancing age could be attributed to the declining health status of older Filipinos as they age, making them unable to fulfil their obligations or responsibilities as household head (Sarmiento, 1990). Older persons from the rural areas and those who are ever married tend to head their own household compared with their urban and never married counterparts. Since housing costs are relatively inexpensive in rural areas compared with urban areas, older people are more likely to establish or keep their own dwelling unit and become the household head, rather than move in with their children or other relatives. Meanwhile, married older Filipinos tend to stay in the same household with their spouse and young children; and mostly remain in the same household, even when all their children have already moved out. In this type of living arrangement either of the couple, usually the husband, becomes the household head.

Living arrangements represent an important dimension of the overall well-being of older people (Domingo & Casterline, 1992). In the Philippines living with children is the most common form of living arrangement among older people. Although some scholars suggest that the declining fertility will lead to the higher proportion of older people not living with their children (Costello, 1994), data indicate that the proportion of older Filipinos living with their children has remained stable over time, echoing findings from earlier research (Knodel & Ofstedal, 2002). The generally high level of coresidence with children among older Filipinos and its stability over time could be rooted in the traditional expectations for children to support their parents in old age (Domingo & Casterline, 1992). One way for children to provide this support is through coresidence. Adherence to this cultural expectation may have been motivated by the children's sense of "utang na loob", an "immeasurable and eternal" debt of gratitude for their parents for giving them life and providing them care while growing up (Hollnsteiner, 1970, p. 72). Those who fail to repay this "utang na loob" is sanctioned by "hiya", or "the uncomfortable feeling that accompanies awareness of being in a socially unacceptable position, or performing a socially unacceptable action" (Lopez, 1991; Lynch, 1970, p. 16).

Although the majority of older Filipinos live with their children, this level of coresidence is relatively low compared with other Southeast Asian countries (Abejo, 2004; Knodel & Debavalya, 1997; Knodel & Ofstedal, 2002). For example, census data show that 67.2% of older people in Cambodia (2008) and 64.4% in Vietnam (2009) coreside with their children compared with 62.5% in the Philippines (2010) (Minnesota Population Center, 2018). One reason for the relatively low coresidence rates among older people is the physical constraints of the small housing unit of Filipino household (Domingo & Casterline, 1992). Coresidence with children is higher among older men (65.0%) than older women (60.5%); and tends to decrease with advancing age, from 66.7% among those in their 60s to 55.2% among the oldest old. Previous research shows an increasing trend toward coresidence at older ages, and it was argued to be a reflection of the older person's deteriorating health status (Karagiannaki, 2011) thus their increasing need for assistance from their children. That the opposite pattern is observed in the Philippines could mean that parent-child coresidence in the Philippines may be a reflection of the life-course circumstances of the children rather than parental needs (Domingo & Casterline, 1992; Knodel, Chayovan, & Siriboon, 1996).

Living in the same household as their children is more common among older people living in Metro Manila (66.4%) and other urban areas (64.9%) compared with those living in rural areas (60.6%). Previous studies argue that urban crowding, housing shortages, and high housing costs could lead to higher coresidence in urban areas relative to rural areas (Knodel & Ofstedal, 2002; Martin, 1989). Coresidence with children is also more common among older Filipinos who are currently married (66.9%) and formerly married (63.1%) compared with those who have never married (15.7%). This is expected since those who have ever been married have more available children to live with compared with those who have never married. However, it is also possible for never married older Filipinos to be living with children who could either be adopted or biological children born out of wedlock. Data from the 2007 Philippine Study on Ageing (PSOA) show that about 11% of never married older Filipinos have at least one child and around 5% have any adopted or stepchildren.

About 1 in 8 older Filipinos is living with their spouse only, particularly more so among older men (14.8%) than older women (10.0%). The slow but steady increase in the proportion of older Filipinos who live with their spouse only, from 10.7% in 1990 to 12.1% in 2010 reflects the slow increase in life expectancy at older ages in the Philippines. Living in this kind of arrangement declines with age and coincides with the "empty nest stage" life cycle where

children usually leave their parents' home to establish their own household (Giang & Pfau, 2007). Higher proportions of older people in rural areas (13.5%) than their counterparts in Metro Manila (8.5%) and other urban areas (10.6%) are living with their spouse only.

Social isolation is viewed negatively in the Filipino society (Domingo & Casterline, 1992), so much so that there is no word in any Filipino languages for "privacy" (Lopez, 1991). Thus living alone, particularly at older ages is not very common in the Philippines, because it implies that the family has reneged on its duties to care for its older persons (Natividad & Cruz, 1997). However, despite this social stigma, census data show that the proportion of Filipino older persons who live alone has moderately increased from 4.4% in 1990 to 7.0% in 2010. This increasing pattern is also observed in other Asian countries (Knodel, 2014). The proportion of older Filipinos living alone is higher among women (8.0%) than men (5.8%) and steadily rises with age, from 5.4% among those in their 60s to 10.9% among the oldest old. Older Filipinos in rural areas and those who have never married tend to live alone compared with their counterparts. The higher share of older Filipinos who live alone in rural areas could also be due to the migration of their children to urban areas (Costello, 1994). Meanwhile, the higher propensity to live alone among the unmarried could reflect life course circumstances in that they are more likely to live alone because there is no spouse available (Zimmer & Kim, 2001).

Table 3. 5. Household characteristics of older persons in the Philippines, 1990-2010

Indicators	Year			2010 Sex		Age group			Type of place of residence			Marital status		
				Men	Women	60-69	70-79	80+	Metro Manila	Other urban areas	Rural area	Never married	Currently married	Formerly married
	1990	2000	2010											
Average household size	4.9	4.7	4.4	4.5	4.4	4.6	4.2	4.3	4.7	4.6	4.3	4.2	4.6	4.1
% Household head	55.7	57.4	59.7	88.5	36.9	60.1	61.0	53.5	57.8	59.0	60.4	40.2	56.7	69.2
Living arrangements (%)														
Living alone	4.4	5.7	7.0	5.8	8.0	5.4	8.9	10.9	4.9	5.9	7.9	19.5	1.1	15.9
Living with spouse only	10.7	11.8	12.1	14.8	10.0	11.8	13.8	8.9	8.5	10.6	13.5	0.0	19.6	0.0
Living with children	62.9	62.6	62.5	65.0	60.5	66.7	56.6	55.2	66.4	64.9	60.6	15.7	66.9	63.1
Other arrangement	22.0	19.9	18.4	14.4	21.5	16.1	20.7	24.9	20.2	18.7	17.9	64.8	12.4	20.9

Source: 1990, 2000 and 2010 CPH data

3.6 Housing conditions and household possessions of older Filipinos

Adequate access to shelter is one of the principles for older persons endorsed by the United Nations in its General Assembly in 1991. Studies have also shown that housing conditions may indirectly influence the psychological well-being of older persons (Phillips, Siu, Yeh, & Cheng, 2005). To assess the housing conditions of the Filipino older people several indicators on housing quality are presented in Table 3.6. Overall, the vast majority of older Filipinos live in a building or house that is in good condition, i.e., does not need repair or needs only minor repair. A significant proportion (15.1%) of older persons, however, is living in a dwelling unit that needs major repair or is already dilapidated. These types of housing units cannot fully protect the residents from the elements and may have cracks on the interior walls, leaking roofs, holes on the floors, among other things (NSO, 2010). Minimal sex and age differences exist in terms of housing quality of older Filipinos. Meanwhile, a slightly higher proportion of divorced and separated older Filipinos lives in a dwelling that needs major repair compared with their never married and currently married counterparts. Census data also indicate that overwhelming proportions of Filipinos older persons live in a housing unit with electricity, but only a third live in households that have access to piped water inside the house or within their yard. In addition, only 67.5% of older Filipinos live in a dwelling unit with a flush toilet, while 4.4% live in a household with no toilet facility. The proportions of older people who live in households with electricity and a flush toilet are higher among older women, the oldest old and the never married.

Table 3.6 also shows that older Filipino women, those in their 60s and those have never been married are generally better off in terms of household possessions. It should be noted, however, that the number of household possessions is correlated with household size. With some exceptions, higher proportions of these segments of the older population live in households that have each item shown in Table 3.6 compared with their counterparts. The availability of these household amenities, particularly access to landline telephone and cellular phone will facilitate communication between older people and their non-coresident children.

Aside from these devices, other means by which older people can maintain contact with their non-coresident children, especially those who are overseas, is through the internet. Based on the 2010 census only around 10% of older Filipinos live in a household that has an internet

connection. A slightly higher proportion of older women and the never married lives in households with an internet connection relative to their counterparts.

Table 3. 6. Housing quality and household possessions among older persons in the Philippines, 2010

Indicators	Total	Sex		Age group			Marital Status		
		Men	Women	60-69	70-79	80 +	Never married	Currently married	Formerly married
State of repair of the building or house									
Needs no repair/needs minor repair	79.8	79.2	80.3	80.2	79.1	79.6	81.1	80.3	78.6
Needs major repair/dilapidated/condemned	15.1	15.5	14.8	14.6	16.0	15.7	14.9	14.5	16.3
Others	5.1	5.3	5.0	5.3	4.9	4.7	4.0	5.3	5.0
% living in dwelling with electricity	85.8	84.3	87.1	85.9	85.1	87.3	87.7	85.7	85.7
% with piped water inside the house	33.4	32.6	34	33.6	33.0	33.6	36.4	33	33.5
% in dwelling with flush toilet	67.5	65.9	68.7	67.6	66.7	69.2	71.9	67.5	66.7
% in dwelling with no toilet	4.4	4.8	4.0	4.3	4.7	3.9	3.7	4.3	4.7
Presence of household possessions									
Radio cassette	68.9	69	68.8	69.5	67.6	68.5	70.9	70.3	65.8
Television Set	74.8	73.6	75.8	76.3	72.2	73.5	75.5	75.8	72.9
CD/DVD/VCD Player	54.1	53.8	54.4	56.7	50.1	51.0	52.6	55.6	51.6
Component/Stereo Se	27.1	26.6	27.5	28.1	25.1	26.8	28.3	28.2	24.9
Landline/Wireless Telephone	13.3	12.5	13.9	13.2	12.8	15.0	17.9	13.6	11.7
Cellular phone	67.5	67.1	67.9	70.8	62.5	63.0	65.6	68.4	66.3
Personal Computer	16.0	15.4	16.5	16.8	14.4	16.4	18.6	16.5	14.7
Refrigerator/Freezer	47.0	45.2	48.5	47.7	45.2	48.7	52.7	47.9	44.4
Cooking Range	30.8	29.4	31.9	31	29.5	33.0	35.8	30.9	29.5
Washing Machine	33.8	32.6	34.7	34.9	31.6	33.6	36.2	34.6	31.9
Car/Jeep/van	12.7	13	12.5	13	11.8	13.7	13.4	14.1	10.0
Motorcycle/Tricycle	18.8	19.4	18.3	20.2	16.4	17.4	15.6	20.1	16.9
Motorized Boat/Banca	2.9	3.3	2.6	3.3	2.5	2.2	2.1	3.4	2.2
% in dwelling with an internet connection	11.0	10.5	11.3	11.5	9.8	11.2	13.0	11.2	10.1

Source: 2010 CPH data

3.7 Summary and Discussion

The population of the Philippines is still young but is slowly ageing. The country's long history of high fertility and its slow decline, combined with the modest improvement in mortality has contributed to the slow pace of population ageing in the Philippines. Although the increase in the proportion of Filipino older persons has been very modest, the increase in the absolute number has been substantial: from 1.6 million in 1970 to 6.2 million in 2010. This puts the Philippines in a challenging situation of catering for the basic needs of a young population and at the same time providing for the health care needs of its growing number of older population.

There are also pronounced differences in the demographic and socioeconomic profile of older persons in the Philippines. The “feminisation of elderly” observed in many countries is also apparent in the Philippines (Domingo, 1994; Knodel & Chayovan, 2009) and has slightly intensified over time. This excess of women over men at older ages has been viewed negatively because it reflects high levels of widowhood and older women, particularly those without a spouse, are deemed disadvantaged compared with older men (Knodel, 1999). However, while the predominance of women at older ages has been considered problematic, some factors could work to their advantage (Knodel, 1999; Sobieszczyk et al., 2003). For example, women may suffer less disruption in the performance of their major roles as they enter old age compared with men who may experience discontinuity associated with their exit from the job market (Gibson, 1996). Older women may also be considered more valued members of the household than non-working older men, because of their greater contribution in terms of performing domestic chores (Knodel, 1999).

This chapter also shows that ageing in the Philippines is mostly a rural phenomenon. Older Filipinos who are in their 60s are more likely to live in urban areas, including Metro Manila, while those in their 70s or 80+ are more likely to live in rural areas. The relative concentration of oldest old in the rural areas, where access to health care facility is limited, is worrisome since it is at oldest ages where the incidence of disease and disability is generally high. Furthermore, the outmigration of young people from rural to urban areas could also potentially diminish the available pool of caregivers to the oldest old Filipinos in rural areas.

Appreciable differences in the marital status composition of older men and women in the Philippines are also noted. Specifically, higher proportions of older Filipino men are currently

married, while higher proportions of older Filipino women are widowed. This pronounced sex difference in marital status could have important implications for the well-being of older Filipinos. The presence of spouse among older Filipino men could work to their advantage as “spouses act as a small insurance pool against life’s uncertainties, reducing their need to protect themselves against unexpected events” (Waite, 2009, p. 691). In contrast, the absence of a spouse may put widowed older women in a disadvantaged position due to loss of financial resources (Holden & Smock, 1991).

Concomitant with the population ageing in the Philippines are significant changes in the socioeconomic characteristic of older people, particularly education. Over time, the share of older persons with no education significantly declined, whereas those with above secondary education sharply increased. Given the association between higher levels of education and better health status (Zimmer & Amornsirisoombon, 2001), the observed improvement in education bodes well for the current and future cohort of older Filipinos. Older Filipino men, those who are in the younger cohort, those living in urban areas and who have never married may reap more the benefits of having a better education than their counterparts. Their high level of education could present better work opportunities for them that could translate to better economic status later in life (Knodel & Chayovan, 2009).

Given the long history of high fertility in the Philippines, the current generation of older Filipinos is assured of a bigger household size from which they can draw support. Coresidence with children, which can serve as an indicator of family support, is generally high and has remained stable over time. However, while this may reflect the resilience of filial obligations toward older people, caution should be taken in automatically equating coresidence with the presence of support or provision of care for older people (Hermalin, 2002). As argued by Chan (2005, p. 277) living with a child “is not evidence in and of itself of a net flow of resources from child to parent, or that coresidence reflects the parent’s needs”. Earlier studies in the Philippines and Indonesia suggest that parents in a coresidential arrangement may be the one providing support to their children, and not the other way around, especially if the children are still young and have not established their independence (Beard & Kunharibowo, 2001; Domingo & Casterline, 1992). Similarly, noncoresidence with children does not necessarily mean an absence of support (Knodel & Saengtienchai, 1999). For example, the PSOA data show that older Filipinos received both financial (87.3%) and non-financial (73.7%) support from their non-coresident children (Cruz et al., 2016). This suggests that information on living

arrangements among older people should be complemented with information on actual exchange of support between older people and their children who are living within and beyond the household to get a more nuanced picture of the intergenerational exchange of support in the country.

The overall household conditions of older people in the Philippines are generally favourable. Most older Filipinos live in a housing unit that is of acceptable quality, although a significant proportion still lives in less than ideal housing condition. Their access to household necessities, such as appropriate lighting, potable water, and decent toilet facility is generally high but far from universal. Lack of access to these household necessities may further exacerbate the difficulty experienced by those who need assistance in carrying out ADLs, such as bathing and using the toilet. On the positive side, a significant share of older Filipinos has access to some household possessions, such as radio and television that can play an essential role in their recreation and social life.

Chapter 4: Children's education and parental health in the Philippines

4.1 Introduction

A great number of studies have investigated the impact of older adults' own socioeconomic resources on their own health status (Hosseinpour et al., 2012; Zimmer, 2006). However, health crises usually involve family networks, particularly adult children, who may provide not only caretaking roles but also substantial material and non-materials resources (Zimmer et al., 2002a). In addition, children may also influence the health status of their parents through social support and social influence (Torssander, 2013). Some argue that focusing only on the socioeconomic position of the individual will underestimate the degree of health inequality; thus it is also important to consider the position of other family members (Torssander, 2014; Zimmer et al., 2002a).

The growing recognition of the influence of an individual's resources on another person's health has provided an impetus for more research on this topic. Several studies in developed countries have demonstrated the important role of adult children's education in the physical functioning and survival of their elderly parents (Friedman & Mare, 2014; Lee & Chuang, 2003; Torssander, 2013; Zimmer et al., 2002a; Zimmer et al., 2007). For example, older people in Taiwan and Mexico with highly educated children are less likely to report functional limitations compared with their counterparts with less educated children (Yahirun et al., 2016; Zimmer et al., 2002a).

Some of these earlier studies suggest that the relationship between children's education and parental health could be stronger in settings where coresidence between adult children and their parents is common, such as in most developing countries (Torssander, 2013; Zimmer et al., 2002a). However, very limited evidence exists in developing countries to support this claim (De Neve & Harling, 2017; Yahirun et al., 2016; Yang et al., 2016). Furthermore, previous studies have focused only on functional limitation or mortality as indicators of health outcome. As discussed in chapter 1, these two indicators are important components of the disablement process, with mortality as the terminal outcome. However, other important components of the disablement process, such as impairment which corresponds to the early stage of the disablement process and disability which correspond to the advanced stage of this process, have not been investigated in relation to children's education. To address this gap, this study

broadens the definition of health to capture the different stages of the disablement process. In addition, to functional limitation, this research uses the presence of chronic disease and disability in IADL and ADL, as health indicators. Mortality is not examined here due to data limitations. Employing a more comprehensive definition of health will help us understand whether the influence of children's education is dependent on the stage in the disablement process in which their parents are in.

In sum, this chapter has three main objectives. First, it examines the association between children's education and parental health using multiple indicators of health. Second, it investigates whether the influence of children's education on parental health is similar for low and highly educated parents. Do low-educated parents benefit more from having highly educated children compared with parents who have high levels of education? Third, this chapter explores whether changing parents' health behaviour is one of the pathways by which children's education influence their parents' health.

4.2 Data and Methods

Data for this chapter are drawn from the 2007 PSOA. The analysis is limited to respondents with at least one child who is at least 25 years old, regardless of residential location. Four health indicators are the primary outcome variables in this study, including difficulty in ADL and IADL, mobility limitations and presence of chronic diseases. Operationalization of these health indicators; and the independent and control variables are discussed in chapter 2.

Children's education is the main independent variable in this analysis. Education has been shown to be relatively stable over time, and it is a reliable indicator of socioeconomic status (Zimmer et al., 2002a). Following previous studies, the educational attainment of the most educated child is used to capture the available family resource through children (Bao, 2016; Zimmer et al., 2002; Zimmer et al., 2007; Torssander, 2014). This approach has at least two advantages. First, there is a moderately strong correlation [Intraclass Correlation Coefficient (ICC) =0.53] between the educational attainments of all adult children of the older people so that the educational attainment of the most educated is a good proxy for the education of all children. Second, the health of the older person is likely to be impacted by someone who can provide the greatest resources, and this is represented well by the most educated child (Zimmer et al., 2002a; Zimmer et al., 2007). The focus on one child per older person also eliminates the

problem of clustering of children within their parents that can potentially introduce problems in the calculation of standard errors (Friedman & Mare, 2014). In cases where there is more than one child with the highest education in the family (1,263 cases), a random selection was used to identify which child to include in the analysis. Following prior studies, only children aged 25 years and over are included in the analysis as they are assumed to have completed their education around this age (Friedman & Mare, 2014; Yahirun et al., 2016). Of the 3105 respondents, 188 have no living children and only 2832 cases have a child who is at least 25 years old. It should be noted that childless older people in the sample are predominantly unmarried, mostly live in rural areas and have a relatively high level of education. In the regression models for the four health indicators, only respondents who have valid responses for all the independent and control variables are included in analyses (1141 for men and 1608 for women). A similar approach is adopted in the regression models for the three health behaviours (smoking, drinking and exercise).

Several characteristics of the older persons and their children that have been shown to be associated with health are also included as control variables. Personal characteristics of the older persons controlled in the analysis include age, marital status, types of the place of residence, number of children, and perceived income adequacy. Their socio-economic and health condition during childhood are also controlled for in the analyses. Additional characteristics of the most highly educated child that are entered in the multivariate analysis include sex, age, marital status, and residential proximity.

Binomial logistic regression models are used to examine the association between the most educated child's education on the health status of older Filipinos, controlling for the characteristics of both children and older persons. Each model is constructed in a step-wise manner, starting with a baseline model and then entering additional variables in the subsequent models. Model 1 examines the influence of older persons' own education controlling for their basic demographic and socioeconomic characteristics. Child's characteristics including education were entered in Model 2 to see how they help explain older people's health status. Model 3 includes an interaction effect between parent and child's education to examine whether the benefits of child's education are similar across parents of varying levels of education.

This chapter also examines whether this association between children's education and parental health varies by sex of older persons. While most studies in developed countries did not find a

sex difference in the association between children's education and parental health (Friedman & Mare, 2014; Lee et al., 2017; Yahirun et al., 2017) studies in low and medium income setting show some difference (De Neve & Harling, 2017; Yahirun et al., 2017; Yang et al., 2016). Since the Philippines is more similar to these low and middle-income countries in terms of high intergenerational support, coresidential pattern and social support for older persons, we would expect this sex difference to be present in the Philippine context. This sex difference in health is addressed in this chapter by stratifying the analysis by sex.

4.3 Results

4.3.1 Descriptive analysis

Table 4.1 presents a descriptive overview of the respondents and their most educated child. The respondents are predominantly women (59%), and their average age is 69 years. The majority is married, although the proportion married is almost twice higher among men (82.1%) than women (44.0%). More than half (51.6%) of the respondent have completed at least primary education. Close to half of the respondents have at least enough income to meet their household expenses, while about a third experience difficulty in meeting their household expenses. About 46% considered their family poor while growing up and three quarters rated themselves healthy when they were younger. Older people in the sample have an average of five living children. About 6 in 10 live in urban areas, although more women (60.8%) than men (52.5%) are urban residents. More than half of the respondents have at least one chronic disease (56.9%), and at least one functional limitation (55.5%). High blood pressure (36.4%) and angina and myocardial infarction among others (21.1%) are the most commonly reported chronic conditions experienced by the respondents. Nearly 1 in 5 has IADL difficulty and about 1 in 7 has ADL difficulty. Higher proportions of older women than older men have at least one chronic disease and at least one ADL difficulty. More than a quarter of the sample are currently smoking (26.3%) and drinking alcohol (28.3%) while about 60% are doing physical exercise daily. A higher share of men than women are currently drinking and smoking, whereas more of the latter than the former are doing daily exercise.

The highest educated children included in the sample are also predominantly female (57.4%) and their average age is 38 years. Three-quarters of the children in the sample are currently married. Parallel with changes in cohort education, the educational profile of children included in the sample is substantially higher than that of their parents. About 46% of the sampled

children completed tertiary education while nearly 40% completed secondary education. Only 15% have less than secondary education.

Nearly 3 in 10 of the highly educated children live with their elderly parents while another 13% live nearby. More than half live elsewhere but within the country, while about 8% live abroad.

Table 4. 1. Characteristics of older Filipino men and women and their highest educated child

	Men	Women	Both sexes	p
Older Person's Characteristics				
Mean age	68.2	69.8	69.1	0.012
% currently married	82.1	44.0	59.7	0.000
% at least primary education	50.1	52.6	51.6	0.661
Perceived income adequacy				0.208
At least enough income	44.1	49.0	47.0	
Some difficulty	36.0	31.9	33.6	
Considerable difficulty	19.9	19.1	19.4	
% poor during childhood	48.2	44.0	45.7	0.369
% healthy during childhood	77.6	76.0	76.6	0.378
Mean number of living children	5.5	5.4	5.4	0.433
% Living in urban areas	52.5	60.8	57.4	0.029
With at least one chronic disease	53.5	59.3	56.9	0.086
With at least one functional limitation	47.8	60.9	55.5	0.010
With least 1 IADL difficulty	16.4	20.3	18.7	0.182
With least 1 ADL difficulty	12.2	17.5	15.3	0.020
% Current smoker	37.5	18.5	26.3	0.002
% Current drinker	49.3	13.6	28.3	0.000
% who exercises daily	64.8	56.1	59.7	0.046
Highest Educated Child's Characteristics				
Mean age	36.7	39.6	38.4	0.000
% male	44.5	41.3	42.6	0.239
% married	73.8	75.1	74.6	0.669
Education				0.381
Below secondary	13.6	16.7	15.4	
Secondary completed	40.0	37.1	38.3	
Tertiary completed	46.3	46.2	46.3	
Location of child				0.375
Same household	26.6	29.7	28.4	
Next door	13.3	12.5	12.8	
Same town	17.9	19.0	18.5	
Another town	34.9	31.0	32.6	
Abroad	7.3	7.9	7.6	
Number of cases*	1171	1661	2832	

* The number of cases for some variable vary from this figure due to missing cases.

4.3.2 Multivariate analysis

Tables 4.2 to 4.5 present the results of binomial logistic models showing the association between the selected health indicators and the characteristics of older persons and those of their children. Model 1 shows that some demographic and socioeconomic characteristics of older Filipinos are associated with their experience of chronic disease, functional limitations, IADL and ADL difficulty. For example, living in urban areas is associated with higher odds of reporting chronic disease, and ADL difficulty among older women. Older men and women who experience difficulty in meeting their household expenses have elevated odds of reporting functional limitations and ADL disability. However, unlike previous studies, older Filipinos' level of education did not show a significant relationship with their physical health status.

When children's characteristics were included (Model 2), the associations observed in Model 1 did not substantially change, i.e., the older persons' demographic and socioeconomic characteristics remained important determinants of their health status. For older men, there were no significant associations between children's level of education and parental health. However, for older women Model 2 shows that, the educational attainment of their children is significantly associated with their own health status, specifically in terms of ADL and IADL difficulty. For example, the odds of reporting ADL and IADL difficulty are 60% and 61% lower, respectively, among older women whose children completed a college degree relative to their counterparts whose children attained below secondary education.

Model 3 examines whether the positive influence of children's education (observed in the Model 2) is similar for highly- and low-educated parents. The model indicates that the benefits of having highly educated children are similar regardless of whether the parents are highly educated or not, except for ADL difficulty. Older Filipino women with below primary education but have children who completed at least secondary education have lower odds of reporting ADL difficulty compared with older women with below primary education and whose children have below secondary education.

To explore whether children's education relationship with parental health is mediated by parental health behaviour, I ran regression models (Tables 4.6 to 4.8) predicting older people's smoking and drinking behaviour and their exercise habits, using the same set of predictors as the earlier models. Similar analytical strategies are implemented as that of the first and second research objective of this chapter.

Model 1 shows that most of the demographic and socioeconomic characteristics are not significantly associated with smoking and drinking behaviours of older men and women. Model 2 indicates that children's education plays an important role in their parents' health behaviour, particularly in terms of smoking and exercise. Having children with secondary and tertiary education is associated with lower odds of smoking among older men compared with having a child with below secondary education. Similarly, older women whose children completed secondary education have 60% higher odds of doing daily exercise compared with women whose children did not finish secondary education. Model 3 shows the interaction effects between parents' and children's education on parents' health behaviours. Having completed at least primary education and having highly educated child is associated with lower odds of smoking among men and women. In addition, older women with below primary education but have children with tertiary education have lower odds of smoking. In terms of exercise, older women with at least primary education and whose children completed secondary education have higher odds of doing daily exercise compared with their counterparts whose children have below secondary education. In addition, older women with low level of education but have a child with at least secondary education have higher odds of doing daily exercise compared with parents who are low-educated and whose children also received lower levels of education. These findings suggest that although parents' level of education plays an important role in their health behaviours, their children's education has an additional influence on their parents' health behaviour, and to some extent is even more important than parents' own level of education.

Table 4. 2. Logistic regression adjusted odds ratio for the presence of chronic disease among older Filipino men and women

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
<i>Older men's characteristics</i>						
At least primary education (ref=below primary)	1.33	0.323	1.29	0.408		
Perceived income adequacy (ref =enough income)		0.380		0.372		0.277
Some difficulty	1.21	0.170	1.22	0.186	1.21	0.163
Considerable difficulty	1.00	0.984	1.02	0.938	0.98	0.945
Urban (ref =rural)	1.60	0.096	1.62	0.067	1.63	0.071
<i>Child's characteristics</i>						
Education (ref= below secondary)				0.307		
Secondary			0.76	0.392		
Tertiary			0.85	0.113		
Interaction between parent's and child's education						
Below primary x secondary					0.71	0.295
Below primary x tertiary					1.28	0.187
Primary and above x secondary					1.37	0.626
Primary and above x tertiary					1.03	0.927
Primary and above x below secondary					1.93	0.143
Below primary x below secondary (ref)						
Number of cases	1141		1141		1141	
<i>Older women's characteristics</i>						
At least primary education (ref=below primary)	1.19	0.448	1.16	0.491		
Perceived income adequacy (ref =enough income)		0.976		0.983		0.970
Some difficulty	0.98	0.950	1.01	0.981	1.00	0.990
Considerable difficulty	0.93	0.825	0.94	0.845	0.92	0.800
Urban (ref =rural)	1.83	0.017	1.86	0.010	1.84	0.013
<i>Child's characteristics</i>						
Education (ref= below secondary)				0.087		
Secondary			0.85	0.384		
Tertiary			1.06	0.758		
Interaction between parent's and child's education						
Below primary x secondary					0.75	0.528
Below primary x tertiary					1.25	0.468
Primary and above x secondary					1.13	0.721
Primary and above x tertiary					1.12	0.726
Primary and above x below secondary					1.12	0.856
Below primary x below secondary (ref)						
Number of cases	1608		1608		1608	

Note: Results are presented only for some variables. Complete results can be found in the appendix.

Table 4. 3. Logistic regression adjusted odds ratio for the presence of functional limitations among older Filipino men and women

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older men's characteristics						
At least primary education (ref=below primary)	0.66	0.342	0.68	0.407		
Perceived income adequacy (ref =enough income)		0.005		0.015		0.016
Some difficulty	1.77	0.006	1.75	0.007	1.74	0.006
Considerable difficulty	1.65	0.025	1.56	0.091	1.55	0.089
Urban (ref =rural)	1.56	0.120	1.53	0.130	1.53	0.126
Child's characteristics						
Education (ref= below secondary)				0.807		
Secondary			0.90	0.617		
Tertiary			0.92	0.514		
Interaction between parent's and child's education						
Below primary x secondary					0.87	0.589
Below primary x tertiary					0.99	0.976
Primary and above x secondary					0.66	0.319
Primary and above x tertiary					0.61	0.295
Primary and above x below secondary					0.71	0.526
Below primary x below secondary (ref)						
Number of cases	1141		1141		1141	
Older women's characteristics						
At least primary education (ref=below primary)	0.91	0.510	0.90	0.408		
Perceived income adequacy (ref =enough income)		0.003		0.005		0.003
Some difficulty	2.20	0.017	2.13	0.019	2.10	0.024
Considerable difficulty	2.83	0.000	2.84	0.001	2.78	0.000
Urban (ref =rural)	1.52	0.007	1.55	0.001	1.52	0.002
Child's characteristics						
Education (ref= below secondary)				0.139		
Secondary			0.88	0.675		
Tertiary			0.72	0.295		
Interaction between parent's and child's education						
Below primary x secondary					0.63	0.219
Below primary x tertiary					0.86	0.706
Primary and above x secondary					0.93	0.875
Primary and above x tertiary					0.52	0.173
Primary and above x below secondary					0.64	0.261
Below primary x below secondary (ref)						
Number of cases	1608		1608		1608	

Note: Results are presented only for some variables. Complete results can be found in the appendix.

Table 4. 4. Logistic regression adjusted odds ratio for the existence of IADL difficulty among older Filipino men and women

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older men's characteristics						
At least primary education (ref=below primary)	0.91	0.594	0.96	0.799		
Perceived income adequacy (ref =enough income)		0.056		0.081		0.062
Some difficulty	2.37	0.089	2.45	0.081	2.47	0.076
Considerable difficulty	2.90	0.010	2.75	0.019	2.87	0.015
Urban (ref =rural)	3.77	0.001	3.95	0.000	3.99	0.000
Child's characteristics						
Education (ref= below secondary)				0.511		
Secondary			1.50	0.402		
Tertiary			0.83	0.596		
Interaction between parent's and child's education						
Below primary x secondary					1.47	0.338
Below primary x tertiary					0.56	0.334
Primary and above x secondary					1.15	0.864
Primary and above x tertiary					0.81	0.667
Primary and above x below secondary					0.57	0.467
Below primary x below secondary (ref)						
Number of cases	1141		1141		1141	
Older women's characteristics						
Currently married (ref =unmarried)	1.03	0.784	1.07	0.628	1.07	0.590
At least primary education (ref=below primary)	0.96	0.799	1.22	0.130		
Perceived income adequacy (ref =enough income)		0.021		0.223		0.317
Some difficulty	1.08	0.531	0.99	0.924	0.98	0.863
Considerable difficulty	1.80	0.003	1.49	0.073	1.44	0.107
Urban (ref =rural)	1.96	0.150	2.01	0.135	2.01	0.124
Child's characteristics						
Education (ref= below secondary)				0.144		
Secondary			0.53	0.036		
Tertiary			0.39	0.040		
Interaction between parent's and child's education						
Below primary x secondary					0.46	0.187
Below primary x tertiary					0.68	0.516
Primary and above x secondary					0.93	0.854
Primary and above x tertiary					0.40	0.104
Primary and above x below secondary					1.80	0.590
Below primary x below secondary (ref)						
Number of cases	1608		1608		1608	

Note: Results are presented only for some variables. Complete results can be found in the appendix.

Table 4. 5. Logistic regression adjusted odds ratio for the presence of ADL difficulty among older Filipino men and women

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older men's characteristics						
At least primary education (ref=below primary)	1.01	0.975	1.03	0.931		
Perceived income adequacy (ref =enough income)		0.007		0.013		0.009
Some difficulty	2.48	0.002	2.38	0.002	2.42	0.002
Considerable difficulty	1.76	0.169	1.58	0.280	1.60	0.256
Urban (ref =rural)	1.79	0.078	1.86	0.076	1.85	0.077
Child's characteristics						
Education (ref= below secondary)				0.058		
Secondary			1.19	0.687		
Tertiary			0.70	0.432		
Interaction between parent's and child's education						
Below primary x secondary					1.36	0.499
Below primary x tertiary					0.62	0.383
Primary and above x secondary					1.10	0.850
Primary and above x tertiary					0.81	0.691
Primary and above x below secondary					1.19	0.856
Below primary x below secondary (ref)						
Number of cases	1141		1141		1141	
Older women's characteristics						
At least primary education (ref=below primary)	1.14	0.483	1.41	0.150		
Perceived income adequacy (ref =enough income)		0.000		0.004		0.005
Some difficulty	1.14	0.605	1.00	0.986	0.99	0.957
Considerable difficulty	2.97	0.000	2.43	0.001	2.40	0.001
Urban (ref =rural)	2.04	0.040	2.08	0.028	2.07	0.028
Child's characteristics						
Education (ref= below secondary)				0.020		
Secondary			0.69	0.076		
Tertiary			0.40	0.003		
Interaction between parent's and child's education						
Below primary x secondary					0.51	0.005
Below primary x tertiary					0.58	0.007
Primary and above x secondary					1.22	0.600
Primary and above x tertiary					0.44	0.001
Primary and above x below secondary					1.29	0.588
Below primary x below secondary (ref)						
Number of cases	1608		1608		1608	

Note: Results are presented only for some variables. Complete results can be found in the appendix.

Table 4. 6. Logistic regression adjusted odds ratio for current smoking among older Filipino men and women

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older men's characteristics						
At least primary education (ref=below primary)	0.94	0.763	0.99	0.967		
Perceived income adequacy (ref =enough income)		0.217		0.340		0.328
Some difficulty	1.11	0.704	1.06	0.840	1.07	0.809
Considerable difficulty	1.53	0.085	1.41	0.151	1.35	0.129
Urban (ref =rural)	0.90	0.746	0.92	0.740	0.92	0.753
Child's characteristics						
Education (ref= below secondary)				0.007		
Secondary			0.53	0.027		
Tertiary			0.53	0.001		
Interaction between parent's and child's education						
Below primary x secondary					0.65	0.226
Below primary x tertiary					0.78	0.187
Primary and above x secondary					0.67	0.219
Primary and above x tertiary					0.60	0.005
Primary and above x below secondary					2.30	0.075
Below primary x below secondary (ref)						
Number of cases	1141		1141		1141	
Older women's characteristics						
At least primary education (ref=below primary)	0.72	0.058	0.80	0.183		
Perceived income adequacy (ref =enough income)		0.819		0.853		0.861
Some difficulty	1.02	0.760	0.97	0.673	0.97	0.710
Considerable difficulty	1.21	0.533	1.15	0.668	1.16	0.647
Urban (ref =rural)	0.77	0.551	0.71	0.463	0.72	0.476
Child's characteristics						
Education (ref= below secondary)				0.190		
Secondary			0.80	0.390		
Tertiary			0.62	0.061		
Interaction between parent's and child's education						
Below primary x secondary					0.80	0.545
Below primary x tertiary					0.55	0.004
Primary and above x secondary					0.60	0.001
Primary and above x tertiary					0.50	0.004
Primary and above x below secondary					0.70	0.279
Below primary x below secondary (ref)						
Number of cases	1608		1608		1608	

Note: Results are presented only for some variables. Complete results can be found in the appendix.

Table 4. 7. Logistic regression adjusted odds ratio for current drinking among older Filipino men and women

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older men's characteristics						
At least primary education (ref=below primary)	1.14	0.629	1.12	0.704		
Perceived income adequacy (ref =enough income)		0.183		0.217		0.290
Some difficulty	1.01	0.973	0.96	0.840	0.96	0.822
Considerable difficulty	0.73	0.096	0.70	0.103	0.71	0.132
Urban (ref =rural)	0.83	0.120	0.83	0.200	0.83	0.213
Child's characteristics						
Education (ref= below secondary)				0.062		
Secondary			1.33	0.230		
Tertiary			1.06	0.809		
Interaction between parent's and child's education						
Below primary x secondary					1.27	0.360
Below primary x tertiary					1.04	0.909
Primary and above x secondary					1.48	0.368
Primary and above x tertiary					1.14	0.701
Primary and above x below secondary					1.00	0.994
Below primary x below secondary (ref)						
Number of cases	1140		1140		1140	
Older women's characteristics						
At least primary education (ref=below primary)	1.18	0.028	1.20	0.023		
Perceived income adequacy (ref =enough income)		0.064		0.106		0.089
Some difficulty	1.35	0.085	1.30	0.079	1.28	0.103
Considerable difficulty	0.88	0.309	0.84	0.173	0.84	0.162
Urban (ref =rural)	0.76	0.533	0.79	0.520	0.78	0.501
Child's characteristics						
Education (ref= below secondary)				0.438		
Secondary			0.97	0.924		
Tertiary			0.80	0.535		
Interaction between parent's and child's education						
Below primary x secondary					0.69	0.317
Below primary x tertiary					0.75	0.605
Primary and above x secondary					1.14	0.751
Primary and above x tertiary					0.79	0.494
Primary and above x below secondary					0.63	0.209
Below primary x below secondary (ref)						
Number of cases	1608		1608		1608	

Note: Results are presented only for some variables. Complete results can be found in the appendix.

Table 4. 8. Logistic regression adjusted odds ratio for daily exercise among older Filipino men and women

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older men's characteristics						
At least primary education (ref=below primary)	0.99	0.984	0.89	0.792		
Perceived income adequacy (ref =enough income)		0.636		0.676		0.476
Some difficulty	0.83	0.311	0.83	0.359	0.80	0.283
Considerable difficulty	0.83	0.516	0.86	0.640	0.91	0.809
Urban (ref =rural)	0.79	0.401	0.82	0.508	0.82	0.517
Child's characteristics						
Education (ref= below secondary)				0.296		
Secondary			0.97	0.926		
Tertiary			1.18	0.657		
Interaction between parent's and child's education						
Below primary x secondary					0.63	0.087
Below primary x tertiary					0.81	0.538
Primary and above x secondary					0.73	0.452
Primary and above x tertiary					0.78	0.484
Primary and above x below secondary					0.28	0.122
Below primary x below secondary (ref)						
Number of cases	1130		1130		1130	
Older women's characteristics						
At least primary education (ref=below primary)	1.42	0.157	1.44	0.155		
Perceived income adequacy (ref =enough income)		0.066		0.049		0.033
Some difficulty	0.86	0.227	0.83	0.149	0.84	0.158
Considerable difficulty	0.48	0.020	0.46	0.014	0.46	0.010
Urban (ref =rural)	0.64	0.377	0.61	0.325	0.61	0.337
Child's characteristics						
Education (ref= below secondary)				0.055		
Secondary			1.60	0.011		
Tertiary			1.15	0.184		
Interaction between parent's and child's education						
Below primary x secondary					1.92	0.044
Below primary x tertiary					1.21	0.468
Primary and above x secondary					2.28	0.037
Primary and above x tertiary					1.87	0.062
Primary and above x below secondary					2.11	0.166
Below primary x below secondary (ref)						
Number of cases	1587		1587		1587	

Note: Results are presented only for some variables. Complete results can be found in the appendix.

4.4 Discussion and Conclusion

This study contributes to the growing literature that links children's education with parental health (Bao, 2016; Friedman & Mare, 2014; Torssander, 2013, 2014; Yahirun et al., 2016, 2017; Zimmer et al., 2016; Zimmer et al., 2002a; Zimmer et al., 2007). It extends the literature by assessing the role of children's education in several indicators of health that correspond to the different stages of the disablement process, to provide additional insights on how children's resources are mobilized to improve parental health. This chapter also examines whether the benefits of children's education is similar for low and highly educated older parents. It also investigates whether one of the pathways by which children's education impacts parental health is through influencing their health behaviours, including drinking, smoking, and exercise. Finally, this research is contextualized in the Philippine setting where there is scant literature on the upward intergenerational transmission of health benefits of education.

The Philippines is an ideal setting for this research because of its growing proportion of older people and its strong norms of intergenerational support, where the family is the "major source of emotional, moral and economic support" (Mc Bride, 2006, p. 192). The ageing of the Philippine population is also accompanied by improvements in education, particularly among the younger cohorts of the population. Some have welcomed this educational expansion as an "opportunity to ameliorate some of the challenges posed by population ageing" (Yahirun et al., 2016, p. 324). Higher education enhances an individual's earnings capacity thereby increasing the available resources for the family. It also grants individuals better access to medical services and health-related information that can redound to the benefit of the older persons through direct care and knowledge transfer (Friedman & Mare, 2014; Torssander, 2013).

Results of this study echo earlier findings in Mexico and Taiwan, showing children's education to be an important determinant of their parent's health status, over and above that of the latter's own education (Yahirun et al., 2016; Zimmer et al., 2002a). It lends support to the contention that education is not only an individual resource but could be a household or family resource that could benefit other family members (Torssander, 2013; Yang et al., 2016; Zimmer et al., 2007).

However, the association between children's education and parental health is only statistically significant among older women. There are several reasons for this sex difference on the influence of children's education on parental health status. First, compared with older men,

older women tend to be less educated and less active in the labour force putting them in a disadvantaged socioeconomic position in older ages. This socioeconomic disadvantage makes them more dependent on their children for support compared with older men. Second, the roles that women perform over the life course, such as child-rearing and performing important household services engender a closer emotional connection and greater loyalty from their children (Knodel & Ofstedal, 2003; Risseuw, 2001; Wolf, 1972). The continuity of women's domestic roles even in older ages relative to older men, such as assisting their children in babysitting or doing household chores (Gomes, 2007; Szinovacz, 2000) render women more valued as household members (Beales, 2000; Lopata, 2002; Yount & Khadr, 2008). These maternal investments that accrue over the life course arguably make children more responsive to the health needs of their mothers compared with their fathers' (Zimmer, 2005).

As noted earlier, this research employed several indicators of health that correspond to the different stages of the disablement process, from the presence of chronic disease (early stage) to IADL and ADL disability (advanced stage). Functional limitations, which precede the onset of disability, and has also been widely used in earlier research as a health indicator, is also examined in this research. However, unlike previous studies (Yahirun et al., 2016; Zimmer et al., 2002a), this study did not find a significant relationship between children's education and parents' experience of functional limitations. The research finds that of the four health indicators only IADL and ADL difficulty are associated with children's education. These two indicators correspond to the advanced stages of the disablement process and reflect a more severe health status than the experience of chronic disease or functional limitations because these forms of disability limit the capacity of older people to perform basic activities to live an independent life. Although the presence of chronic disease and functional limitations, may cause some forms of difficulty or discomfort among older Filipinos, they may not take it as something that severely impacts their health. It is common for some Filipinos to take minor disorders stoically and consider them as a normal part of life that will eventually go away (Pacquiao, 2008). Even if they experience pain, Filipinos consider pain as part of "living an honourable life" and view it as "an opportunity to reach a fuller spiritual life or to atone for past transgressions" (Pacquiao, 2008, p. 193). However, when this pain or difficulty starts to interfere with their ability to live an independent life by preventing them from performing basic activities, such as eating, bathing, and dressing, they may call on for help from family members, particularly their children for assistance.

This chapter also assessed whether the beneficial effects of children's education is similar for low and highly-educated parents. Results of the study show that the positive effects of children's education do not generally vary by parents' level of education, except for ADL difficulty. Specifically, this study shows that older women with at least primary education and whose children completed tertiary education are less likely to experience difficulty in performing this activity. Similarly, older women with less than primary education but whose children completed at least secondary education have lower odds of reporting ADL difficulty. These findings suggest that although parents' high level of education confers a benefit to their health, children's education also have additional beneficial effects on parental health.

This study also shows that one of the pathways by which children's education can impact their parents' health is through influencing parental health behaviour. Results indicate that older men with college-educated children are less likely to smoke compared with those whose children did not complete secondary education. Similarly, older women with children who completed secondary education are more likely to engage in daily exercise relative to those whose children completed below secondary education. The protective effects of children's education on parental health behaviours, such as smoking and physical activity have previously been demonstrated among older adults in the United States and China (Bao, 2016; Friedman & Mare, 2014). These findings are supportive of the proposition that children's education may improve their parents' health directly by encouraging them to alter their health behaviours, and indirectly through health spill-over effects (Bao, 2016; Friedman & Mare, 2014). Such a spill-over effect happens when children share with their parents their values and beliefs on "lifestyle, the use of health care, and adherence to medical treatment" (Torssander, 2014, p. 149).

Another pathway by which children's education can influence their parents' health is through its psychological impact (Bao, 2016). This pathway is explored in subsequent chapters that look at factors associated with psychological well-being of older Filipinos.

Consistent with previous studies other characteristics of older persons, such as, type of place of residence and socioeconomic status are significantly associated with their status. However, unlike earlier studies (Yahirun et al., 2016; Zimmer et al., 2002a) the educational level of older persons in the study did not have a significant influence on their health status, except in terms of chronic diseases. This lack of a significant association between education and health status among older people in the Philippines is not without precedent. Cruz et al. (2007)) did not find a significant effect of older people's level of education on their health transitions. Similarly,

Zimmer et al. (2002b) found no significant association between education of older Filipinos and their experience of ADL difficulty. One reason for this could be due to the lack of heterogeneity in their educational composition as almost 70 % of the respondents in the analysis have relatively low levels of education. It is also likely that education in “some sense loses its meaning for an ill and old individual, for whom the ability to self-advocate and actively use one’s resources may be reduced” (Torssander, 2013, p. 656). In such a situation, the resources of other family members, particularly children, and spouse, become more important (Torssander, 2013). This is particularly true in the case of the Philippines where children take an active role in addressing the health problems of their elderly parents. For example, previous research found that 61% of older Filipinos reported that their children paid most of the cost their last hospitalization (Cruz, 2013). That children’s education is more important than older people’s own education in determining their health could also be due to differential exposure to the health-enhancing benefits of education. Phelan, Link, Diez-Roux, Kawachi, and Levin (2004, p. 279) argues that “because, at a given time, younger people have lived more of their lives in a period in which health-enhancing knowledge and technology is more advanced, and because highly educated people benefit most from that knowledge, those who are younger at a given time have benefitted more from education than those who are older”.

Although the study demonstrates a significant association between children’s education and parental health status, the results remain inconclusive and should be interpreted with caution. Due to the cross-sectional nature of the data, direct causation between children’s education and the health status of their parents cannot be inferred. Longitudinal data are better suited in establishing this causation. Although most of the relevant variables that have been shown to influence the health status of older people are included in the model, there may be some characteristics of older persons and their children that could further explain the association but were excluded in the analysis due to data limitations. Like previous studies, the present study may also suffer from problems of endogeneity (Friedman & Mare, 2014; Torssander, 2013, 2014; Zimmer et al., 2002a). One source of this endogeneity is the possibility of reverse causation between children’s education and parental health, i.e., healthier parents are more likely to have highly educated children. Healthier parents are then more able to finance and actively support the education of their children. This issue is addressed in this study by including older people’s self-rated health when they were younger in the regression models. The inclusion of this variable did not change the significant relationship between children’s

education and parental health. In a separate analysis, I also did not find a significant association between older people's health status when they were younger with their children's likelihood of completing tertiary education. It is also possible that parents who are more forward-thinking and invest in their offspring's education may themselves invest in making sure that they have better health in the future by living healthier lifestyles (Yahirun et al., 2016). Another limitation of the study is that the health indicators used are self-reported and not medically validated. Without medical validation it may be difficult to be conclusive and be accurate about the presence and severity of diseases from self-reports, particularly for illness such as myocardial infarction, cancer, cerebrovascular disease, diabetes and respiratory illness. Notwithstanding these limitations, this study contributes to the growing evidence that investments in human capital of younger generation also confers benefits to the older generation (De Neve & Harling, 2017; Friedman & Mare, 2014; Yahirun et al., 2016). This finding is very important in the Philippine setting where one of the motivations of the current older generation for having many children was to secure old age support (Bulatao, 1975), and where investing in children's schooling was a way of ensuring that one's children obtain good jobs and are thus able to later extend support to their parents.

The future generations of older people in the Philippines and many other countries have already been born, but their children are still in school. There is a good argument to support the investment in the education of the younger cohorts as it benefits the older generation, as has been demonstrated in this study. While existing policies in the Philippines encourage the completion of tertiary education by eliminating tuition fees in some public universities and colleges, attention should also be directed to the quality and content of the education that young people receive. The positive impact of children's education on their parents' health can only materialize if there is continuity in intergenerational support. However, the widespread migration of young people within and outside the country could widen the physical and emotional distance between parents and their children, which could result in a decline in intergenerational support. While filial piety and other values that encourage familial responsibility towards older people remain strong in the Philippines, educational expansion may threaten these values to the detriment of older people. Some studies report that increasing education may increase the knowledge gap between the younger and older generation that could lead to disrespect for older people (Ingersoll-Dayton & Saengtienchai, 1999). Thus, the future educational curriculum should continue to emphasize traditional familial values that promote care for older persons.

Chapter 5: Living arrangement concordance and well-being of older Filipinos

5.1 Introduction

The household is an important avenue where material and non-material forms of support are exchanged across generations; and these different types of support influence the health of older people by exposing them to health-related risks and protective factors (Hughes & Waite, 2002; Mehio-Sibai et al., 2009; Samanta, Chen, & Vanneman, 2014). Living in the same household also facilitates the exchange of support between older people and their children (Chan, 1997; Knodel & Chayovan, 1997), particularly in the provision of assistance to frail older persons (Domingo & Asis, 1995). Although assistance can extend beyond the household, coresidence acts as an insurance to meet the future needs of older people (Martin, 1989) and increases the likelihood of obtaining care from family members (Ugargol, Hutter, James, & Bailey, 2016).

The growing importance of household structure on the well-being of older people has thus generated research on how different types of living arrangements are associated with the well-being of older people, although the results are far from conclusive. While mounting evidence points to the positive influence of coresidence on well-being of older people (An et al., 2008; Chen et al., 2017; Do & Malhotra, 2012; Wang et al., 2014; Wu & Schimmele, 2008; Ye et al., 2017) some research shows a negative impact of coresidence (Johar & Maruyama, 2014). While categories used in previous studies may prevent comparability (Ren & Treiman, 2015), another factor that could contribute this inconsistency in the results could be that previous studies focus on the actual living arrangement of older people and ignore their preferred living arrangement. Velkoff (2001) noted that it is commonly assumed particularly in developing countries that coresidence with children is the preferred living arrangement of older people. However, existing evidence indicates that although a majority of older people, particularly in most Asian countries, are living with their children, a significant proportion of them do not necessarily prefer this kind of arrangement, but they, in fact, would want to live independently (Chen, 2018; Kim & Rhee, 1997; Logan & Bian, 1999; Sereny, 2011), implying a discordance between older people's actual and preferred living arrangement.

Concordance between an individual's expectations and outcomes may be important because those whose expectations do not materialize may suffer adverse impacts on their economic, physical and emotional well-being (Hermalin & Yang, 2004). Similarly, this discordance between what people want and the type of environment they live in can represent an important source of stress that could be associated with negative well-being (Caplan, 1987; Kahana & Kahana, 1996). To address this gap, this research investigates the interplay between living arrangement concordance – having a fit between actual living arrangement and preferred living arrangement – and well-being of older people. Given the dearth of information on living arrangement preference of older people despite its important implications for their well-being, the first objective of this chapter is to provide a general overview of the living arrangement preference of older Filipinos, both in terms of living in the community and living in institutions. Current preferences for living arrangement among older Filipinos could serve as a potential indicator of their actual living arrangement in the future. In addition, knowing the actual living arrangement of older people rather than their assumed preferences will be very useful in designing policies that could better meet their needs and wants (Velkoff, 2001). Second, this chapter explores which characteristics of older people are associated with their preference for independent living relative to coresidence. Focusing on older people's preference for independent living is important because contrary to common beliefs majority of older Filipinos, particularly the currently married, prefer to live independently from their children, as will be shown in this chapter. Third, it describes the living arrangement concordance of older Filipinos and identifies the factors associated with it. Finally, this chapter examines the relationship between living arrangement concordance and the well-being among older people in the Philippines.

5.2 Data and Methods

Data for this chapter are drawn from the 2007 PSOA. All respondents are included in the analysis of their living arrangement preference (3,105 cases), but the sample was limited to currently married and widowed respondents with at least one living child in the analysis of living arrangement concordance (2,602 cases). In the regression model for the three subjective well-being indicators, only respondents with valid responses for all the independent and control variables are included in the analysis (2549 for self-rated health, 2552 for life satisfaction and 2517 for psychological well-being). Respondents who are divorced and separated were not included because no indicators on living arrangement preference are available for this group.

Respondents who answered “DK” or “Depends” in the living arrangement preference were excluded in the analysis of living arrangement concordance. Proxy respondents are also excluded in the analysis of subjective well-being indicators.

This chapter has several dependent variables, namely living arrangement preference, living arrangement concordance, self-rated health, life satisfaction and psychological well-being. A number of variables were also used in this study as controls, such as the demographic and socioeconomic characteristics of older people and that of their children. Characteristics of older people include their age, marital status, level of education, work status, perceived income adequacy, number of children, and place of residence. Indicators on their physical health condition, such as their experience of chronic disease, functional limitations, IADL and ADL difficulties, were also included as controls. Aggregate measures of children’s characteristics, such as their average age, sex composition, marital status composition, education composition and work status composition, are also controlled for in the multivariate analyses. Operationalization of these variables is discussed in chapter 2.

The first analysis predicts preference for independent living compared with a preference for coresidence with children, controlling for demographic and socioeconomic characteristics of older people and that of their children. The second part of the analysis predicts living arrangement concordance, using the same set of controls as the first analysis. The third analysis examines the factors associated with self-rated health, life satisfaction and psychological well-being of older people, focusing on the role of living arrangement concordance. Logistic regression models are used in the analysis of self-rated health and life satisfaction, while ordinary least squares regression models are used in the analysis of psychological well-being. Since previous studies have shown sex differences in the well-being of older people the analyses are stratified by sex (Jeon, Jang, Rhee, Kawachi, & Cho, 2007; Ramos & Wilmoth, 2003; Williams et al., 2017).

5.3 Results

5.3.1 Actual and preferred living arrangement of older Filipinos

Table 5.1 presents the actual living arrangement of older Filipinos. It shows that 7 in 10 older Filipinos are currently living with their children and about 8 percent are living with their spouse

only. Only a small proportion of older Filipinos live alone. A slightly higher proportion of older men than older women are living with their children or spouse, but more of the latter than the former are living alone. Table 5.1 also describes the living arrangements preference of older Filipinos, conditioned on marital status and sex. A third of the respondents reported that the best living arrangement for an older couple is to live by themselves. Another 3 in 10 respondents also agreed that older couple should live by themselves, but near one or more children. Only 28 percent of the respondents reported that the best living arrangement for an older couple is to live with their children.

Table 5. 1. Actual and preferred living arrangements of older Filipino men and women

	Men	Women	Total	p
Actual Living arrangement				0.006
Living alone	3.3	5.4	4.5	
Living with spouse only	9.9	6.8	8.1	
Living with children	73.5	69.2	71.0	
Living with others	13.3	18.6	16.4	
N of cases	1276	1289	3105	
Living arrangement preference				
Couple				0.451
Live by themselves	33.7	32.7	33.1	
Live by themselves but near one or more children	31.8	30.9	31.3	
Rotate residence among children	6.1	6.4	6.3	
Live w/ a child	26.6	28.8	27.9	
Depends, other	1.8	1.2	1.4	
N of cases	1200	1272	2922	
Widow				0.367
Live by herself	13.9	17.1	15.8	
Live by herself but near one or more children	23.6	27.0	25.6	
Rotate residence among children	11.9	9.0	10.2	
Live with a child	46.8	44.2	45.3	
Depends, other arrangements	3.8	2.6	3.1	
N of cases	1198	1720	2918	
Widower				0.734
Live by himself	16.3	16.2	16.3	
Live by himself but near one or more children	23.8	25.7	24.9	
Rotate residence among children	11.5	9.9	10.6	
Live with a child	45.5	45.6	45.6	
Depends, other arrangements	2.9	2.6	2.7	
N of cases	1202	1708	2910	
Never married				0.430
Live alone (but near relatives)	19.2	22.7	21.2	

Live with sibling	33.5	33.3	33.4
Live with parents (if still living)	8.1	7.7	7.9
Other relatives	25.7	25.0	25.3
Home for the aged/government institution	7.7	7.5	7.6
Others	5.8	3.8	4.6
N of cases	1177	1692	3105

For older men and women who have been widowed, about 45 percent of the respondents perceived that it is best for them to live with their children, while around 41 percent reported that they are better off living independently, either by themselves or near one or more children. Only about 10 percent believed that rotating residence among older people's children is the best option in terms of living arrangements.

A third of the respondents reported that living with their siblings is the best living arrangement for never married older people. About a quarter indicated that never married older people should live with their other relatives, while a fifth reported that they should live alone, but near their relatives. Less than 10 percent reported that living in government institutions is the best living arrangement for never married older people.

Table 5.2 presents the logistic regression model of the factors associated with preference for independent living among older men and older women. Independent living preference means that an older widowed person prefers to live alone or that an older currently married person prefers to live with their spouse only. Older Filipinos' marital status, number of children and actual living arrangement are all significantly associated with preference for independent living. Specifically, older men and women who are married and are living alone or with their spouse only have higher odds of preferring to live independently. Similarly, a higher number of children is associated with higher odds of choosing independent living over coresidence with children. For example, currently married older men are almost four times more likely to prefer independent living than their unmarried counterparts. Health status is also significantly associated with living arrangement preference of older women. In particular, older women who experience ADL difficulty have 49 percent lower odds of preferring to live independently.

Table 5. 2. Odds ratios from logistic regression models predicting independent living preference among older Filipino men and women

	Men		Women	
	Odds ratio	p	Odds ratio	p
<i>Socioeconomic and demographic characteristics of older persons</i>				
Age	1.13	0.180	0.80	0.282
Age squared	1.00	0.055	1.00	0.273
Currently married (ref = unmarried)	3.85	0.000	2.58	0.004
At least primary education (ref=below primary)	0.99	0.941	0.86	0.505
Working (ref = not working)	0.98	0.911	1.27	0.375
Perceived income adequacy (ref = enough income)		0.745		0.861
Some difficulty	1.00	0.987	1.09	0.570
Considerable difficulty	1.14	0.418	1.04	0.810
Number of children	1.12	0.000	1.17	0.046
Urban (ref =rural)	1.23	0.754	1.66	0.215
With chronic disease (ref = without chronic disease)	1.10	0.555	0.98	0.813
Functional limitation (ref = without functional limitation)	0.86	0.722	0.82	0.219
IADL (ref = without IADL)	1.40	0.519	1.44	0.160
ADL (ref = without ADL)	1.28	0.427	0.51	0.001
Actual living arrangement (ref =living with children)		0.007		0.016
Living alone/spouse	2.67	0.004	2.85	0.041
Other arrangement	0.89	0.698	2.22	0.021
<i>Socioeconomic and demographic characteristics of children</i>				
Age	0.97	0.765	1.14	0.027
Age squared	1.00	0.703	1.00	0.039
Sex composition (ref = both sons and daughters)		0.534		0.804
All sons	1.04	0.899	1.12	0.768
All daughters	0.76	0.307	0.92	0.788
All children are married (ref = at least one single)	0.88	0.456	1.23	0.210
Education composition (ref = no children with college education)		0.832		0.117
Some children with college education	0.98	0.936	0.82	0.134
All children with college education	1.22	0.585	1.30	0.371
All children are working (ref = at least one child is not working)	0.93	0.772	1.28	0.534
Number of cases	1079		1475	

Note: living alone and living with spouse were grouped together because they have small numbers of cases. Reference: coresidence with children

5.3.2 Preference for an institutional living arrangement

Although the majority of older Filipinos still live with their family members and prefer to be in this arrangement, as shown in the previous section, living in an institution is not unheard of in the Philippines. While the Philippine Constitution mandates the Filipino family to take care of its older family members, it also acknowledges the role of the state in promoting the well-being of older people. For example, the Department of Social Welfare and Development (DSWD), the main agency tasked with promoting the welfare of older persons, also developed the Long-Term Care Program for Senior Citizens (LTCSC) in 2010. This program serves as the “blueprint of the government to ensure the development of a milieu that would meet the present and future needs of the growing number of senior citizens in terms of human development and service delivery” (Department of Social Welfare and Development, 2010, p. 2). The program is targeted at older Filipinos aged 60 years and over who are in vulnerable situations and do not have the necessary means to support themselves, e.g., the poor, those abandoned and neglected by their families, and those who are disabled and incapable of taking care of themselves. The services in this program include residential care services (RCS), community-based services for older persons and their families, home care support service, and volunteer resource services (VRS). Under the RCS, older Filipinos who are abandoned by their families or have no-one else to take care of them are accommodated in a facility that provides 24-hour care arrangement, including social, health, medical, and psychological services, among other things (e.g. home for the aged). The program also offers home-care support services and community-based services.

Table 5.3 presents the attitudes of older Filipinos towards ‘homes for the aged’. It shows that an overwhelming proportion of older Filipinos welcomed the idea of having ‘home for the aged’, with little difference between older men (82.6%) and older women (80.8%). Although older Filipinos are receptive to the idea of ‘home for the aged’, only 22 percent of them want to live in such an institution, with a higher proportion of older men (25.5%) than older women (19.8%) expressing willingness for this type of arrangement. When further asked whether they want to live in ‘home for the aged’ at the time of the survey, only 8 percent answered in the affirmative, with minimal sex difference between older men and older women.

Table 5.3 presents the various reasons cited by those who agreed and disagreed with the idea of ‘home for the aged’. Among those who agreed more than three quarters explained that this

type of institution is beneficial for those who have no one to care for them. A much higher proportion of older women (80.2%) than older men (74.1%) cited this reason. About a fifth reported that the health of the older person would be taken care of in an institutional setting, particularly more so among older men (26.8%) than older women (19.7%). Other reasons mentioned by those who are receptive to the idea of having 'home for the aged' include sparing the family from the burden of caring for the elderly (16.4%) and giving older people a better chance to socialize with people of the same age (5.4%). Among those who disagreed with the idea of having 'home for the aged', the most common reason cited was that the family should care for the elderly (77.6%). About 16 percent of the respondents answered that it is shameful for the family to send the older people to an institution, with a higher proportion of older men (21.0%) than older women (13.2%) citing this reason. About 15 percent of the respondents indicated that elderly would miss the family if they are placed in an institution.

Table 5. 3. Attitudes toward ‘home for the aged’ among older Filipino men and women (%)

	Men	Women	Both sexes	p
Think it is a good idea to have homes for the aged				0.507
Yes	82.6	80.8	81.5	
No	16.8	18.2	17.6	
Depends	0.6	1.0	0.8	
N of cases	1257	1796	3053	
Would ever want to live in a home for the aged				0.001
Yes	25.5	19.8	22.2	
No	61.1	69.6	66.0	
Depends	13.4	10.6	11.8	
N of cases	1254	1773	3027	
Want to live in a home for the aged now				0.060
Yes	9.4	7.3	8.2	
No	87.3	91.3	89.6	
Depends	3.2	1.4	2.2	
N of cases	1257	1786	3043	
Reasons R thinks it is a good idea to have homes for the aged*				
Spare the family from burden of caring for the elderly	17.6	15.5	16.4	0.265
Health will be better taken care of	26.8	19.7	22.6	0.009
Better chance to socialize with people of same age	6.5	4.6	5.4	0.367
Beneficial for those who have no one to care for them	74.1	80.2	77.6	0.009
Other reasons	6.9	5.7	6.2	0.485
N of cases	1024	1457	2481	
Reasons R thinks it is not a good idea to have homes for the aged*				
The family should care of the elderly	77.5	77.7	77.6	0.978
Elderly will miss the family	14.7	15.0	14.9	0.962
Elderly will not want to live with strangers	13.7	5.9	9.0	0.180
Expensive	4.1	2.8	3.3	0.570
Shameful for the family	21.0	13.2	16.3	0.005
Other reasons	3.3	2.9	3.1	0.788
N of cases	213	319	532	

Note: * Multiple responses

5.3.3 Concordance between actual and preferred living arrangement

The preceding sections described the actual and preferred living arrangement of older Filipinos. This section explores the concordance between the two and the factors associated with this

living arrangement concordance. Table 5.4 indicates that less than half of the respondents have living arrangement concordance: only 32 percent have coresidence concordance, and only 9 percent have an independent living concordance. Majority (52.4%) of the respondents prefer to live independently, either alone or with their spouse only but are living with other people, mostly family members. Only 7 percent preferred to live with their children but are in different types of living arrangement.

Table 5. 4. Living arrangement concordance of older Filipino men and women (%)

	Men	Women	Both sexes	p
Living arrangement concordance				0.205
Independent living concordance ^a	8.7	8.7	8.7	
Independent living discordance ^b	55.5	49.8	52.4	
Coresidence concordance ^c	28.8	34.0	31.8	
Coresidence discordance ^d	7.0	7.4	7.3	
N of cases	1098	1510	2608	
a.	Prefer to live independently (alone or with spouse) and doing so.			
b.	Prefer to live independently (alone or with spouse) but in a different living arrangement.			
c.	Prefer to live with children and doing so.			
d.	Prefer to live with children but in a different living arrangement.			

Table 5.5 presents the regression results that examine the factors associated with living arrangement concordance of older Filipinos relative to having a discordant living arrangement. Results indicate that older men who are married and with a higher number of children have lower odds of concordance between their preferred and actual living arrangement. Similarly, older women who are married also have lower odds of living arrangement concordance. In addition, older women who are working have lower odds of having a match between their desired and actual living arrangement. In contrast, older women who suffer from a chronic illness are more likely to have living arrangement concordance.

Although perceived income adequacy, as a whole, is not significantly associated with living arrangement concordance, some of its categories are significantly different from the reference category in relation to living arrangement concordance. Specifically, older women who experience considerable difficulty in meeting their household expenses have 29 percent lower odds of concordance compared with those with enough income.

5.3.4 Living arrangement concordance and well-being of older Filipinos

This section presents the factors associated with the well-being of older people focusing on the role of living arrangement concordance. Tables 5.6 shows the results of the regression analyses for males and females. Model 1 contains only the demographic and socioeconomic characteristics of older people and their children. Model 2 examines the role of living arrangement concordance in well-being controlling for the demographic and socioeconomic characteristics of older people and their children, while Model 3 examines the role of health factors using the same set of control variables. Model 4 simultaneously examines the impact of living arrangement concordance and health factors on the well-being of older people.

Model 1 shows that older men who have at least primary education and who are currently working have higher odds of reporting good self-rated health compared with their counterparts. Model 2 indicates that living arrangement concordance is not associated with older men's self-rated health, while Model 3 shows a significant association between men's physical health and their self-rated health. For example, older men with a chronic disease, functional limitations and ADL difficulty have lower odds of reporting good health rating. Model 4 indicates that the physical health of older men remains a significant predictor of their self-rated health, while their living arrangement concordance did not exert significant influence, holding all other factors constant.

Table 5. 5. Odds ratios from logistic regression models predicting living arrangement concordance among older Filipino men and women

	Men		Women	
	Odds ratio	p	Odds ratio	p
<i>Socioeconomic and demographic characteristics of older persons</i>				
Age	0.95	0.739	1.09	0.673
Age squared	1.00	0.511	1.00	0.573
Currently married (ref = unmarried)	0.25	0.002	0.66	0.041
At least primary education (ref=below primary)	1.13	0.355	0.97	0.895
Working (ref = not working)	1.20	0.325	0.63	0.035
Perceived income adequacy (ref = enough income)		0.237		0.129
Some difficulty	0.91	0.554	0.78	0.336
Considerable difficulty	0.78	0.366	0.71	0.033
Number of children	0.91	0.000	0.94	0.226
Urban (ref =rural)	0.74	0.551	0.68	0.307
With chronic disease (ref = without chronic disease)	1.15	0.378	1.32	0.012
Functional limitation (ref = without functional limitation)	1.48	0.322	1.07	0.697
IADL (ref = without IADL)	0.81	0.371	1.03	0.869
ADL (ref = without ADL)	1.00	0.992	1.56	0.087
<i>Socioeconomic and demographic characteristics of children</i>				
Age	0.97	0.759	1.06	0.506
Age squared	1.00	0.889	1.00	0.801
Sex composition (ref = both sons and daughters)		0.204		0.160
All sons	0.83	0.559	1.31	0.214
All daughters	0.58	0.072	1.51	0.422
All children are married (ref = at least one single)	1.26	0.490	0.91	0.713
Education composition (ref = no children with college education)		0.086		0.278
Some children with college education	1.31	0.375	1.21	0.109
All children with college education	1.49	0.184	1.33	0.252
All children are working (ref = at least one child is not working)	0.99	0.943	0.81	0.285
Number of cases	1079		1475	

Reference: Living arrangement discordance

Table 5. 6. Odds ratios from logistic regression models predicting healthy self-rated health among older Filipino men and women

	Model 1		Model 2		Model 3		Model 4	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
Older men								
At least primary education (ref=below primary)	1.49	0.014	1.50	0.010	1.53	0.000	1.54	0.000
Perceived income adequacy (ref = enough income)		0.183		0.194		0.183		0.206
Some difficulty	0.80	0.321	0.80	0.341	0.90	0.519	0.90	0.538
Considerable difficulty	0.40	0.049	0.40	0.054	0.43	0.049	0.43	0.059
Urban (ref =rural)	0.64	0.120	0.63	0.109	0.73	0.405	0.73	0.375
With chronic disease (ref = without chronic disease)					0.39	0.001	0.38	0.001
Functional limitation (ref = without functional limitation)					0.61	0.018	0.61	0.020
IADL (ref = without IADL)					0.71	0.598	0.69	0.566
ADL (ref = without ADL)					0.22	0.011	0.21	0.009
Living arrangements concordance (ref = coresidence concordance)				0.625				0.677
Independent living concordance			1.06	0.864			1.22	0.570
Independent living discordance			1.28	0.155			1.27	0.212
Coresidence discordance			1.10	0.787			0.92	0.799
Number of cases	1076		1076		1076		1076	
Older women								
At least primary education (ref=below primary)	0.82	0.348	0.82	0.323	0.84	0.456	0.84	0.398
Perceived income adequacy (ref = enough income)		0.048		0.039		0.036		0.034
Some difficulty	1.12	0.708	1.10	0.753	1.24	0.490	1.20	0.568
Considerable difficulty	0.61	0.132	0.59	0.138	0.72	0.331	0.71	0.325
Urban (ref =rural)	0.82	0.366	0.77	0.244	1.02	0.948	0.95	0.848
With chronic disease (ref = without chronic disease)					0.47	0.000	0.46	0.000
Functional limitation (ref = without functional limitation)					0.53	0.001	0.54	0.003
IADL (ref = without IADL)					1.21	0.625	1.11	0.767
ADL (ref = without ADL)					0.66	0.307	0.65	0.285
Living arrangements concordance (ref = coresidence concordance)				0.001				0.001
Independent living concordance			0.48	0.048			0.46	0.088
Independent living discordance			0.95	0.802			0.86	0.449
Coresidence discordance			0.27	0.003			0.23	0.001
Number of cases	1473		1473		1473		1473	

Parallel results for older women are also presented in Table 5.6. Model 1 shows that most demographic and socioeconomic characteristics of older women and their children are not significantly associated with their self-rated health. As shown in Model 2 older women who have coresidence discordance have 73% lower odds of reporting positive health rating than those who have coresidence concordance. Meanwhile, those with independent living concordance also have lower odds of reporting positive health rating compared with those with coresidence concordance. Model 3 shows the important role of physical health in older women's self-rated health. Specifically, older women who have a chronic disease and have a functional limitation have lower odds of reporting good health ratings. Living arrangement concordance and physical health remain significant predictors of older women's self-rated health, even when both factors are simultaneously entered in Model 4.

Table 5.7 presents the results of multinomial logistic regression models predicting the odds of being somewhat satisfied and very satisfied with one's life, as opposed to not being satisfied among older Filipino men. Model 1 indicates that place of residence is associated with life satisfaction of older men. Model 2 shows no significant association between older men's living arrangement concordance and their life satisfaction. As with self-rated health, physical health status of older men is also significantly associated with their life satisfaction. Specifically, older men with ADL difficulty have lower odds of reporting very satisfied with their life than those with no ADL difficulty. This relationship remains significant even when living arrangement concordance is added in Model 4.

A similar pattern is observed among older women, as shown in Table 5.8. It is worth noting that older women who have independent living discordance have lower odds of reporting very satisfied with their life compared with older women with coresidence concordance.

Table 5. 7.Odds ratios from multinomial logistic regression models predicting life satisfaction among older Filipino men

	Model 1		Model 2		Model 3		Model 4	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
Somewhat satisfied vs not satisfied								
At least primary education (ref=below primary)	0.92	0.859	0.92	0.872	0.88	0.762	0.88	0.774
Perceived income adequacy (ref = enough income)		0.138		0.179		0.108		0.121
Some difficulty	0.39	0.034	0.39	0.028	0.42	0.057	0.42	0.059
Considerable difficulty	0.24	0.001	0.25	0.001	0.25	0.001	0.26	0.001
Urban (ref =rural)	0.35	0.039	0.36	0.048	0.36	0.037	0.37	0.049
Health conditions of older persons								
With chronic disease (ref = without chronic disease)					0.76	0.544	0.71	0.410
Functional limitation (ref = without functional limitation)					0.59	0.088	0.57	0.075
IADL (ref = without IADL)					1.39	0.467	1.42	0.462
ADL (ref = without ADL)					0.65	0.431	0.64	0.406
Living arrangements concordance (ref = coresidence concordance)				0.714				0.668
Independent living concordance			0.81	0.833			0.85	0.868
Independent living discordance			0.68	0.117			0.67	0.136
Coresidence discordance			0.51	0.362			0.40	0.248
Very satisfied vs not satisfied								
At least primary education (ref=below primary)	1.04	0.900	1.05	0.883	1.01	0.976	1.02	0.958
Perceived income adequacy (ref = enough income)								
Some difficulty	0.29	0.010	0.28	0.009	0.32	0.016	0.32	0.019
Considerable difficulty	0.13	0.001	0.14	0.002	0.14	0.001	0.14	0.002
Urban (ref =rural)	0.23	0.001	0.23	0.001	0.23	0.001	0.24	0.001
With chronic disease (ref = without chronic disease)					0.89	0.818	0.85	0.713
Functional limitation (ref = without functional limitation)					0.68	0.080	0.65	0.103
IADL (ref = without IADL)					1.27	0.536	1.28	0.517
ADL (ref = without ADL)					0.22	0.003	0.22	0.003
Living arrangements concordance (ref = coresidence concordance)								
Independent living concordance			0.58	0.552			0.64	0.605
Independent living discordance			0.66	0.081			0.65	0.106
Coresidence discordance			0.51	0.171			0.39	0.073
Number of cases	1077		1077		1077		1077	

Note: Results are presented only for some variables. Complete results can be found in the appendix.

Table 5. 8. Odds ratios from multinomial logistic regression models predicting life satisfaction among older Filipino women

	Model 1		Model 2		Model 3		Model 4	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
Somewhat satisfied vs not satisfied								
At least primary education (ref=below primary)	0.77	0.306	0.77	0.292	0.79	0.333	0.80	0.329
Working (ref = not working)	1.31	0.073	1.34	0.090	1.27	0.147	1.31	0.153
Perceived income adequacy (ref = enough income)		0.084		0.084		0.100		0.097
Some difficulty	0.53	0.170	0.54	0.189	0.56	0.143	0.56	0.181
Considerable difficulty	0.28	0.018	0.28	0.016	0.32	0.016	0.33	0.016
Urban (ref =rural)	0.69	0.016	0.70	0.033	0.75	0.111	0.77	0.159
With chronic disease (ref = without chronic disease)					0.99	0.973	0.99	0.972
Functional limitation (ref = without functional limitation)					0.72	0.456	0.72	0.389
IADL (ref = without IADL)					1.59	0.400	1.59	0.393
ADL (ref = without ADL)					0.43	0.029	0.41	0.036
Living arrangements concordance (ref = coresidence concordance)				0.742				0.588
Independent living concordance			0.73	0.594			0.60	0.436
Independent living discordance			0.79	0.325			0.70	0.168
Coresidence discordance			0.78	0.757			0.72	0.679
Very satisfied vs not satisfied								
At least primary education (ref=below primary)	0.94	0.747	0.95	0.785	0.97	0.901	0.99	0.971
Perceived income adequacy (ref = enough income)								
Some difficulty	0.36	0.048	0.37	0.058	0.38	0.043	0.39	0.059
Considerable difficulty	0.09	0.001	0.10	0.001	0.11	0.001	0.12	0.001
Urban (ref =rural)	0.44	0.106	0.45	0.091	0.51	0.215	0.53	0.216
With chronic disease (ref = without chronic disease)					0.96	0.921	0.93	0.879
Functional limitation (ref = without functional limitation)					0.74	0.319	0.73	0.284
IADL (ref = without IADL)					1.16	0.804	1.15	0.809
ADL (ref = without ADL)					0.19	0.022	0.17	0.024
Living arrangements concordance (ref = coresidence concordance)								
Independent living concordance			0.99	0.977			0.73	0.584
Independent living discordance			0.70	0.126			0.57	0.034
Coresidence discordance			0.62	0.603			0.51	0.462
Number of cases	1475		1475		1475		1475	

Note: Results are presented only for some variables. Complete results can be found in the appendix.

Table 5. 9. Coefficients from ordinary least squares (OLS) regression models predicting psychological well-being among older Filipino men and women

	Model 1		Model 2		Model 3		Model 4	
	Coefficient	p	Coefficient	p	Coefficient	p	Coefficient	p
Older men								
At least primary education (ref=below primary)	0.28	0.278	0.29	0.260	0.22	0.318	0.23	0.295
Perceived income adequacy (ref = enough income)		0.011		0.009		0.046		0.046
Some difficulty	-1.29	0.002	-1.29	0.002	-0.96	0.019	-0.97	0.018
Considerable difficulty	-1.72	0.002	-1.76	0.001	-1.47	0.008	-1.50	0.009
Urban (ref =rural)	-0.48	0.027	-0.51	0.027	-0.23	0.243	-0.26	0.227
With chronic disease (ref = without chronic disease)					-0.46	0.233	-0.45	0.258
Functional limitation (ref = without functional limitation)					-0.89	0.003	-0.86	0.003
IADL (ref = without IADL)					-0.64	0.145	-0.65	0.118
ADL (ref = without ADL)					-2.45	0.004	-2.45	0.004
Living arrangements concordance (ref = coresidence concordance)				0.091				0.175
Independent living concordance			-0.21	0.607			0.04	0.917
Independent living discordance			0.39	0.474			0.37	0.453
Coresidence discordance			0.84	0.249			0.42	0.503
Number of cases	1065		1065		1065		1065	
Older women								
At least primary education (ref=below primary)	0.81	0.007	0.80	0.009	0.85	0.005	0.84	0.005
Perceived income adequacy (ref = enough income)		0.001		0.002		0.004		0.005
Some difficulty	-0.86	0.083	-0.88	0.070	-0.71	0.141	-0.73	0.116
Considerable difficulty	-1.97	0.000	-1.98	0.000	-1.65	0.001	-1.65	0.001
Urban (ref =rural)	0.21	0.384	0.18	0.393	0.51	0.103	0.49	0.094
With chronic disease (ref = without chronic disease)					-0.58	0.031	-0.59	0.037
Functional limitation (ref = without functional limitation)					-0.75	0.107	-0.73	0.131
IADL (ref = without IADL)					-1.34	0.003	-1.39	0.003
ADL (ref = without ADL)					-0.67	0.003	-0.72	0.006
Living arrangements concordance (ref = coresidence concordance)				0.237				0.015
Independent living concordance			-0.53	0.190			-0.70	0.195
Independent living discordance			-0.02	0.952			-0.19	0.535
Coresidence discordance			-0.37	0.291			-0.75	0.021
Number of cases	1452		1452		1452		1452	

Note: Results are presented only for some variables. Complete results can be found in the appendix.

Tables 5.9 presents the results of OLS regression models that examine the factors associated with psychological well-being of older men and older women. Model 1 shows that living in urban areas and socioeconomic status is negatively associated with psychological well-being of older men. Model 2 shows no significant relationship between living arrangement concordance of older men and their psychological well-being. As shown in Model 3 physical health status of older men is significantly associated with their psychological well-being. Specifically, older men with functional limitation and ADL difficulty have lower psychological well-being than those with no limitation or difficulty. The lack of relationship between living arrangement concordance and psychological well-being of older men persists when health factors are controlled for in Model 4.

Model 1 in Table 5.9 shows that older women's characteristics are significantly associated with their psychological well-being. For example, better socioeconomic status, as indicated by education and perceived income adequacy, is significantly associated with better psychological well-being of older Filipino women. Model 2 shows no significant association between living arrangement concordance and psychological well-being, while Model 3 shows a significant relationship between physical health and psychological well-being. Model 4 shows that living arrangement concordance becomes significant when physical health is taken into account. Specifically, older women with coresidence discordance have lower psychological well-being than those with coresidence concordance.

5.4 Discussion and Conclusion

The first objective of this chapter is to describe the living arrangement preferences of older Filipinos, both in terms of living in the community and living in an institution; and identify the factors associated with their preference. Results show that the majority of older people live with their family members, particularly their children and spouse, but a significant proportion of them, particularly the currently married also prefer to live independently from their children. A similar finding has also been found in Korea where 51.3 percent of older people prefer to have separate residence from their children (Kim & Rhee, 1997). Qualitative data from Thailand, the Philippines, Singapore (except Indians) and Taiwan, also show that a substantial proportion find independent living to be an attractive alternative, but often with some qualifications, namely that the economic status and health condition of older person would be adequate to enable them to live independently and that at least some adult children live close

to them (Asis et al., 1995). Preference for independent living is also common among older Asians who migrated to other countries (Diwan, Lee, & Sen, 2011; Lai, 2005). The need for privacy and independence; and potential conflict between parents and the children-in law could be some of the reasons why older people prefer to have separate dwellings (Asis et al., 1995; Knodel, Saengtienchal, & Sittitrai, 1995; Lee, Lin, & Chang, 1995b; Panigrahi, 2009).

This chapter also shows that although living in the community, whether with children or independently, is still the preferred living arrangement for older people in the Philippines, there are indications that older Filipinos are becoming more open to living in institutions. This is despite the fact that there is a strong stigma towards institutionalization in the Philippines and it is considered as “almost taboo” (Abaya, 1991, cited in Natividad & Cruz, 1997). As in other settings, this stigma could be because institutional living reflects the failure of the family in delivering its obligation to provide care and support for older people (Mehta et al., 1995). However, findings from the study indicate that although a high proportion of older Filipinos still believe that family should take care of the older people, older people also acknowledge that living in an institution will be beneficial to both the older persons and their family. This implies that the well-being of older people is still the paramount concern when people decide whether to put older Filipinos in 'home for the aged' or not.

The present study noted several factors associated with living arrangement preference of older people in the Philippines. Consistent with findings from previous studies in China (Asis et al., 1995; Chen, 2018; Knodel et al., 1995; Lee et al., 1995b; Panigrahi, 2009; Sereny, 2011), this study shows that older men and older women with greater family resources-more children and a living spouse-are more likely to prefer to live independently from their children. Sereny (2011) argues that these resources enable older people to maintain quasi-coresidence- not living in the same household but having them nearby- which is not uncommon in the Philippines. This type of living arrangement affords older people the benefits of coresidence without its associated strains (Ngin & DaVanzo, 1999; Teerawichitchainan et al., 2015).

The health condition of older Filipinos is also associated with their living arrangement preferences. Specifically, older women with ADL difficulty are less likely to prefer independent living. This is consistent with findings from previous studies that found older people with poor health status to be more likely to prefer living with their children, which

reflects their desire for companionship, support, and caregiving (Lai, 2005; Logan & Bian, 1999).

Echoing results of previous studies, this study also found the actual living arrangement to be predictive of their preferred living arrangement (Chen, 2018; Logan & Bian, 1999; Sereny, 2011; Yu, Yan, & Li, 2016). It is likely that older Filipinos try to achieve concordance between their actual and preferred living arrangement in order to reduce cognitive dissonance (Sereny, 2011). However, it is also possible that actual living arrangement has some impact on older people's living arrangement preference as people adapt to their circumstances (Logan & Bian, 1999). For example, an older person may be living alone and have become used to it and express it as a preference; or a parent who is living with a child might realize that this arrangement may be more advantageous than other arrangements (Logan & Bian, 1999).

In general, the factors associated with living arrangement preference are similar for both older men and women. One notable exception is the influence of health status on living arrangement preference. Having ADL difficulty is associated with higher odds of preferring to live independently among older men but is associated with lower odds of independent living preference among older women. The relationship, however, is significant only among women. The sex difference in the direction of the relationship between health status and living arrangement preference could be related to the availability of caregivers for those with ADL difficulty, which is discussed in detail in chapter 6. Men may prefer to live independently, which includes living alone or with spouse only, rather than living with their children, when they experience ADL difficulty because they are more dependent on their spouse for caregiving. Older women with ADL difficulty are less likely to prefer to live independently because they are more dependent on their children for caregiving.

The second objective of this chapter is to describe the living arrangement concordance of older Filipinos and to examine the factors associated with this concordance. Results show that less than half of older Filipinos have concordance between their preferred and actual living arrangements, which is relatively low compared with older people in China (Chen, 2018; Sereny, 2011). One reason for this is that although there is a high proportion of actual coresidence with children in both countries, the proportion who prefer to live independently is much higher in the Philippines, resulting in more than half of older Filipinos having

independent living discordance or those who prefer to live independently but are living with children or with other people.

Previous research provides several reasons for older people's lack of concordance between their preferred and actual living arrangements, including housing situation, physical distance, availability of children and poor economic situation (Logan & Bian, 1999; Panigrahi, 2009). In the current study, older people's health condition and to some extent their socioeconomic status influence their living arrangement concordance. Specifically, older women with a chronic disease are more likely to achieve living arrangement concordance. Older women with a health condition may prefer to live with their children for instrumental support, and their children may respond to their needs for assistance by coresiding with them. Meanwhile, older women who experience financial difficulty are less likely to realize their preferred living arrangement.

The third objective of this chapter is to identify the role of living arrangement concordance in the well-being of older people, controlling for their characteristics, including health conditions and the characteristics of their children. Results indicate that concordance between preferred and actual living arrangements are associated with better well-being among older Filipinos. Consistent with the prediction of the person-environment fit theory, cognitive dissonance, and self-discrepancy theory (Festinger, 1957; Higgins, 1987; Kahana, 1975; Kahana et al., 1980), this study shows that older people who have coresidence discordance have lower odds of reporting favourable self-rated health, and psychological well-being while those with independent living discordance have lower odds of reporting life satisfaction than those with coresidence concordance. These results support previous findings in China that demonstrated the positive impact of living arrangement concordance on the health and well-being of older people (Chen, 2018; Sereny, 2011; Sereny & Gu, 2011). While a number of studies have pointed to the importance of actual living arrangements, particularly coresidence with children on well-being of older people (Wang et al., 2014; Wu & Schimmele, 2008; Zimmer, 2005) because it facilitates the exchange of support and provision of care, the current study provides empirical evidence that it is also equally important to consider whether the actual living arrangement correspond with what older people prefer. Older people's preference may indicate their underlying needs (Chen, 2018; Yu et al., 2016) and meeting these needs plays a role in promoting better health and well-being. These needs not only refer to health care and economic needs but also needs for independence and privacy. This highlights the importance of

simultaneously looking at the preferred and actual living arrangements of older people, as the concordance or discordance of these two will have important implications for their well-being (Hermalin & Yang, 2004).

Although living arrangement concordance is associated with the three indicators of subjective well-being, the relationship is more consistent among older women than older men. For example, the relationship of living arrangement concordance with psychological well-being and self-rated health is significant only among older women. Specifically, older women with coresidence discordance have lower psychological well-being and have lower odds of reporting good self-rated health than those with coresidence concordance. One reason for this gender difference could be due to the roles women perform over their life course, such as taking care of their children and providing family services that build emotional connections to their families and lead to stronger bonds as they get older (Kandiyoti, 1988; Yount, 2005). These emotional connections with family members, including their children, may motivate older women's preference to live with their children. This lack of concordance between their preferred living arrangement and actual living arrangement may lead to negative subjective well-being.

This chapter also noted that the relationship between living arrangement and well-being is not as straightforward as it seems, particularly in terms of life satisfaction and psychological well-being. For example, the multivariate analyses show that, initially, living arrangement concordance does not have a significant relationship with life satisfaction and psychological well-being, but it becomes significant only when health factors are controlled for in the model. It is likely that living arrangement concordance per se does not directly influence well-being but can indirectly influence well-being through health factors. To explore this, an interaction term between living arrangement concordance and ADL disability was included in the model to test whether health factors moderate the relationship between living arrangement concordance and life satisfaction and psychological well-being, particularly among women. Results show that older women with independent living discordance and without ADL disability have much lower odds of reporting life satisfaction. In addition, older women with independent living concordance and have ADL difficulty have lower psychological well-being compared with those who are in a coresidence concordance and do not suffer from ADL disability. Similarly, those with coresidence discordance and have ADL difficulty also have lower psychological well-being than those with coresidence concordance and do not have ADL

difficulty. This means that physical health status of older women moderates the relationship between living arrangement concordance and well-being.

It is also noteworthy that the control variables, particularly physical health and socioeconomic status indicators, are associated with the well-being of older people. In general, those with higher socioeconomic status and do not have a disability or functional limitations have favourable self-rated health, have higher life satisfaction, and have fewer depressive symptoms. These findings are supportive of findings from earlier research (Gaymu & Springer, 2010; Lee et al., 2014; Litwin, 2004; Takagi & Saito, 2013; Zhou & Qian, 2008). In addition, consistent with findings from the previous chapter, children's education is also associated with the health and well-being of older people.

This chapter has some limitations. Due to the cross-sectional nature of the data, caution should be made in inferring direct causation between living arrangement concordance and well-being of older people. Although results of the study are interpreted as if living arrangement concordance may impact health and well-being of older people, the possibility of reverse causation cannot be ruled out, particularly in terms of self-rated health and living arrangement concordance. Previous studies show that those with poor health status may self-select into coresidence (Sereny, 2011; Zimmer, 2005). This also implies that their living arrangement preference is largely motivated by their health condition and not the other way around. However, there is a compelling reason for the direct causation between living arrangement concordance in terms of their effect on the other measures of well-being used in the study. Life satisfaction and depressive symptoms, which can be considered emotional outcomes, reflect feeling states, that are quite volatile over time (Beck, Steer, & Garbin, 1988; Elkins, Pincus, & Comer, 2014; Fountoulakis et al., 2007) hence may refer to the time when the survey was conducted, whereas actual living arrangements, and to some extent, their preferences which is closely intertwined with their actual behaviour, on average have persisted for some time. Thus, it is much more plausible that well-being reflects living arrangement concordance than the other way around. However, longitudinal data are needed to establish the exact nature of the relationship. This chapter also focused only on the social support within the household and did not take into account the exchange of support beyond the household. This issue is addressed in the next chapter.

Chapter 6: Intergenerational exchange of support and well-being of older Filipinos

6.1 Introduction

The previous chapter focused on the role of living arrangements concordance in the well-being of older people in the Philippines. It shows that concordance between older people's actual and preferred living arrangements have important implications for their well-being. However, while living in the same household facilitates the exchange of support across generations (Chan, 1997; Knodel & Chayovan, 1997) the household is not an adequate unit of analysis (Madhavan et al., 2017; Randall & Coast, 2015) because the flow of support extends beyond the household. The direction of intergenerational transfer is also not always clear when parents and their adult children live in the same household (Cohen & Casper, 2002; Smits et al., 2010). Thus, it is essential to complement information on living arrangements with information on the flow of intergenerational support (Treas & Cohen, 2006). However, most research on intergenerational support focuses only on the unidirectional flow of support (either provider or receiver of support), despite mounting evidence showing older people to be not just passive recipients of support, but also active participants in the exchange of support with their children (Beard & Kunharibowo, 2001; Hoang, 2015; Laguna, 2013). Moreover, older people and their children exchange different types of support, including financial, instrumental and emotional support, but most studies tend to focus on only one type of support (e.g. Lee et al., 2014) or aggregate the different types into a single indicator (e.g. Ng & Hamid, 2012; Davey & Eggebeen, 1998). These conventional ways of measuring the exchange of support are limited in that different types and sources of support may mean different things among older people so that their impact on well-being could also be different (Guo et al., 2017; Li et al., 2011; Mao & Han, 2018; Schwarz et al., 2010; Wu & Schimmele, 2008).

Overall, this chapter has three main objectives. First, it describes the receipt of assistance among older people with ADL or IADL disability and the exchange of support g older Filipinos and their children. This chapter looks at not only the unidirectional flow of support, but also the reciprocal intergenerational flow of support. Second, this chapter distinguishes different types of support to identify how each type of support is associated with the well-being of older people. Third, given the importance of living arrangement concordance for the well-being of

older people, as shown in the previous chapter, this chapter examines whether living arrangement concordance moderates the relationship between the exchange of support and well-being.

6.2 Data and Methods

Data for this chapter are drawn from the 2007 PSOA. Since this chapter focuses on the exchange of support between older people and their children, only ever-married respondents with at least one living child are included in the analysis (2,664 cases). However, for the analysis on receipt of instrumental support among older people with ADL or IADL difficulty, only respondents who reported assistance in performing these activities are included (531 cases). Similar to chapter 5, this study focuses on three dependent variables, namely self-rated health, life satisfaction and psychological well-being. In the regression model for the three subjective well-being indicators, only respondents with valid responses for all the independent and control variables are included in the analysis (2549 for self-rated health, 2552 for life satisfaction and 2517 for psychological well-being). Operationalisation of these variables has been discussed in chapter 2.

The demographic and socioeconomic characteristics of older people and that of their children are controlled for in the analysis. Physical health conditions of older people are also controlled for in this chapter. Previous research shows that exchange of support and their consequences may partially dependent on the life course of both parents and children (Davey & Eggebeen, 1998). Given the importance of children's characteristics on the exchange of support, aggregated measures of children's characteristics, such as their average age, sex composition, marital status composition, education composition, and work status composition, are controlled for in the multivariate analyses.

Multiple sets of logistic regression and ordinary least squares (OLS) regression analysis were carried out to explore the relationships between the exchange of support and well-being.

As with chapter 5, self-rated health and life satisfaction are modelled using binomial and multinomial logistic regression, respectively. For psychological well-being, an ordinary least squares (OLS) regression model was implemented. For each of the dependent variable, I ran

two models. The first model builds on the results of chapter 5 and adds exchange of support, while the second model examines the interaction between the exchange of support and living arrangement concordance. Due to the small number of cases for some categories of living arrangement concordance, this variable was dichotomized into those who achieved living arrangement concordance or otherwise. The analyses are also stratified by sex, given the sex differences in the exchange of support (Antonucci & Akiyama, 1987; Laguna, 2013) and in the well-being of older people (Jeon et al., 2007; Ramos & Wilmoth, 2003; Williams et al., 2017).

6.3 Results

6.3.1 Intergenerational exchange of support

To complement the information on the actual and preferred living arrangements of older Filipinos discussed in chapter 5, different types of exchange of support between older people and their children are presented in Table 6.1. Exchange of support was derived by asking the respondents whether they received from, or gave to, their children any form of support in the past year. The types of support include financial support, material support (help with material goods), instrumental support (help with food and meals, help with self-care, transportation/getting around, shopping/errands), and emotional (companionship/advice for troubles). Four mutually exclusive categories were created for each type of support: 1) giver only of support (gives but does not receive support from children); 2) receiver only of support (receives support but does not give support to children); 3) exchanger (receives and gives support to children); 4) non-exchanger (does not give nor receive support from children).

The table shows that about 44 percent of older Filipinos are involved in an exchange of financial support, while 41 percent are recipients only of financial support. About 8 percent of older Filipinos are givers only of financial support, while a similar proportion do not engage in any exchange of financial support with their children. In terms of instrumental support, more than a third (35.5%) of older Filipinos engage in the exchange of support with their children, while another 34.5 percent are recipients only of instrumental support. About 1 in 8 older Filipinos are givers only of instrumental support, while around 1 in 6 do not give nor receive any instrumental support to and from their children.

The table further shows that the levels of intergenerational exchanges of emotional and material support are relatively low compared with the exchanges of financial and instrumental support. Specifically, only 1 in 5 older Filipinos is engaged in the exchange of emotional support with their children, while the majority (53.1%) are not involved in any exchange of emotional support. Only 8 percent and 18 percent of older Filipinos are recipients only and givers only of emotional support, respectively. In terms of material support, only 1 in 10 older Filipinos is involved in the exchange of this type of support, while close to half (47.9%) neither give nor receive material support to their children.

Although the sex differences are not statistically significant, except for material support, it is worth noting that a higher share of older women than men are recipients only of support while more men than women are givers only of support.

Table 6. 1. Intergenerational exchange of different types of support among older Filipino men and women, and their children (%)

Types of support	Men	Women	Both sexes	p
Financial				0.124
Exchangers	48.4	40.4	43.8	
Non-exchangers	7.7	7.8	7.8	
Receiver only	35.0	44.9	40.7	
Giver only	8.8	6.9	7.7	
Instrumental				0.074
Exchangers	39.2	32.8	35.5	
Non-exchangers	16.6	16.4	16.5	
Receiver only	28.5	39.0	34.5	
Giver only	15.7	11.8	13.4	
Emotional				0.1133
Exchangers	20.4	21.8	21.2	
Non-exchangers	53.8	52.6	53.1	
Receiver only	6.2	9.6	8.2	
Giver only	19.7	16.0	17.6	
Material				0.0171
Exchangers	11.4	8.9	10.0	
Non-exchangers	47.3	48.3	47.9	
Receiver only	29.9	36.0	33.4	
Giver only	11.4	6.8	8.7	
N of cases	1126	1538	2664	

6.3.2 Receipt of instrumental support among older Filipinos who need assistance in performing ADLs or IADLs

While the main focus of this chapter is the exchange of different types of support between older Filipinos and their children, it also describes in more detail the receipt of instrumental support among older Filipinos with ADL or IADL difficulty. Information on the receipt of this type of support was in fact collected only among older people with ADL or IADL difficulty and who reported that they required assistance in performing these activities (531 cases).

Receipt of assistance of this sub-group of older people is important because of the significant proportions of older Filipinos who have difficulty in performing these activities (Cruz & Mallari, 2012). Since these activities are required to live an independent life, having someone to assist older people in performing these activities can impact their subjective well-being. Unlike the previous section that focused mainly on the exchange of support between older people and their children, this section looks at the receipt of support from all family members. Results are presented in Table 6.2. Due to the small number of cases, the receipt of assistance for both ADLs and IADLs were combined. Results show that the Filipino family remains the most common provider of assistance for older Filipinos when they experience ADL or IADL difficulty. Even family members who do not live with the older Filipinos also extend support to their elderly parents (22.5%). However, most of those who assist the older persons are co-resident family members, such as spouse (23.5%), daughters (21.2%), grandchildren (14.9%) and sons (9.7%). Only a small share relies on their children-in-law (3.5%) or domestic workers (3.2%) for assistance to perform these activities. However, nearly 1 in 10 older Filipinos have no-one to assist them in performing ADL or IADL, particularly among those with no children living in the same household or no child at all.

The receipt of assistance in the performance of ADLs or IADLs follows a gendered pattern. Higher proportion of older men than older women are assisted by their spouse (55.5% for men vs 8.8% for women) to perform these activities. In contrast, higher share of older women than older men are assisted by daughters (27.1% for women vs 8.5% for men) and non-coresident family members (27.4% for women vs 12.0% for men). More women than men are also dependent on their children-in-law and domestic helpers for assistance.

The receipt of care also varies by care recipients' demographic and socioeconomic characteristics. The proportions of older Filipinos who are assisted by their spouse to perform ADLs or IADLs significantly decline with increasing age, as most of them have lost their spouse at advanced ages. For example, the share of older people assisted by their spouse drops from 40.1% among those in their 60s to 10.1% among those aged 80 years and over. In contrast, the role of children, specifically daughters, becomes more important in assisting their ageing parents. Although not significant, the proportion of older Filipinos who receive assistance from their daughter increases from 13.4% among those in their 60s to 31.0% among those 80 years old and over. As expected, currently married older Filipinos are highly dependent on their spouse for ADL or IADL assistance, while the unmarried generally rely on other family members, e.g., children or domestic workers for similar types of assistance. The receipt of caregiving also significantly differs by educational status the care recipient and a pattern is noted depending who provides assistance. For example, the proportions who are assisted by their spouse are higher among those with above primary education (32.4%) than among those with primary or lower levels of education (19.6%). This pattern is reversed among those assisted by their non-coresident family member. A notable urban-rural divide is also apparent among those who are assisted by their coresident children. Specifically, a considerably higher share of older people living in rural than in urban areas is assisted by their sons (15.1% vs 7.5%). There is no clear pattern in the receipt of care of older persons in terms of the latter's socioeconomic status and number of children. Finally, older persons who live close to their children are more likely to be assisted by their daughters, while those whose children live farther away are assisted by other non-coresident family members.

Table 6. 2. Receipt of instrumental support among older Filipinos with at least one ADL or IADL difficulty by background characteristics (%)

Background characteristics	N of cases	None	p	Non-coresident family member	p	Spouse	p	Son	p	Daughter	p	Grand-children	p	Children in law	p	Domestic helper	p
Total	531	9.2		22.5		23.5		9.7		21.2		14.9		3.5		3.2	
Sex			0.795		0.012		0.004		0.159		0.030		0.083		0.000		0.000
Male	157	8.6		12.0		55.5		13.1		8.5		11.9		0.1		0.1	
Female	374	9.4		27.4		8.8		8.1		27.1		16.3		5.1		4.6	
Age group			0.117		0.781		0.020		0.105		0.233		0.527		0.597		0.000
60-69	133	9.2		21.7		40.1		8.6		13.4		14.1		1.7		0.1	
70-79	183	12.9		24.1		18.6		6.4		20.2		17.3		4.9		2.6	
80+	215	5.1		21.8		10.1		14.2		31.0		13.4		4.0		7.3	
Marital Status			0.123		0.030		0.001		0.835		0.013		0.187		0.002		0.011
Married	214	7.7		17.2		50.5		9.2		11.2		12.7		0.0		0.4	
Unmarried	317	10.4		27.1		-		10.0		29.9		16.9		6.5		5.7	
Education			0.947		0.003		0.009		0.903		0.489		0.170		0.051		0.200
Primary or lower	405																
Above primary	126	9.0		25.9		19.6		9.5		22.6		16.4		4.7		1.8	
Place of residence																	
Rural	193		0.283		0.476		0.768		0.015		0.076		0.760		0.007		0.937
Urban	338	9.8		23.5		21.9		15.1		29.1		13.9		0.4		3.1	
Perceived income adequacy																	
At least enough	216		0.104		0.252		0.170		0.073		0.505		0.287		0.886		0.061
Some difficulty	169	8.3		19.1		14.3		13.2		22.9		13.5		3.7		7.0	
Considerable difficulty	126	5.0		27.0		33.1		4.7		19.3		11.9		2.6		1.2	
		15.5		22.8		26.4		11.8		17.4		20.1		3.8		0.1	

Background characteristics	N of cases	None	p	Non-coresident family member	p	Spouse	p	Son	p	Daughter	p	Grand-children	p	Children in law	p	Domestic helper	p
Number of children			0.177		0.117		0.416		0.456		0.010		0.542		0.619		0.238
0	37	21.8		53.8		4.9		0.0		1.0		7.4		0.9		3.5	
1-2	63	14.0		25.2		21.7		4.4		31.4		11.1		5.6		8.7	
3-4	115	11.2		18.3		24.0		9.7		20.8		16.3		4.4		3.5	
5-6	140	2.9		20.6		26.0		12.5		20.8		13.7		4.2		1.6	
7+	174	9.4		20.2		24.9		10.6		22.5		17.7		2.0		2.6	
Location of nearest child			0.183		0.046		0.267		0.117		0.001		0.752		0.027		0.207
In household	383	7.4		16.7		25.0		11.5		26.8		15.1		4.7		2.6	
Elsewhere/No child	148	14.2		39.0		19.2		4.4		5.6		14.5		0.3		4.9	

6.3.3 Exchange of support and well-being of older Filipinos

This section presents results of regression models that examine the association between exchange of support and well-being of older people, controlling for living arrangement concordance and other demographic and socioeconomic factors. Table 6.3 shows the results of the regression analyses for men and women. The models show that the different types of exchange of support, as a whole, are not significantly associated with well-being of older Filipino men and women, but there are significant differences between some categories of exchange of support relative to the reference categories. Specifically, older men who are givers only of emotional support have 64% greater odds of reporting good self-rated health than those who are recipients only of emotional support.

Table 6.4 shows the moderating effect of living arrangement concordance on the association between exchange of support and self-rated health of older Filipino men and women. Results of this model indicate significant interactions between different types of exchange of support and living arrangement concordance. For males for example, engaging in an exchange of support and having a living arrangement concordance is associated with positive self-rated health. However, the model also shows that having a lack of involvement in the exchange of support, regardless of living arrangement concordance, is also associated with better self-rated health than being recipients only of support and have living arrangement concordance. Given the relatively small number of cases for those in the non-exchangers category, caution should be taken in interpreting this unexpected finding. Similarly, older men who are givers only of financial support, but are in a discordant living arrangement, are also more likely to rate their health as healthy. In terms of instrumental support, those who are not involved in any exchange of support, but are living in their preferred living arrangement have higher odds of reporting positive self-rated health than those who are recipients only of support and also have living arrangement concordance. Not being involved in any exchange of emotional support and not living in their preferred living arrangement are associated with negative self-rated health among older men. Finally, those who give material support and have living arrangement concordance have lower odds of reporting good self-rated health.

Results in Table 6.3 show that none of the four types of support is associated with self-rated health of older Filipino women, although it is worth noting that those who are active in the exchange of instrumental and emotional exchange of support have greater odds of reporting

better self-rated health. There are also no significant interactions between living arrangement concordance and exchange of support on their relationship with self-rated health among older Filipino women, as shown in Table 6.4.

Table 6. 3. Odds ratios from logistic regression models predicting healthy self-rated health among older Filipino men and women

	Men		Women	
	Odds ratio	p	Odds ratio	p
<i>Socioeconomic and demographic characteristics of older persons</i>				
Age	0.88	0.840	0.95	0.742
Age squared	1.00	0.833	1.00	0.818
Currently married (ref = unmarried)	0.86	0.567	0.80	0.291
At least primary education (ref=below primary)	1.49	0.001	0.84	0.412
Working (ref = not working)	1.45	0.016	1.14	0.308
Perceived income adequacy (ref = enough income)		0.252		0.078
Some difficulty	0.90	0.486	1.14	0.607
Considerable difficulty	0.42	0.081	0.69	0.318
Number of children	1.02	0.648	1.02	0.742
Urban (ref =rural)	0.72	0.349	0.97	0.896
<i>Socioeconomic and demographic characteristics of children</i>				
Age	1.01	0.944	1.29	0.067
Age squared	1.00	0.859	1.00	0.070
Sex composition (ref = both sons and daughters)		0.046		0.181
All sons	0.55	0.017	1.77	0.247
All daughters	0.63	0.444	2.39	0.067
All children are married (ref = at least one single)	1.24	0.261	0.93	0.782
Education composition (ref = no children with college education)		0.067		0.447
Some children with college education	1.27	0.123	1.35	0.184
All children with college education	1.44	0.017	0.91	0.796
All children are working (ref = at least one child is not working)	1.09	0.857	1.22	0.444
<i>Health conditions of older persons</i>				
With chronic disease (ref = without chronic disease)	0.38	0.000	0.46	0.000
Functional limitation (ref = without functional limitation)	0.54	0.005	0.52	0.001
IADL (ref = without IADL)	0.72	0.541	1.10	0.762
ADL (ref = without ADL)	0.22	0.007	0.61	0.232
Living arrangements concordance (ref = coresidence concordance)		0.534		0.002
Independent living concordance	1.27	0.592	0.44	0.095
Independent living discordance	1.36	0.189	0.88	0.545
Coresidence discordance	0.85	0.749	0.20	0.001

	Men		Women	
	Odds ratio	p	Odds ratio	p
Intergenerational support				
Financial support (ref = receiver only)		0.224		0.393
Exchangers	1.59	0.054	0.67	0.187
Non-exchangers	2.29	0.180	0.93	0.881
Giver only	2.04	0.273	0.45	0.255
Instrumental support (ref = receiver only)		0.829		0.845
Exchangers	1.29	0.398	1.12	0.530
Non-exchangers	1.11	0.817	0.81	0.330
Giver only	0.87	0.704	0.77	0.590
Emotional support (ref = receiver only)		0.131		0.723
Exchangers	0.73	0.450	1.18	0.596
Non-exchangers	0.78	0.314	1.46	0.399
Giver only	1.64	0.044	1.30	0.321
Material support (ref = receiver only)		0.390		0.534
Exchangers	0.51	0.330	0.61	0.239
Non-exchangers	1.25	0.576	0.97	0.894
Giver only	1.06	0.796	0.95	0.903
Number of cases	1076		1473	

Table 6. 4. Odds ratios from logistic regression models showing the interaction effects of living arrangement concordance and exchange of support on self-rated health of older Filipino men and women

	Men		Women	
	Odds ratio	p	Odds ratio	p
Intergenerational support				
Financial support				
Exchangers x Concordance	2.51	0.010	0.61	0.140
Exchangers x Discordance	7.64	0.050	0.67	0.686
Non-exchangers x Concordance	4.86	0.042	0.69	0.622
Non-exchangers x Discordance	9.86	0.037	0.74	0.682
Giver only x Concordance	5.01	0.070	0.36	0.112
Giver only x Discordance	8.27	0.023	0.48	0.355
Receiver only x Discordance	5.82	0.140	0.84	0.837
Receiver only x Concordance (ref)	1.00		1.00	
Instrumental support				
Exchangers x Concordance	2.55	0.065	0.77	0.247
Exchangers x Discordance	0.94	0.851	1.67	0.091
Non-exchangers x Concordance	3.71	0.048	0.67	0.541
Non-exchangers x Discordance	0.59	0.307	1.00	0.997
Giver only x Concordance	1.17	0.748	0.51	0.358
Giver only x Discordance	0.75	0.57	1.05	0.902
Receiver only x Discordance	-		-	
Receiver only x Concordance (ref)	1.00		1.00	
Emotional support				
Exchangers x Concordance	1.20	0.603	1.61	0.332
Exchangers x Discordance	0.52	0.229	1.02	0.968
Non-exchangers x Concordance	1.48	0.501	1.74	0.483
Non-exchangers x Discordance	0.47	0.047	1.17	0.758
Giver only x Concordance	2.76	0.169	1.69	0.542
Giver only x Discordance	1.19	0.573	0.97	0.956
Receiver only x Discordance	-		-	
Receiver only x Concordance (ref)	1.00		1.00	
Material support				
Exchangers x Concordance	0.26	0.108	0.71	0.507
Exchangers x Discordance	0.83	0.812	0.47	0.180
Non-exchangers x Concordance	0.72	0.448	1.01	0.971
Non-exchangers x Discordance	1.75	0.243	0.91	0.795
Giver only x Concordance	0.31	0.022	0.67	0.390
Giver only x Discordance	1.87	0.162	0.99	0.964
Receiver only x Discordance	-		-	
Receiver only x Concordance (ref)	1.00		1.00	
Number of cases	1076		1473	

Note: Results are presented only for some variables. Complete results can be found in the appendix.

Table 6.5 presents the results of the multinomial logistic regression models predicting the odds ratios of being somewhat satisfied and very satisfied with life, as opposed to not being satisfied among older Filipino men and women. The table shows that older men who are giver only of instrumental support have lower odds of reporting somewhat satisfied with their life compared with those who are recipient only of instrumental support. Meanwhile, older men who are involved in the exchange of financial support and those who are not involved in any exchange of support have reduced odds of reporting very satisfied with their life compared with those who are recipient only of financial support.

Table 6.6 shows that there are significant interactions between exchange of financial and instrumental support and living arrangement concordance on life satisfaction of older Filipino men. Older men who are involved in an exchange of financial support and are living in their preferred living arrangement have lower odds of being satisfied with their life compared with those who are recipient only of support and are also living in their preferred living arrangement. Older men who are giver only of instrumental support but are not living in their preferred living arrangement have lower odds of being satisfied with their life.

The equivalent results for older women are also presented in Table 6.5. It shows that older women who are both recipient and provider of financial support to their children have 62% higher odds of reporting somewhat satisfied with their life than those who are recipient only.

Table 6.6 shows some significant interactions between the exchange of financial, material and instrumental support with living arrangement concordance in relation to life satisfaction. Specifically, older women who are giver only of financial support and are living in their preferred arrangement have lower odds of reporting life satisfaction than those who are recipient only and are living in their preferred arrangement.

Moreover, those who are involved in an exchange of material support with their children, and not in their preferred living arrangement have lower risk of reporting life satisfaction than those who are recipient only of material support and are living in their preferred living arrangement. Curiously, older women who are involved in an exchange of instrumental support and are also living in their preferred living arrangement have also lower odds of reporting life satisfaction.

Table 6.7 presents the results of OLS regression models that examine the factors associated with psychological well-being of older men and women. The results indicate that there is no significant association between exchange of different types of support and psychological well-being of older men. Table 6.8 shows significant interaction between exchange of financial support and living arrangement concordance. Specifically, older men who are not living in their preferred living arrangement and are not involved in any exchange of financial support or givers only of financial support have lower psychological well-being compared with older men who are recipients only of support and are also living in their preferred living arrangement.

Corresponding results for women are also presented in Table 6.7. It shows that older women who are givers only of financial and emotional support have better psychological well-being than those who are recipient only of these types of support. Significant interactions between the exchange of financial support and emotional support with living arrangement concordance are also noted in table 6.8. Specifically, older women who are active in an exchange of financial support with their children, but do not have living arrangement concordance, have lower odds of reporting positive psychological well-being. Similarly, those who are recipient only of support but are not living in their preferred living arrangement tend to have poor psychological well-being. Meanwhile, older women who are givers only of emotional support but are not in their preferred living arrangement tend to have positive psychological well-being relative to those who are recipient only but have living arrangement concordance.

Table 6. 5. Odds ratios from multinomial logistic regression models predicting life satisfaction among older Filipino men and women

	Men				Women			
	Somewhat satisfied vs not satisfied		Very satisfied vs not satisfied		Somewhat satisfied vs not satisfied		Very satisfied vs not satisfied	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
<i>Socioeconomic and demographic characteristics of older persons</i>								
Age	0.99	0.968	0.91	0.504	1.25	0.566	1.51	0.190
Age squared	1.00	0.980	1.00	0.552	1.00	0.541	1.00	0.229
Currently married (ref = unmarried)	2.52	0.043	2.22	0.100	1.20	0.450	1.18	0.524
At least primary education (ref=below primary)	0.84	0.646	1.03	0.912	0.80	0.452	1.01	0.951
Working (ref = not working)	0.91	0.553	0.78	0.362	1.30	0.177	0.82	0.404
Perceived income adequacy (ref = enough income)		0.039				0.118		
Some difficulty	0.41	0.069	0.30	0.029	0.58	0.226	0.40	0.075
Considerable difficulty	0.23	0.000	0.11	0.002	0.32	0.011	0.12	0.001
Number of children	1.12	0.213	1.11	0.328	1.00	0.967	0.99	0.756
Urban (ref =rural)	0.38	0.052	0.25	0.001	0.76	0.172	0.53	0.223
<i>Socioeconomic and demographic characteristics of children</i>								
Age	0.93	0.518	0.90	0.340	0.98	0.832	0.90	0.257
Age squared	1.00	0.464	1.00	0.312	1.00	0.637	1.00	0.192
Sex composition (ref = both sons and daughters)		0.673				0.068		
All sons	2.28	0.083	3.64	0.210	0.72	0.734	0.79	0.802
All daughters	1.00	0.997	1.06	0.950	0.67	0.432	1.10	0.836
All children are married (ref = at least one single)	1.64	0.090	1.54	0.183	0.85	0.470	0.82	0.415
Education composition (ref = no children with college education)		0.147				0.587		
Some children with college education	0.93	0.763	1.01	0.980	1.35	0.245	1.61	0.094
All children with college education	3.48	0.069	4.12	0.038	2.47	0.289	3.90	0.090
All children are working (ref = at least one child is not working)	1.17	0.758	1.11	0.856	1.00	0.991	1.36	0.099
<i>Health conditions of older persons</i>								

	Men				Women			
	Somewhat satisfied vs not satisfied		Very satisfied vs not satisfied		Somewhat satisfied vs not satisfied		Very satisfied vs not satisfied	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
With chronic disease (ref = without chronic disease)	0.64	0.190	0.82	0.591	0.94	0.887	0.85	0.715
Functional limitation (ref = without functional limitation)	0.63	0.152	0.74	0.234	0.74	0.457	0.75	0.238
IADL (ref = without IADL)	1.15	0.730	0.93	0.822	1.59	0.358	1.11	0.851
ADL (ref = without ADL)	0.74	0.595	0.28	0.008	0.39	0.052	0.16	0.019
Living arrangements concordance (ref = coresidence concordance)		0.520				0.672		
Independent living concordance	0.73	0.753	0.55	0.534	0.76	0.704	0.90	0.878
Independent living discordance	0.62	0.074	0.60	0.084	0.74	0.097	0.60	0.007
Coresidence discordance	0.46	0.241	0.44	0.094	0.92	0.908	0.60	0.571
Intergenerational support								
Financial support (ref = receiver only)		0.230				0.650		
Exchangers	0.69	0.134	0.38	0.006	1.62	0.043	1.69	0.188
Non-exchangers	0.37	0.037	0.21	0.010	0.94	0.927	1.21	0.799
Giver only	0.87	0.830	0.37	0.176	0.91	0.850	1.32	0.284
Instrumental support (ref = receiver only)		0.377				0.861		
Exchangers	0.81	0.502	1.20	0.570	0.62	0.064	0.63	0.185
Non-exchangers	1.24	0.559	1.10	0.792	0.68	0.440	0.66	0.083
Giver only	0.41	0.008	0.49	0.072	1.02	0.962	0.92	0.808
Emotional support (ref = receiver only)		0.356				0.619		
Exchangers	0.81	0.768	0.99	0.996	0.59	0.306	0.31	0.150
Non-exchangers	0.71	0.506	0.81	0.694	0.47	0.118	0.42	0.189
Giver only	0.86	0.849	1.44	0.701	0.66	0.419	0.47	0.292
Material support (ref = receiver only)		0.592				0.513		
Exchangers	2.38	0.071	1.48	0.190	0.63	0.177	0.54	0.335

	Men				Women			
	Somewhat satisfied vs not satisfied		Very satisfied vs not satisfied		Somewhat satisfied vs not satisfied		Very satisfied vs not satisfied	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
Non-exchangers	1.00	0.998	1.27	0.587	0.72	0.537	0.69	0.360
Giver only	1.08	0.711	1.37	0.198	0.88	0.880	0.87	0.799
Number of cases	1077		1077		1475		1475	

Note: Results are presented only for some variables. Complete results can be found in the appendix.

Table 6. 6. Odds ratios from multinomial logistic regression models showing the interaction effects of living arrangement concordance and exchange of support on life satisfaction of older Filipino men and women

	Men				Women			
	Somewhat satisfied vs Not Satisfied		Very satisfied vs not satisfied		Somewhat satisfied vs Not Satisfied		Very satisfied vs not satisfied	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
Intergenerational support								
Financial support								
Exchangers x Concordance	0.21	0.024	0.18	0.017	1.42	0.396	1.35	0.464
Exchangers x Discordance	0.39	0.445	0.36	0.142	1.99	0.263	1.48	0.558
Non-exchangers x Concordance	1.60	0.665	0.71	0.798	0.70	0.695	0.75	0.734
Non-exchangers x Discordance	0.07	0.076	0.12	0.068	1.18	0.694	1.38	0.801
Giver only x Concordance	2.34	0.401	1.44	0.770	0.22	0.047	0.44	0.211
Giver only x Discordance	0.34	0.602	0.24	0.340	1.62	0.229	1.11	0.893
Receiver only x Discordance	0.34	0.425	0.76	0.773	0.98	0.974	0.68	0.480
Receiver only x Concordance (ref)	1.00		1.00		1.00		1.00	
Instrumental support								
Exchangers x Concordance	2.74	0.245	2.89	0.250	0.41	0.027	0.35	0.020
Exchangers x Discordance	0.62	0.310	1.10	0.757	0.80	0.419	1.03	0.944
Non-exchangers x Concordance	4.45	0.125	3.00	0.188	0.58	0.499	0.89	0.911
Non-exchangers x Discordance	0.83	0.568	0.75	0.548	0.80	0.681	0.52	0.191
Giver only x Concordance	2.55	0.056	1.23	0.792	0.52	0.211	0.52	0.169
Giver only x Discordance	0.16	0.020	0.36	0.023	1.23	0.686	1.31	0.496
Receiver only x Discordance	-		-		-		-	
Receiver only x Concordance (ref)	1.00		1.00		1.00		1.00	
Emotional support								
Exchangers x Concordance	0.49	0.550	0.56	0.669	0.89	0.892	0.58	0.571
Exchangers x Discordance	1.50	0.674	1.22	0.834	0.43	0.180	0.21	0.114
Non-exchangers x Concordance	0.43	0.356	0.79	0.846	0.42	0.303	0.36	0.285

	Men				Women			
	Somewhat satisfied vs Not Satisfied		Very satisfied vs not satisfied		Somewhat satisfied vs Not Satisfied		Very satisfied vs not satisfied	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
Non-exchangers x Discordance	1.33	0.770	0.81	0.613	0.51	0.247	0.55	0.367
Giver only x Concordance	0.98	0.989	2.06	0.643	0.62	0.685	0.50	0.566
Giver only x Discordance	1.18	0.839	1.24	0.746	0.59	0.160	0.41	0.172
Receiver only x Discordance	-		-		-		-	
Receiver only x Concordance (ref)	1.00		1.00		1.00		1.00	
Material support								
Exchangers x Concordance	1.21	0.647	1.06	0.842	1.05	0.948	1.24	0.791
Exchangers x Discordance	3.88	0.182	1.72	0.506	0.36	0.022	0.22	0.058
Non-exchangers x Concordance	1.22	0.581	1.29	0.661	1.53	0.331	1.29	0.325
Non-exchangers x Discordance	1.02	0.981	1.34	0.650	0.42	0.252	0.40	0.150
Giver only x Concordance	0.30	0.101	0.75	0.234	0.86	0.828	1.19	0.763
Giver only x Discordance	2.19	0.238	1.74	0.377	0.57	0.687	0.49	0.415
Receiver only x Discordance	-		-		-		-	
Receiver only x Concordance (ref)	1.00		1.00		1.00		1.00	
Number of cases	1077				1475			

Note: Results are presented only for some variables. Complete results can be found in the appendix.

Table 6. 7. Coefficients from ordinary least squares (OLS) regression models predicting psychological well-being among older Filipino men and women

	Men		Women	
	Coefficient	p	Coefficient	p
<i>Socioeconomic and demographic characteristics of older persons</i>				
Age	-0.56	0.079	0.03	0.910
Age squared	0.00	0.083	0.00	0.979
Currently married (ref = unmarried)	0.49	0.438	0.69	0.190
At least primary education (ref=below primary)	0.25	0.213	0.82	0.005
Working (ref = not working)	0.18	0.510	-0.64	0.011
Perceived income adequacy (ref = enough income)		0.045		0.006
Some difficulty	-1.04	0.021	-0.73	0.090
Considerable difficulty	-1.70	0.008	-1.62	0.001
Number of children	-0.08	0.317	-0.06	0.263
Urban (ref =rural)	-0.21	0.295	0.40	0.252
<i>Socioeconomic and demographic characteristics of children</i>				
Age	0.05	0.698	-0.04	0.456
Age squared	0.00	0.620	0.00	0.164
Sex composition (ref = both sons and daughters)		0.006		0.986
All sons	0.06	0.916	-0.05	0.946
All daughters	-1.38	0.013	0.03	0.888
All children are married (ref = at least one single)	0.34	0.158	0.15	0.484
Education composition (ref = no children with college education)		0.013		0.011
Some children with college education	0.04	0.870	0.86	0.014
All children with college education	1.19	0.012	1.25	0.004
All children are working (ref = at least one child is not working)	-0.21	0.739	0.62	0.074
<i>Health conditions of older persons</i>				
With chronic disease (ref = without chronic disease)	-0.41	0.310	-0.54	0.056
Functional limitation (ref = without functional limitation)	-0.79	0.004	-0.71	0.142
IADL (ref = without IADL)	-0.80	0.089	-1.34	0.003
ADL (ref = without ADL)	-2.37	0.002	-0.69	0.012
Living arrangements concordance (ref = coresidence concordance)		0.442		0.111
Independent living concordance	0.33	0.483	-0.54	0.201
Independent living discordance	0.42	0.384	-0.21	0.495
Coresidence discordance	0.74	0.218	-0.53	0.064
<i>Intergenerational support</i>				
Financial support (ref = receiver only)		0.076		0.047
Exchangers	-0.56	0.164	0.48	0.265
Non-exchangers	-1.22	0.062	-0.70	0.163
Giver only	-0.83	0.056	0.87	0.024
Instrumental support (ref = receiver only)		0.200		0.316
Exchangers	0.67	0.286	-0.69	0.069
Non-exchangers	-0.27	0.399	-0.40	0.287

	Men		Women	
	Coefficient	p	Coefficient	p
Giver only	0.61	0.430	0.37	0.412
Emotional support (ref = receiver only)		0.587		0.004
Exchangers	0.05	0.972	0.34	0.289
Non-exchangers	-0.37	0.518	0.24	0.511
Giver only	-0.19	0.860	0.60	0.001
Material support (ref = receiver only)		0.656		0.560
Exchangers	-0.05	0.952	0.30	0.378
Non-exchangers	-0.30	0.170	0.28	0.406
Giver only	-0.10	0.843	0.47	0.312
Number of cases	1065		1452	

Table 6. 8. Odds ratios from logistic regression models showing the interaction effects of living arrangement concordance and exchange of support on the psychological well-being of older Filipino men and women

	Men		Women	
	Odds ratio	p	Odds ratio	p
Intergenerational support				
Financial support				
Exchangers x Concordance	-0.58	0.131	-0.05	0.791
Exchangers x Discordance	-1.69	0.275	-0.90	0.015
Non-exchangers x Concordance	-1.10	0.310	-2.17	0.075
Non-exchangers x Discordance	-2.41	0.037	-1.50	0.176
Giver only x Concordance	0.19	0.833	0.87	0.061
Giver only x Discordance	-2.33	0.019	-1.02	0.333
Receiver only x Discordance	-1.10	0.348	-1.82	0.020
Receiver only x Concordance (ref)	1.00		1.00	
Instrumental support				
Exchangers x Concordance	0.49	0.397	-0.37	0.216
Exchangers x Discordance	0.80	0.217	-0.97	0.061
Non-exchangers x Concordance	-0.72	0.151	-0.15	0.719
Non-exchangers x Discordance	0.06	0.892	-0.77	0.337
Giver only x Concordance	0.37	0.731	0.75	0.168
Giver only x Discordance	0.63	0.300	0.14	0.865
Receiver only x Discordance	-		-	
Receiver only x Concordance (ref)	1.00		1.00	
Emotional support				
Exchangers x Concordance	-0.72	0.144	-0.56	0.053
Exchangers x Discordance	0.73	0.697	0.74	0.150
Non-exchangers x Concordance	-1.00	0.085	-0.70	0.125
Non-exchangers x Discordance	0.38	0.680	0.78	0.070
Giver only x Concordance	-1.08	0.328	-0.67	0.200
Giver only x Discordance	0.64	0.656	1.48	0.009
Receiver only x Discordance	-		-	
Receiver only x Concordance (ref)	1.00		1.00	
Material support				
Exchangers x Concordance	0.48	0.444	0.02	0.957
Exchangers x Discordance	-0.46	0.557	0.49	0.358
Non-exchangers x Concordance	-0.40	0.237	0.26	0.694
Non-exchangers x Discordance	-0.31	0.372	0.23	0.548
Giver only x Concordance	-0.29	0.753	0.50	0.476
Giver only x Discordance	-0.07	0.874	0.56	0.419
Receiver only x Discordance	-		-	
Receiver only x Concordance (ref)	1.00		1.00	
Number of cases	1065		1452	

Note: Results are presented only for some variables. Complete results can be found in the appendix.

6.4 Discussion and Conclusion

This chapter begins by describing the exchange of support between older people and their children; and the provision of assistance among those who have difficulty in performing ADLs or IADLs. Results show that the exchanges of financial and instrumental support are more common among older Filipinos than exchanges of emotional and material support. In general, a higher proportion of older men than older women are involved in the exchange of support with their children, except for emotional support. Older women tend to be recipients of support only, whereas older men tend to be givers only of support.

Complementing the information on the exchange of support between older people and their children, this chapter also identifies the caregivers who support older Filipinos who are in need of ADL or IADL assistance. Results indicate that coresident family members, particularly spouse and daughters, play an important role in assisting older Filipinos who need help in carrying out ADLs or IADLs. The role that the Filipino family plays in supporting and promoting the well-being of older members can be attributed to filial piety which is culturally expected and mandated by law. This familial provision of caregiving, however, follows a gendered pattern. Specifically, the wife assists older men, whereas daughters assist older women. Mostly demographic factors can explain this gender difference. Women are more likely to marry older men, and they tend to live longer than men (Mujahid, 2006; Reiss & Lee, 1988). Thus, husbands tend to need care earlier in their married life and have wives available to provide it. By the time the wives fall ill and need care, they are more likely to have been widowed (Lee, Dwyer, & Coward, 1993).

Although the findings of the study confirm earlier studies on the role of spouse and children in providing care or older people, it also shows that grandchildren are also active in providing care to their grandparents. In the Philippines, it is not uncommon for grandchildren to live in the same household as their grandparents, especially, when the grandchildren's parents work overseas or in other parts of the Philippines. Close to half (45.5%) of older Filipinos in 1996 live in a multigenerational household (Natividad & Cruz, 1997) and about 21% of households in the Philippines in 2002 are multigenerational (Lusterio-Berja, 2007). Earlier studies in the Philippines show that living in multigenerational households redound to the benefit of the younger generations because the older persons not only provide material or financial support but are also involved in caring for their grandchildren (Hermalin, Roan, & Perez, 1998;

Natividad, 2000; Natividad & Cruz, 1997). Another study also shows that grandchildren's continued coresidence with their grandparents has a negative impact on the older adults' mental health (Chen et al., 2017). This present study provides evidence that the flow of support between grandparents and their grandchildren is not always unidirectional and that grandchildren's presence in the household has positive impacts as they play an important role in providing care assistance to the older person.

Living in the same household facilitates the provision of care for older people, and so it is not surprising that the primary provider of care among older people are people with whom they usually live with, including their spouse, children, and grandchildren (Knodel & Chayovan, 2008). However, this study shows that older persons' noncoresident family members (which may also include their children) also provide care. This is not surprising given that more than half (58%) of older Filipinos' nearest noncoresident child is living next door or within the same barangay.

This chapter also shows that after controlling for living arrangement concordance and several demographic and socioeconomic characteristics of older people and their children, exchange of intergenerational support is associated with the well-being of older Filipinos, although the direction of relationship differs depending on which type of support is examined. This provides further reason to look at the individual type of support rather than aggregating them, because each type of support may have different meaning and impact on the well-being of older people (Peng et al., 2018; Silverstein et al., 2013). The current study extends previous studies by not only looking at the unidirectional flow of support but also the exchange of support and its relationship with older Filipinos' well-being. This is to recognize that older people are not just passive recipient or provider of support only, but they are also involved in a web of reciprocal exchange of support with their children. Predictions on the direction of the relationship between the exchange of support and well-being are based on the equity and social exchange theories. Both theories predict that giving support compared with receiving support is not beneficial to well-being (Chen & Jordan, 2018; Peng et al., 2018). Previous research argues that parents' continued provision of assistance to their children deviates from the social expectation that children should support their parents and not the other way around (Kim & Kim, 2003). This situation implies that children are not able to support themselves and require assistance from their parents, resulting in psychological distress for the parents as well as their children (Kim & Kim, 2003). Some also suggest that older people's continued provision of support to their

adult children could be an indication that they have failed to raise a successful child and reflects their failure to fulfil their parental obligation (Schwarz et al., 2010). This proposition is partially supported in this study in that it is true in terms of instrumental support, but not in terms of other types of support.

Indeed, the current study shows the opposite findings. Specifically, this chapter shows that compared with receiving support only (over-benefiting), giving support only (under-benefiting), particularly financial and emotional, are positively associated with self-rated health and psychological well-being of older people in the Philippines. These findings are consistent with a study in Hong Kong that showed older people who are giving but not receiving support (under-benefiting) tend to be more satisfied with their life than those who are receiving but not giving support (over-benefiting) (Peng et al., 2018). Several reasons could explain the positive impact of giving versus receiving. The act of giving may improve an older person's well-being by externally validate of their self-worth (Pinquart & Sorensen, 2000). It also improves their morale by making them feel more useful, nourishing their identity, and giving them a sense of contentment or pride just by performing this role (Chen & Silverstein, 2000; Gierveld, Dykstra, & Schenk, 2012; Schatz et al., 2018).

This chapter also shows that not only do different types of support have different implications for the well-being of older people, but their relationship with well-being also differs between older men and women. For example, the positive impact of providing emotional support on self-rated health is significant only for older men, whereas the positive impact of giving financial and emotional support on psychological well-being is significant only among older women. These differences could be due to traditional gender roles. Husbands in the Philippines are considered the “pillar of the home” (*haligi ng tahanan*) that provides financial and material support to their families, while wives are considered the “light of the home” (*ilaw ng tahanan*) that nurtures the children and provides emotional support (Alampay, 2014). Continuity of these parental roles even in old age may lead to positive health and well-being of older people because it gives older people a sense of contentment or pride in carrying out ng this role (Schatz et al., 2018). However, going beyond these expected gender roles may also positively influence the health and well-being of older Filipinos. For instance, fathers who not only provide material support to their children but also provide emotional support may have an improved sense of self-worth. Similarly, older women who provide not only emotional support but also financial support to their children may have enhanced self-esteem that leads to better psychological well-

being. The fact that older women are able to provide financial support to their children also implies that they have enough resources to meet their basic needs, which could contribute to positive well-being.

However, departure from these gender roles may not always apply to all types of support, particularly in terms of instrumental support whose delivery may require some form of intimacy and sometimes invasion of privacy. Results of the study show that the negative influence of the provision of instrumental support on life satisfaction is true among older men but not among older women. For older men to provide this instrumental support, particularly self-care activities signifies a departure from traditional norms and may have a detrimental impact on their life satisfaction. It may also threaten men's identity because it clashes with culturally accepted masculine behaviour (Graham, 1983).

Equity perspective theory also maintains that being involved in a balanced or reciprocal exchange of support compared with under-benefiting and over-benefiting is beneficial to the well-being of older people (Lee et al., 2014). Partial support for this proposition is noted in this study. Exchange of financial support with their children is associated with greater life satisfaction among older women. This is consistent with previous research in Korea where older people who both gave and received financial support reported a higher level of life satisfaction than those who received financial support only (Lee et al., 2014). Curiously, exchange of financial support exerts a negative influence on life satisfaction of older men. One explanation for this unexpected finding could be that although there is an exchange of support between parents and their children, the exchange is unbalanced, i.e. older people are providing more support of this type than they are receiving from their children. However, even when the number of children that older persons give support to was compared with the number of children that provide support to them, to check the balance of support, it was found that those who have a "balanced" exchange of support are still less likely to be very satisfied with their life than those who give more than they receive, although the difference did not reach the conventional statistical significance ($p = .052$). One plausible explanation for this finding could be the amount and intensity of financial support exchanged. Previous research indicates that a highly unequal flow of support in a dyadic relationship may lead to demoralisation and depression (Kawachi & Berkman, 2001). However, due to data limitations, this hypothesis cannot be directly tested in this study.

This chapter also shows that lack of intergenerational exchange of support, particularly financial support, is negatively associated with life satisfaction of older people. This finding is consistent with previous studies that demonstrate the negative impact of the absence of support on the well-being of older people (Chen & Jordan, 2018; Kim & Kim, 2003; Peng et al., 2018). This lack of exchange of support not only goes against the concept of reciprocity (*utang na loob*) that is highly valued in the Philippine society but could also suggest that both parties may be experiencing financial difficulty that could severely limit their ability to support themselves and that of other people. This financial strain may not only result in psychological distress among older people, as has been shown in earlier studies in the Philippines and other countries (Ferraro & Su, 1999), but the knowledge that their children are also experiencing financial strain may further reduce older people's low levels of well-being.

This chapter also examined how living arrangement concordance of older Filipinos modifies the relationship between the exchange of support and well-being. The analyses identified significant interactions between living arrangement concordance and patterns of support for the different types of support. Analyses of the interaction effects confirmed the findings from the main effects model that although the exchange of support has a positive influence on the well-being of older people, this could also be dependent on whether older people have living arrangement concordance or not. For example, the analyses show that older women who are involved in an exchange of financial support with their children but are not living in their preferred living arrangement have lower psychological well-being compared to those who are recipients only of financial support and are living in their desired living arrangement.

The analysis also indicates that the negative impact of a lack of exchange of support on well-being may be exacerbated, if older people are not living in their preferred living arrangement. In the same vein, having a living arrangement concordance may also buffer this negative impact. For example, this study shows that older men who do not exchange instrumental support with their children but have living arrangement concordance have higher odds of reporting good self-rated health.

This chapter has some limitations. Due to the cross-sectional nature of the data, caution should be made in inferring direct causation between intergenerational support and well-being of older people. Although results of the study are interpreted as if intergenerational support may impact and well-being of older people, the possibility of reverse causation cannot be ruled out. It is likely that the exchange of support is motivated by the health and well-being status of the older person. Other important variables such as the quality of the parent-child relationship, bequest possibility and expectation, that were not included in the analyses due to data limitations. Sibling dynamics in intergenerational transfers among children is also not covered in the present study but will be considered in future research.

Chapter 7: Regional differences in functional difficulty and disability-free life expectancy (DFLE) among older persons in the Philippines

7.1 Introduction

Like most developing countries, the population of the Philippines is ageing, although not as fast as other Southeast Asian countries. The ageing phenomenon in the country is also accompanied by parallel improvements in life expectancy. Life expectancy at birth among Filipino men increased from 54.2 years in 1970 to 66.9 years in 2010, while it increased from 57.2 years to 73.0 years among Filipino women (Flieger & Cabigon, 1994; Philippine Statistics Authority, 2010). Life expectancy at age 60 also moderately increased, but the increase was steeper among older women than older men. The continuing improvement in mortality in most countries, including the Philippines, has brought to the fore the issue of whether the gains in longevity are healthy ones. As the size of the older population continues to increase both in absolute number and proportion, particularly among the oldest old, it becomes critical not only to measure the quantity of life based on life expectancy, but also to assess the quality of remaining life to make sure that the additional gains in life expectancy are healthy ones (Fouweather et al., 2015). Health expectancy has been developed to address this issue as it extends the traditional life expectancy by combining mortality and disability indicators into a single measure to summarize the state of a population's health (Robine & Ritchie, 1991). It can serve as a guide in making informed decisions in healthcare investment and resources allocation as it provides a clear, consistent and significant population health outcome measure (Stiefel, Perla, & Zell, 2010). It is also very useful in comparing health across populations; monitoring changes in population health; and in identifying and quantifying health inequalities within populations (Gutiérrez-Fisac et al., 2000; Pongiglione et al., 2015).

While most countries have available estimates on health expectancy, these are mostly calculated at the national level, masking the potential health inequality at the sub-national level. Factors that explain these subnational differences, particularly in developing countries, are largely unexplored. The present study addresses these gaps in two ways. First, it describes regional differences in the prevalence of functional difficulty among older persons in the Philippines. Second, it examines regional differences in disability-free life expectancy (DFLE)

and investigates the factors associated with these differences. Not only does the ageing situation in the Philippines vary substantially across regions as presented in chapter 3, but the country is also characterised by socioeconomic disparities, as will be later shown in this chapter. Based on previous research, these socioeconomic inequalities are hypothesized to contribute to the geographic differentials in DFLE among older Filipinos.

7.2 Data and Methods

To describe regional differences in functional difficulty among older people, the 20% sample of the 2010 Philippine Census of Population and Housing (CPH) data were used. The analysis is limited to older people aged 60 years and over (1,272,993 cases) living in households. The data were weighted to represent the older national population.

The 2010 CPH is the first census in the country that included questions on functional difficulty. Functional difficulties experienced by people may have been due to their health condition, which could refer to diseases or illnesses, other health problems that may be short or long lasting injuries, mental or emotional problems, and problems with alcohol or drugs (National Statistics Office [NSO], 2010). A difficulty is usually manifested when a person is doing an activity with increased effort, discomfort or pain, slowness, or changes in the way he/she does the activity (NSO, 2010). These functional difficulty measures are based on the International Classification of Functioning, Disability and Health (ICF) developed by the World Health Organization (WHO, 2001), that “provides a consistent and complete conceptualisation of disability” (Leonardi et al., 2006, p. 1220). In addition to the self-care activities and mobility limitations that have been used to define health status in earlier studies, the functional difficulty indicators used in the current study also capture other disability dimensions, including visual, aural, cognition, and intellectual/developmental (Loeb et al., 2008), thus capturing multiple dimensions of health. The specific indicators used in the study include difficulty in walking or climbing steps; self-caring (bathing or dressing); seeing, even when wearing eyeglasses; hearing, even when using hearing aid; remembering or concentrating; and communicating using his/her usual language. From these six indicators, a composite measure is constructed indicating whether the older person has at least one difficulty in any of these tasks⁶. Using this

⁶ Having at least two functional difficulties were also explored. Although the overall prevalence of the composite index is much lower and the DFLE is much higher compared with using at least one

composite measure, along with the corresponding mortality schedule from the 2010 life table provided by the Philippine Statistics Authority (Philippine Statistics Authority, 2010). DFLE at each age groups by sex and by region were calculated using the Sullivan method (Sullivan, 1971). DFLE calculated by the Sullivan method reflects the current health status of a real population adjusted for the levels of mortality and independent of its age structure (Jagger, Hauet, & Brouard, 2001). The resulting DFLE refers to the number of remaining years, at a particular age that an individual can expect to live in a disability-free state (Jagger et al., 2001).

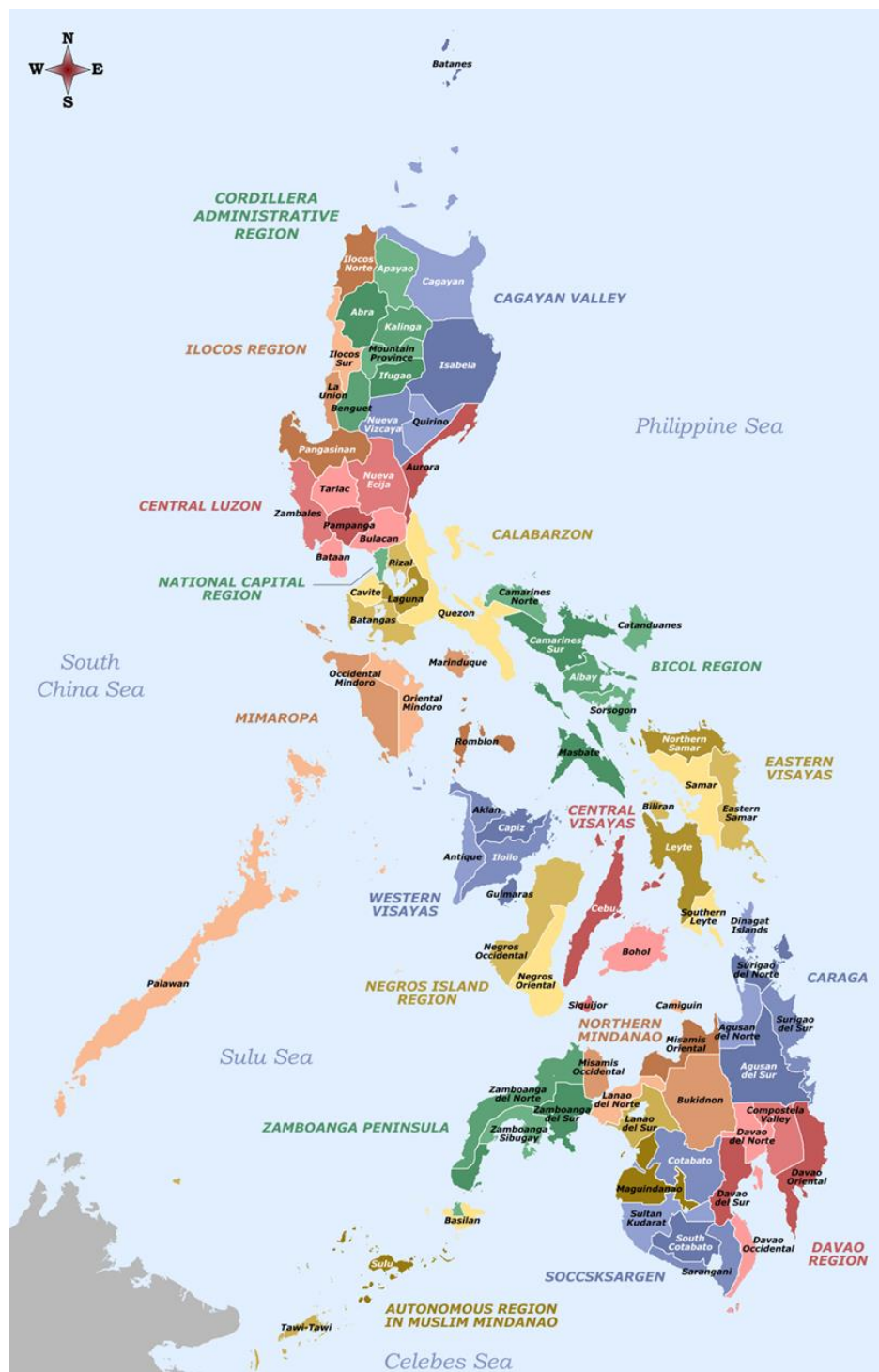
To explore the factors associated with regional differences in DFLE, several macro-level indicators that have been shown by previous studies to be associated with health expectancy were used. These factors include poverty incidence, regional per capita GDP, doctor to population ratio, the proportion of total population living in urban areas, percentage of older people with at least secondary education, percentage of older people who are in the labour force, percentage of older people with health insurance coverage, proportion of older people who are currently married and proportion of older people living alone and living with children. The proportion of younger cohorts of population at least secondary education is also included in the model to capture the socioeconomic resources of older people's children, which has been shown to be associated with parental health, as shown in chapter 4. The definition and data sources for these indicators are described in chapter 2. Due to the highly skewed distribution of these explanatory variables, most of them have been log-transformed to normalize their distributions.

Meta-regression models for DFLE were used to allow for the inclusion of uncertainty around the DFLE estimates (Wohland et al., 2014). The unit of analysis is the 17 regions of the Philippines (see Figure 7.1). Since standard meta-regression models are prone to suffer from substantially inflated false positive rates due to few observations and many correlates, permutation tests were conducted to adjust the p values for multiplicity (Higgins et al., 2003). Model 1 tests the bivariate relationships between DFLE at age 60 and each independent variable. Model 2 adds the proportion of older people aged 60 and over in the region as a control. Given the relatively small number of cases, the influence of all explanatory variables

difficulty, the factors associated with regional differences are still the same regardless of whether one or two is used as a cut-off.

on DFLE was not analysed simultaneously in the meta-regression models. Analyses were conducted separately for men and women.

Figure 7. 1. Map of the Philippines and its regions



Source: Sanglahi86 via Wikimedia Commons, downloaded from https://commons.wikimedia.org/wiki/File:Labelled_map_of_the_Philippines_-_Provinces_and_Regions.png

7.3 Results

7.3.1 Regional Differences in Functional Difficulty among Older Filipinos

Table 7.1 presents the prevalence of functional difficulty among older men and women in the Philippines by region. Given the different age structure of the regions in the Philippines, the rates were standardized using the age structure of the total Philippine population as the standard. Results show a wide regional disparity in the prevalence of functional difficulty among older Filipinos. Older men and women in the Cordillera Administrative Region (CAR) registered the lowest functional difficulty rates, while their counterparts in Bicol region and the Autonomous Region in Muslim Mindanao (ARMM) recorded the highest rates. The two regions also recorded the highest poverty rates in the country. Little sex differences were observed in the regional prevalence of functional difficulty, except in ARMM where older women reported slightly higher prevalence than older men (25.9% vs. 23.5%). Difficulty in seeing even when wearing eyeglasses (14%) was the most common form of functional difficulty among older persons in the Philippines and its regions. A much lower proportion reported difficulty in hearing (6%) and walking or climbing steps (6%). Less than 5% reported difficulty in self-care, remembering and communicating. ARMM consistently registered the highest share of older people who reported difficulty in each of these indicators.

Table 7.2 presents the prevalence of at least one functional difficulty by age groups. It shows that the prevalence of functional difficulty among older Filipinos steadily increased with advancing age. For example, the proportion of older women in Ilocos region with least one functional difficulty increased from 10.4% among the 60 to 64 age group to 49.4% among those who are 85 years old and over. This pattern is true for both men and women and across all regions of the country.

Table 7. 1. Age-standardized prevalence of functional difficulty among older Filipino men and women aged 60 and over by type of difficulty and region, 2010

	Seeing	Hearing	Walking or climbing steps	Remembering	Bathing or dressing	Communicating	At least one functional difficulty
Men							
Region I	11.7	6.5	5.7	2.5	1.8	1.2	18.0
Region II	11.9	7.0	6.2	2.7	1.7	1.2	18.3
Region III	14.3	5.5	6.2	2.2	2.0	1.3	19.6
Region IVA	12.5	5.0	5.5	2.1	1.7	1.3	17.8
Region IV-B	16.7	7.4	7.3	2.9	2.1	1.4	22.7
Region V	16.8	8.4	7.7	3.4	2.4	1.7	24.0
Region VI	11.0	5.5	5.8	2.7	2.0	1.3	17.1
Region VII	12.1	6.3	6.0	2.8	2.2	1.3	18.6
Region VIII	13.9	7.5	6.8	3.2	2.1	1.3	21.0
Region IX	15.0	7.6	6.3	3.3	2.0	1.3	21.2
Region X	12.5	6.7	5.6	3.1	2.1	1.3	18.9
Region XI	13.4	6.0	5.7	3.0	2.1	1.4	19.0
Region XII	13.8	6.7	6.5	3.4	2.3	1.4	19.6
NCR	16.3	5.1	6.0	2.3	2.0	1.2	20.7
CAR	7.1	6.0	6.9	3.0	1.9	1.3	14.9
ARMM	18.0	11.2	9.5	6.2	3.5	2.6	23.6
Caraga	14.6	7.2	6.1	3.2	2.1	1.2	20.9
Philippines	13.6	6.4	6.2	2.8	2.1	1.4	19.5
Women							
Region I	12.5	5.7	5.5	2.7	1.9	1.1	17.8
Region II	13.0	6.4	5.8	3.0	1.8	1.1	18.1
Region III	15.1	5.2	6.3	2.5	2.1	1.2	20.0
Region IVA	13.8	4.6	5.8	2.3	1.8	1.2	18.7
Region IVB	16.9	6.2	7.0	3.3	2.2	1.3	22.3
Region V	17.8	6.9	7.0	3.6	2.2	1.4	23.7
Region VI	11.3	4.7	5.0	3.0	1.9	1.2	16.3
Region VII	12.6	5.5	6.0	3.1	2.1	1.1	18.4
Region VIII	14.3	6.5	6.3	3.5	2.2	1.1	20.5
Region IX	15.1	6.8	6.1	3.6	2.1	1.4	20.5
Region X	12.8	5.7	5.1	3.1	1.9	1.1	18.3
Region XI	14.5	5.3	5.5	3.3	2.1	1.3	19.5
Region XII	14.1	6.1	6.2	3.6	2.1	1.4	19.5
NCR	16.8	4.7	6.1	2.4	1.9	1.1	20.9
CAR	8.0	6.2	6.9	3.4	2.1	1.2	15.6
ARMM	19.4	12.6	11.1	6.9	4.0	2.9	26.1
Caraga	14.7	5.9	5.5	3.4	1.7	1.2	20.4
Philippines	14.2	5.6	6.0	3.0	2.0	1.2	19.5

Source: 2010 Philippine Census of Population and Housing.

Table 7. 2. Prevalence of at least one functional difficulty among older Filipino men and women aged 60 years and over by age group and region, 2010

Regions	Men							Women						
	60-64	65-69	70-74	75-79	80-84	85+	Total	60-64	65-69	70-74	75-79	80-84	85+	Total
Region I	10.7	14.1	20.3	26.0	34.5	45.2	18.0	10.4	13.7	19.3	25.5	35.2	49.4	17.8
Region II	11.1	14.2	19.9	26.3	36.2	47.1	18.3	9.8	14.4	20.4	26.2	35.7	49.5	18.1
Region III	12.7	16.2	21.4	26.4	36.0	45.3	19.6	12.7	16.2	21.9	27.5	36.1	48.6	20.0
Region IVA	11.9	14.8	19.5	23.8	31.6	39.8	17.8	12.1	15.1	20.3	25.4	34.5	45.1	18.7
Region IVB	15.9	19.0	25.1	29.0	38.7	48.2	22.7	15.5	17.7	24.1	30.4	40.1	49.0	22.3
Region V	16.1	19.9	27.5	31.2	42.5	51.8	24.0	15.7	19.7	26.3	32.3	41.5	52.3	23.7
Region VI	10.7	13.2	19.1	23.9	33.0	40.8	17.1	9.8	12.4	17.8	23.3	31.2	45.1	16.3
Region VII	11.5	14.8	20.8	25.7	34.4	46.5	18.6	11.3	14.2	19.9	26.1	35.9	48.7	18.4
Region VIII	12.7	17.4	23.1	28.3	39.5	53.2	21.0	12.7	16.3	21.1	29.6	39.8	53.2	20.5
Region IX	13.0	17.1	24.6	29.6	39.6	47.9	21.2	12.5	17.7	22.6	27.8	37.3	49.2	20.5
Region X	11.8	15.2	21.5	26.3	35.0	43.7	18.9	11.7	15.2	20.1	24.2	33.7	44.9	18.3
Region XI	12.9	16.0	20.2	25.2	32.4	45.0	19.0	13.0	15.3	21.1	26.0	36.1	47.4	19.5
Region XII	12.4	16.2	21.5	27.2	36.2	44.4	19.6	12.6	15.8	21.7	27.7	33.9	45.5	19.5
NCR	14.1	17.0	23.6	26.4	36.1	45.7	20.7	13.9	17.0	24.3	26.7	36.0	48.1	20.9
CAR	8.5	11.3	15.8	21.7	29.3	43.9	14.9	7.8	11.3	17.2	23.4	35.4	46.2	15.6
ARMM	16.1	20.9	27.7	31.4	38.8	40.9	23.6	17.7	23.2	31.1	33.7	41.9	47.1	26.1
Caraga	12.5	17.7	24.0	28.1	37.8	50.8	20.9	13.0	16.8	21.8	28.4	37.5	48.0	20.4
Philippines	12.6	15.9	21.7	26.4	35.6	45.3	19.5	12.4	15.6	21.3	26.7	35.9	48.0	19.5

Source: 2010 Philippine Census of Population and Housing.

7.3.2 Life expectancy (LE) and DFLE among older Filipinos at the regional level

Table 7.3 presents LE, DFLE, and the proportion of life expectancy without functional difficulty at age 60 among older Filipinos at the regional level. It shows that older men in Metro Manila enjoy the highest life expectancy of 17.2 years, while older men in the ARMM have the lowest life expectancy of 14.7 years. However, the region with the highest life expectancy did not necessarily have the highest DFLE, as older people in the Cordillera Administrative Region (CAR) registered slightly longer years of life expectancy spent without functional difficulty than their counterparts in Metro Manila (13.5 years vs 13.3 years). Older people in ARMM not only have the lowest life expectancy at age 60 but also have the lowest DFLE among the 17 regions. The proportion of life expectancy without functional difficulty also varies substantially across regions. For example, older people in CAR can expect to spend 84.4% of their remaining life expectancy at age 60 without functional difficulty, while the corresponding proportion in the Bicol Region was only 74.9%. This translates to a difference of 1.4 healthy years between the two regions.

The regional differences in terms of LE and DFLE were wider among older Filipino women than older men. For example, older women in Metro Manila (20.8 years) recorded the highest life expectancy at age 60, while older women in ARMM (17.1 years) registered the lowest, representing a difference of 3.6 years. It is worth noting that although the life expectancy at age 60 of women in ARMM was the lowest among women, it is similar to the life expectancy of older men in Metro Manila, which was already the highest in the region. Older women in ARMM also have the lowest DFLE (12.4 years), while their counterparts in Region VI (16.0 years) recorded the highest DFLE. Similar with older men, older women in CAR (82.1%) ranked highest in terms of the proportion of life expectancy without functional difficulty, while older women in ARMM (72.5%) remain at the bottom.

Table 7. 3. Life expectancy (LE), disability-free life expectancy (DFLE), and proportion of expected life without functional difficulty among older Filipino men and women at age 60 by region, 2010

Regions	LE			DFLE			% of LE without functional difficulty		
	Men	Women	Sex difference	Men	Women	Sex difference	Men	Women	Sex difference
Region 1	16.2	20.2	-4.0	13.1	15.9	-2.8	80.7	78.7	2.0
Region 2	15.8	19.2	-3.4	12.8	15.2	-2.4	80.8	79.1	1.6
Region 3	16.0	19.8	-3.8	12.7	15.2	-2.5	79.1	76.8	2.3
Region 4A	15.8	19.4	-3.7	12.8	15.3	-2.4	81.3	78.5	2.7
Region 4B	16.7	19.1	-2.4	12.7	14.4	-1.7	76.1	75.4	0.7
Region 5	16.1	19.8	-3.6	12.1	14.5	-2.4	74.9	73.3	1.6
Region 6	16.2	19.8	-3.6	13.3	16.0	-2.8	81.9	81.0	0.8
Region 7	16.0	18.9	-2.9	12.9	15.0	-2.1	80.6	79.3	1.3
Region 8	16.1	19.1	-3.0	12.6	14.6	-2.1	78.1	76.7	1.4
Region 9	15.1	18.3	-3.2	11.9	14.2	-2.3	78.6	77.7	1.0
Region 10	15.7	19.1	-3.4	12.6	15.2	-2.5	80.4	79.4	1.0
Region 11	16.1	18.9	-2.8	12.9	14.8	-1.9	80.2	78.3	2.0
Region 12	15.9	19.2	-3.3	12.6	14.9	-2.3	79.4	78.0	1.5
NCR	17.2	20.8	-3.6	13.3	15.7	-2.4	77.6	75.6	2.1
CAR	16.0	18.7	-2.7	13.5	15.3	-1.9	84.4	82.1	2.3
ARMM	14.7	17.1	-2.5	11.1	12.4	-1.3	76.0	72.5	3.5
Caraga	15.7	19.0	-3.3	12.3	14.6	-2.3	78.5	77.2	1.2
Philippines	16.4	20.1	-3.7	13.0	15.5	-2.5	79.1	77.3	1.8

Source: 2010 Philippine Census of Population and Housing.

Guided by previous studies, the geographic differentials in DFLE observed in the Philippines are hypothesized to be driven by differences in socioeconomic conditions and other health-related factors. As discussed in the framework of analysis, older people living in regions characterized by high levels socioeconomic development, such as high regional gross domestic product, lower poverty incidence, and high educational attainment are expected to have higher DFLE compared with regions with low socioeconomic status. Descriptive statistics for these factors are presented in Table 7.4. The table shows that 1 in 5 Filipinos lives below the poverty line in 2009. Poverty incidence in the country ranges from 2% in Metro Manila or NCR to 46% in Caraga. There are also regional differences in the country in terms of economic development, as evidenced by the huge variation in the regional per capita gross domestic product (GDP). For example, the GDP per capita in Metro Manila (PHP 271,255) was more than 10 times as high of that of ARMM (PHP 25,642). Less than half of Philippine population live in urban areas, and the proportion of urban population widely varies across regions, from less than 10% in Region 8 to 100% in NCR. Except for regions 3, 4A and 11, the regional level of urbanization was below 50%. Overall, 3 in 10 older Filipinos have at least secondary education, although a higher proportion of men (34.4%) than women (29.2%) attained this level of education. This sex difference in education is apparent across the 17 regions of the country, albeit of different magnitude, with NCR, Region 3 and Region 4A registering the widest sex gap of about 10%. Regional disparity in terms of overall level of education also exists. For example, while 71.9% of older men in Metro Manila have at least secondary education, only 19.3% of their counterparts in ARMM achieved the same level of education.

Older Filipinos are still active in the labour force, more so among older men (58%) than older women (36%). As with level of education, this sex difference in terms of labour force participation rate (LFPR) also exists at the regional level, with ARMM registering the highest sex difference of 44.7% (77.3% for men and 32.6% for women). Overall LFPR among older Filipinos ranges from 31.6% in NCR to 60.6% in Region 4B. Since most older Filipinos engage in agriculture such as farming and fishing (Natividad et al., 2014), the vast regional differences in LFPR could be closely linked to the regional variation in the availability of agricultural areas.

Health infrastructure and health services for older people are still underdeveloped in the Philippines. Doctor to population ratio is generally low, partly due to the migration of health professionals out of the Philippines in the past decades. In 2010, there were about 34 doctors per every 100,000 Filipinos. Some regions have only 4 per 100,000 while some have 108 per

100,000, mostly in highly urbanized regions such as Metro Manila. About half of older Filipinos are covered by any health insurance, with a slightly higher proportion of men (49.8%) than women (43.3%) having insurance coverage. Again, there are massive geographic differences in health insurance coverage among older Filipinos, ranging from 26.0% in ARMM to 78.0% in Region 10. Regional and sex differences in terms of family support indexed by the presence of spouse and proportion with children and living alone are also noted. About 6 in 10 older Filipinos were currently married, although the share of currently married was higher among older men (79.5%) than older women (47.1%). Regional differences regarding the marital status of older Filipinos are not as large compared with other indicators. As noted in chapter 3 about 6 in 10 of older Filipinos are living with their children. A substantial regional disparity in the proportion of older people living with children is observed, ranging from 56.4% in Region 4B to 83.2% in ARMM. The percentage of older people living alone in the Philippines is relatively low compared with some developed countries, with a higher proportion of older women (8.1%) than older men (5.8%) living alone. The higher propensity of older women than older men to live alone is also evident in all regions of the country. The overall share of older Filipinos who live alone varies from 0.9% in ARMM to 9.8% in Region 4B. As has also been noted in chapter 4, the educational profile of younger cohorts of Filipinos is much higher than that of older cohorts. There is also wide regional variation in the proportion of young Filipinos with at least secondary education, ranging from 36.3% in ARMM to 85.1% in NCR.

7.3.3 Factors associated with regional differences in DFLE among older Filipinos

Table 7.5 presents the results of meta-regression analyses that examine the factors associated with DFLE of older men and women in the Philippines. Findings show that socioeconomic indicators including poverty incidence, GDP per capita, education and employment status were all significantly associated with DFLE among older Filipino men. For example, one per cent increase in poverty incidence is associated with a 0.03-year decline in DFLE. Similarly, GDP per capita and percent with at least secondary education were both positively associated with DFLE, implying that improvements in these two socioeconomic indicators are associated with longer years of life without functional difficulty. The proportion of urban population and doctor to population ratio were both positively associated with DFLE among older men. Curiously, an increase in the share of older Filipinos who are in the labour force is associated with a decline

in DFLE. Educational attainment of younger cohorts of Filipinos is also positively associated with DFLE of older people. Other indicators such as health insurance coverage, proportion currently married, living with children and living alone were not significantly associated with DFLE among older men.

Table 7.5 also presents the results of the parallel analysis among older women. Similar to older men, poverty incidence, GDP per capita, percent with at least secondary education and per cent of the population living in urban areas are all significantly associated with DFLE of older Filipino women. Specifically, a one percent increase in poverty incidence is associated with .03 years decline in DFLE. Similarly, an increase in socioeconomic indicators such as GDP per capita and education translates to gains in years spent in a healthy state. Living in urban areas is also positively associated with DFLE of older women. Unlike men, being married among older women is negatively associated with DFLE. Similarly, the educational level of younger cohorts of the population is positively associated with DFLE of older people. Other socioeconomic and health-related indicators did not display a significant association with DFLE among older Filipino women.

Table 7. 4. Macro-level demographic and socioeconomic indicators for the 17 regions of the Philippines

Regions	Population (2010)	Poverty Incidence (2009)	Per Capita GDP (In PH Pesos at current price) (2010)	Urban population (%) (2010)	% of population 60+ with secondary education (2010)			Labour force participation rate (LFPR) of population 60+		
	Total	Total	Total	Total	Male	Female	Total	Male	Female	Total
Region 1	4,748,372	16.8	58,808	12.6	38.2	29.5	33.2	53.9	28.9	40.0
Region 2	3,229,163	20.2	46,216	11.5	26.1	20.9	23.2	62.5	31	45.7
Region 3	10,137,737	10.7	78,218	51.6	38.8	28.2	32.8	52.6	25.4	37.4
Region 4A	12,609,803	8.8	123,292	59.7	42.9	33.1	37.3	52.1	32.6	41.0
Region 4B	2,744,671	27.2	57,805	22.3	22.6	18.1	20.2	72	50.2	60.6
Region 5	5,420,411	35.3	34,210	15.3	25.2	21.6	23.2	65.3	42.6	53.0
Region 6	7,102,438	23.6	49,196	34.7	28	26.7	27.3	57.5	37.2	46.1
Region 7	6,800,180	26.0	78,983	43.6	24.9	21.3	22.9	60.1	45.4	52.2
Region 8	4,101,322	34.5	55,082	8.7	19.8	19.7	19.8	68.4	41.4	53.8
Region 9	3,407,353	39.5	53,822	33.8	21.6	19.8	20.6	71.9	44.8	58.0
Region 10	4,297,323	33.3	79,901	41.2	28.7	26.5	27.5	65.7	47.7	56.4
Region 11	4,468,563	25.5	83,721	59.2	27.4	25.2	26.2	59.5	37.8	48.5
Region 12	4,109,571	30.8	60,204	46.5	24.4	23	23.7	63.9	35.6	49.5
NCR	11,855,975	2.4	271,255	100.0	70.8	59.2	64.1	37.9	26.8	31.6
CAR	1,616,867	19.2	122,449	26.2	30.5	26.1	28.1	58.5	43.6	50.7
ARMM	3,256,140	39.9	25,642	13.6	19.3	13.6	16.6	77.3	32.6	57.0
Caraga	2,429,224	46.0	40,345	27.4	24.2	22.1	23.1	65	42.3	53.0
Philippines	92,335,113	20.5	97,227	45.3	34.4	29.2	31.5	58.1	35.9	46.0

Table 7.4. Macro-level demographic and socioeconomic indicators for the 17 regions of the Philippines (Cont'd)

Regions	Doctor to population ratio (2010)	% of population 60+ covered by Health insurance (2008)			% population 60+ currently married (2010)			% population 60+ living alone (2010)			% population 60+ living with children (2010)			% population 25-40 living with at least secondary education (2010)		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
Region 1	32	47.5	34.5	39.9	79.0	44.4	58.9	6.0	8.9	7.7	64.8	59.2	61.5	73.9	81.2	77.5
Region 2	20	30.9	34.2	32.8	79.7	46.4	61.2	5.7	9.6	7.9	61.5	57.1	59.1	55.4	65.2	60.1
Region 3	31	55.9	42.9	48.7	79.8	46.3	60.9	5.2	7.1	6.3	67.2	63.2	65.0	68.0	74.0	71.0
Region 4A	23	53.3	42.6	47.2	80.2	44.9	59.9	5.5	7.8	6.8	67.2	62.9	64.7	72.9	78.7	75.8
Region 4B	15	26.9	31.1	29.2	80.4	50.1	64.0	7.9	11.4	9.8	58.3	54.8	56.4	47.5	57.6	52.4
Region 5	11	49.2	40.6	44.4	81.0	48.2	62.5	6.5	9.5	8.2	61.5	57.3	59.1	50.7	60.7	55.6
Region 6	33	48.5	45.9	47.0	77.8	45.5	59.3	6.6	8.5	7.7	66.2	60.9	63.1	60.2	71.7	65.7
Region 7	33	46.1	46.0	46.0	77.8	49.4	62.0	7.1	9.6	8.5	61.4	57.5	59.2	54.2	62.3	58.1
Region 8	11	42.2	44.0	43.2	78.0	50.7	63.1	7.5	9.8	8.8	58.6	55.0	56.6	42.6	53.2	47.7
Region 9	17	35.4	29.2	32.2	79.9	50.4	64.3	5.8	7.7	6.8	62.3	57.4	59.7	43.1	51.0	46.9
Region 10	27	84.4	72.5	78.0	78.9	49.8	63.3	5.7	8.0	6.9	63.7	59.8	61.6	51.0	59.8	55.3
Region 11	26	39.6	49.5	44.8	79.3	49.6	63.9	6.5	8.2	7.4	63.0	60.2	61.6	52.8	61.5	56.9
Region 12	13	43.6	41.6	42.4	79.3	48.5	63.3	6.1	8.3	7.2	64.8	60.5	62.6	49.5	56.7	53.0
NCR	108	64.0	47.6	54.2	80.9	44.5	59.8	3.9	5.2	4.7	69.6	64.1	66.4	84.1	86.0	85.1
CAR	13	47.1	35.9	41.1	77.6	47.6	61.2	7.2	10.7	9.1	66.6	60.9	63.5	63.4	77.1	70.0
ARMM	4	22.2	29.4	26.0	83.2	52.1	68.4	0.7	1.0	0.9	86.0	80.2	83.2	35.6	36.9	36.3
Caraga	14	48.0	48.3	48.1	80.9	51.2	65.1	5.3	7.5	6.5	63.8	59.9	61.7	47.9	57.5	52.5
Philippines	34	49.8	43.3	46.1	79.5	47.1	61.5	5.8	8.1	7.1	65.0	60.5	62.5	62.1	69.4	65.7

Table 7. 5. Meta-regression models on the association between different macro-level factors and DFLE at age 60 among older Filipino men and women, 2010

Independent variables	Model 1			Model 2					Adjusted R square	
	Coefficient	SE	p	Model F	Prob > F	Coefficient	SE	Unadjusted p	Adjusted p	square
Men										
Poverty incidence (%)	-0.033	0.009	0.002	18.36	0.000	-0.031	0.007	0.000	0.002	0.69
Per capita GDP (logged)	0.725	0.189	0.002	27.16	0.000	0.735	0.12	0.000	0.000	0.77
Urban population (logged)	0.306	0.198	0.142	9.18	0.003	0.452	0.15	0.007	0.016	0.51
% with secondary education (logged)	1.025	0.362	0.013	13.28	0.001	1.055	0.27	0.004	0.007	0.61
% in the labour force	-0.045	0.011	0.001	17.11	0.000	-0.040	0.01	0.000	0.000	0.67
Doctor to population ratio (logged)	0.589	0.149	0.001	11.38	0.001	0.500	0.14	0.002	0.002	0.57
Health insurance coverage (logged)	0.898	0.401	0.040	5.00	0.023	0.675	0.38	0.126	0.212	0.34
% Married	-0.276	0.072	0.002	6.91	0.008	-0.266	0.11	0.048	0.075	0.43
% Living alone	0.192	0.074	0.020	3.58	0.056	0.122	0.12	0.372	0.516	0.24
% Living with children (logged)	-0.038	0.022	0.098	2.83	0.093	-0.003	0.03	0.929	0.992	0.19
% pop (ages 20-40) with secondary education (logged)	2.183	0.387	0.000	21.03	0.000	1.924	0.38	0.000	0.001	0.72
Women										
Poverty incidence (%)	-0.044	0.014	0.006	21.19	0.000	-0.034	0.01	0.004	0.004	0.72
Per capita GDP (logged)	0.853	0.316	0.016	28.65	0.000	0.79	0.18	0.003	0.006	0.78
Urban population (logged)	0.406	0.290	0.182	25.28	0.000	0.624	0.15	0.004	0.011	0.76
% with secondary education (logged)	1.935	0.460	0.001	43.09	0.000	1.571	0.27	0.001	0.002	0.85
% in the labour force	-0.025	0.027	0.374	10.32	0.002	-0.029	0.02	0.149	0.272	0.54
Doctor to population ratio (logged)	0.929	0.192	0.000	29.37	0.000	0.695	0.15	0.002	0.006	0.79
Health insurance coverage (logged)	1.544	0.840	0.086	11.53	0.001	1.149	0.60	0.136	0.222	0.57
% Married	-0.259	0.053	0.000	25.06	0.000	-0.189	0.05	0.001	0.002	0.76
% Living alone	0.176	0.078	0.039	7.69	0.006	-0.002	0.09	0.984	0.999	0.46
% Living with children	-4.475	2.185	0.058	7.76	0.005	0.634	2.44	0.807	0.932	0.46
% pop (ages 20-40) with secondary education	3.565	0.437	0.000	48.42	0.000	2.884	0.46	0.000	0.000	0.86

7.4 Discussion and Conclusion

This chapter has examined regional differences in functional difficulty and DFLE among older people in the Philippines using the 2010 census data. Overall, results show a wide regional disparity in functional difficulty of older men and women in the country. Older men and women in CAR reported the lowest prevalence of functional difficulty, while their counterparts in the Bicol region and ARMM recorded the highest functional difficulty rates. Using these functional difficulty rates and available regional life tables for the Philippines, this study has also described regional differences in DFLE and investigated the factors associated with this regional disparity. Results show variations in DFLE across regions for both men and women, although the differences are larger among women than men. Regions that are more economically developed registered much higher DFLE than poorer regions.

This socioeconomic gradient is confirmed in the meta-regression analyses that examined the association between several demographic, socioeconomic and health-related factors and DFLE. Specifically, the study found several socioeconomic indicators namely poverty incidence, GDP per capita and education, to be significantly associated with regional differences in DFLE. The importance of these socioeconomic factors has also been documented in earlier studies (Liu et al., 2010; Wohland et al., 2014). Socioeconomic status not only shapes an individual's exposure to health-damaging agents but also determines an individual's resources in promoting health (Lynch & Kaplan, 2000). Education is an example of a socioeconomic indicator that has been consistently found to be related to health inequality. In the present study, the proportion of older people with at least secondary education was associated with higher DFLE. Earlier research highlights the significance of education in creating and maintaining social inequalities in health as it plays a critical role in shaping cognitive skills and learning that are important in maintaining favourable health (Lynch & Kaplan, 2000). For example, educated men and women are less likely to engage in smoking and have a greater sense of control, which are associated with more favourable adult health (Chandola, Clarke, Morris, & Blane, 2006). Education also enhances access to a wider social network and higher income which can result in better health by increasing access to medical care services and lowering uncertainty and dependence on others for basic needs (Zhang, Li, & Silverstein, 2005).

The study also confirmed the relationship between poverty and disability that has been found in earlier studies (Tareque, Begum, & Saito, 2014; Zimmer, 2008), meta-regression results show that a greater incidence of poverty is associated with lower DFLE. Poverty has been considered as “the greatest obstacle to old age” (Carlos, 1999, p. 4). An earlier study found that the share of elderly-headed households in the poorest income group has been increasing, while the share in the highest income group has been declining (Mapa, Bersales, Albis, & Daquis, 2011). Poverty affects older people’s health by diminishing their capacity to access health services. An earlier study showed that about a quarter of older Filipinos who felt ill and thought about seeing a doctor but did not in the past year cited financial difficulty as the main reason (Cruz et al., 2016). While there are state initiatives in the country to alleviate the plight of older persons by offering social services (Carlos, 1999), and discounts on medicines and other goods and services, these initiatives tend to most benefit those who are highly educated and have a higher income (Cruz et al., 2016). For example, discounts in buying medicines only benefit those who have the resources to purchase medicines in the first place but have no beneficial effects among those who cannot afford to buy medication (Cruz et al., 2007). At the macro-level, those who live in richer local government units (LGU) have a higher chance of accessing health and social programs than their counterparts in poorer LGUs (Cruz et al., 2016). This highlights the importance of poverty not only at the individual level but at the aggregate level as well.

The negative association found between LFPR and DFLE runs counter to findings from previous studies in Japan and the UK (Minagawa & Saito, 2018; Wohland et al., 2014). A possible explanation for this finding is the type of work that older people do in the Philippines. The majority of older Filipinos, particularly men, are engaged in manual occupations, working as farmers, labourers and unskilled workers. Previous studies have shown that workers in manual occupations have poorer health (Case & Deaton, 2005; Choo & Denny, 2006) and higher mortality rates than those in non-manual occupations (Cutler, Lleras-Muney, & Vogl, 2008; Kunst et al., 1998; Mackenbach et al., 1997). The high physical demands and low job control in these kinds of occupations have been shown to have negative impacts on health (Ravesteijn, Kippersluis, & Doorslaer, 2018). However, workers in these jobs, particularly those in farming rarely retire and continue to work even in old age (Amshoff & Reed, 2005; Natividad et al., 2014). This is particularly true in the Philippines where the pension system is still underdeveloped, forcing older people to continue working to support themselves and that of their families. Thus an increase in the share of older workers, most of whom are manual

workers, is associated with a decline in DFLE. The possibility of reverse causation, i.e., poor health motivates older people to stop working, is also very likely.

While the study has documented the association between socioeconomic indicators and regional differences in DFLE, it has not been possible to take into account other factors, such as health behaviours, due to data constraints. Further, the particular conditions in some areas of the country, such as civil unrest in the southern Philippines, which could also have contributed to the poor health status of older people in these regions, have not been taken into account. Moreover, as the study is cross-sectional, it has not been possible to establish causation between the different independent variables and DFLE. Notwithstanding these limitations, the present study has demonstrated for the first time the existence of geographic inequality in functional difficulty and DFLE among older people in the Philippines and has shown that this inequality is associated with socioeconomic factors. Therefore, addressing socioeconomic inequalities could aid in reducing regional health inequalities among older people in the Philippines.

Chapter 8: Conclusion

8.1 Thesis overview

This thesis investigates the factors associated with the health and well-being of older people in the Philippines. Guided by the fundamental cause theory (Link & Phelan, 1995; Link et al., 2008), this research focuses on the role of different types of resources in explaining inequality in health and well-being of older people. This research uses a broad definition of resources that includes traditional measures of socioeconomic status, such as education, and other types of resources such as social support (Henning-Smith, 2016; Zimmer, 2006). A network approach is added to the fundamental cause theory to take account of this broader explanatory perspective (Zimmer et al., 2016). It is argued that not only do the personal socioeconomic resources of older people matter in explaining their health and well-being but also that the resources of their children, which are an important part of their social network. Social support in this research refers to both the structural characteristics of older people's social network and the functional aspects of this social relationship (Fernández-Ballesteros, 2002). Structural characteristics are measured by older people's living arrangements, while the functional aspects are measured in terms of exchange of support between older people and their children, regardless of their residential location. Using these two aspects of social support provides a more comprehensive picture of the role of social support in the health and well-being of older people. Household living arrangements represent the role of the type of social environment where older people live in their well-being, while the exchange of support captures the impact of different types of support that flow within and beyond the household. This research argues that while the household environment plays an important role in the health and well-being of older people as shown by previous studies, the concordance of this environment with older people's preferred household environment can also influence their well-being. The relationship between living arrangement concordance and well-being of older people is informed by the person-environment fit, cognitive dissonance and self-discrepancy theories (Festinger, 1957; Higgins, 1987; Kahana, 1975; Kahana et al., 1980). The role of the different flows of exchange of support in the well-being of older people is guided by the equity and social exchange theories (Blau, 1964; Homas, 1961; Thibaut & Kelley, 1959; Walster & Berscheid, 1973).

While analysis at the national level is useful in giving an overall picture of the health and well-being of older people and the factors that influence them, it does not capture the rich geographic

diversity of the Philippine population at the regional level. Given the archipelagic make-up of the Philippines and its long history of colonization under different regimes, there is wide regional diversity in the country in terms of socioeconomic condition; cultural, ethno-religious and physical environment; and socio-political situations. To take this regional diversity into account, this research also examines the role of macro-level socioeconomic resources in disability-free life expectancy (DFLE) of older people at the regional level. This macro-level analysis provides additional insights into the role of socioeconomic resources not only in morbidity but also on mortality because DFLE combines these two in a single indicator.

8.2 Summary of main findings

Results in chapters 4 to 7 support the proposition of the fundamental cause theory that inequality in different types of resources, including education, social support, and macro-level socioeconomic factors, can explain, at least in part, the differences in the health and well-being of older people. Chapter 4 shows that the health benefits of education can be transferred from children to parents through various pathways including children's influence on changing their parents' unhealthy behaviour. Chapter 5 demonstrates that the social environment where the exchange of intergenerational support takes place and the fit of this environment with older people's preference also contributes to better subjective well-being of older people. Additionally, chapter 6 indicates that the different types of support and the direction of the flow of this support (unidirectional or bidirectional) also have implications for the well-being of older people. The role of these different types of resources found at the micro-level also extends to the macro-level analysis. Chapter 7 shows that macro-level socioeconomic factors such as poverty incidence and level of education are associated with DFLE of older men and older women.

8.2.1 The role of children's education in parental health

This study shows an important role of children's education in parental health, which is over and above that of the parents' level of education. This finding supports previous findings that education is not only an individual resource but it also represents a household or family resource that can be mobilized to benefit the health and well-being of other family members (Torssander, 2013; Yang et al., 2016; Zimmer et al., 2007).

Unlike previous research that used a single indicator of physical health, the current research employed different health indicators corresponding to the different stages of the disablement process, to assess whether the influence of children's education on parental health is dependent on the stage of the parental disablement process. These indicators include the presence of chronic disease (early stage), functional limitations (intermediate stage), and IADL and ADL disability (advanced stage). Findings show that of the four health indicators, only IADL and ADL difficulty are associated with children's education. These disability indicators correspond to the advanced stage of the disablement process and indicate a more severe condition compared with the presence of chronic condition and functional limitations because these forms of disability restrict an older person's ability to live an independent life. It is likely that it is only when older people experience a severe health condition that children's support is called upon since it is common for older Filipinos to consider minor pain resulting from chronic conditions or functional limitations as part of their daily life.

However, the effect of children's education is only statistically significant among older women. One reason for this could be older women's greater dependence on their children in terms of social support compared with men. Another reason could be the greater emotional attachments between older women and their children due to the roles that women perform over the life course. Maternal investments made over the life course make children more responsive to the health needs of their mothers than of their fathers (Zimmer, 2005).

This study shows that the health benefits of children's education are generally the same for high and low-educated older people. It also shows that one of the pathways by which children's education can influence parental health is through changing parental health behaviour. Findings show that older men with highly educated children are less likely to smoke than their counterparts with low educated children. Similarly, older women with highly educated children are more likely to engage in daily exercise than women with low educated children. These results are supportive of earlier findings that children's education may positively influence parental health directly by encouraging their parents to change their health behaviours or indirectly through 'spill-over' effects by sharing with their parents their norms regarding lifestyle, health care services and conformance with medical treatment (Bao, 2016; Friedman & Mare, 2014; Torssander, 2014).

8.2.2 Living arrangement concordance and well-being of older people

This study has shown that the majority of older Filipinos live with their children, but a significant proportion also prefer to live independently from their children. Older Filipinos are also open to the idea of living in ‘homes for the aged’, despite the stigma associated with living in institutions in the Philippines. There are several factors associated with living arrangement preference of older people, including their number of children, marital status, actual living arrangement, and health conditions. The influence of these factors on living arrangement preference is generally similar for older men and women, except for health conditions. Having ADL difficulty is associated with lower odds of independent living preference among women, and higher odds among men, although the relationship is significant only among women. This sex difference could be explained by demographic factors. Women are more likely to marry older men, and they tend to live longer than men (Mujahid, 2006; Reiss & Lee, 1988). Thus, husbands tend to need care earlier in their married life and have wives available to provide it. By the time the wives fall ill and need care, they are more likely to be widowed (Lee et al., 1993), and are more dependent on their children for caregiving. Since older men are more dependent on their spouse for caregiving, they are more likely to prefer to live independently with their spouse, whereas women are less likely to prefer to live away from their children because they are more dependent on them for social support.

Findings from the study also show that less than half of older Filipinos have living arrangement concordance. Older people’s health status is associated with their living arrangement concordance, particularly among older women. This concordance plays an important role in their subjective well-being. Corroborating the predictions of the person-environment fit, cognitive dissonance, and self-discrepancy theories (Festinger, 1957; Higgins, 1987; Kahana, 1975; Kahana et al., 1980), this study shows that older people who have coresidence discordance have lower odds of reporting good self-rated health, and psychological well-being than those with coresidence concordance. These findings not only highlight the important role of their actual living arrangement in their subjective well-being but also show that whether or not this actual arrangement is consistent with their preferred arrangement matters when it comes to their well-being. Older people’s preference may indicate their underlying needs and meeting these needs will have important implications for their health and well-being. This study shows the role of health status in moderating the relationship between living arrangement concordance and subjective well-being, particularly among older women.

The relationship between living arrangement concordance and the three indicators of subjective well-being is significant only among older women. Older women's greater emotional connections with their children engendered by their much closer interactions during their performance of their roles as a mother may motivate older women to prefer to live with their children. Women who prefer to live with their children but are in different living arrangements are likely to experience cognitive dissonance that can trigger negative outcomes, such as poor self-rated health and lower psychological well-being.

8.2.3 Intergenerational exchange of support and well-being of older people

Although the type of household where older people live has important implications for their well-being, the household is not an adequate unit of analysis when it comes to social support because the flow of support extends beyond the household. This study finds that different types of support that are exchanged across generations, and the directions of this flow of support have different implications for the well-being of older people. Contrary to the predictions of the social and exchange theories, that giving support to children is not beneficial to their well-being, findings of the current study show that, compared with receiving support only (over-benefiting), giving support only (under-benefiting), particularly financial and emotional support, is positively associated with self-rated health and psychological well-being of older people in the Philippines. The positive impact of giving support among older people could be related to the role of giving in supporting well-being by externally validating their self-worth, making them feel useful, nourishing their identity, and giving them a sense of contentment or pride just by performing their role as givers of support (Chen & Silverstein, 2000; Gierveld et al., 2012; Schatz et al., 2018).

This study also finds partial support for the proposition of the equity perspective that being involved in an exchange flow of support is beneficial to the well-being of older people. Specifically, exchange of financial support with their children is associated with higher odds of life satisfaction among older women. Curiously, the exchange of financial support is negatively associated with life satisfaction among older men. This unexpected finding may be related to the amount and intensity of the financial support exchanged. Older people may be providing more financial support than they are receiving which may lead to negative subjective well-being.

Lack of intergenerational support, particularly financial support, is negatively associated with life satisfaction among older men. Lack of exchange of support not only challenges the highly valued concept of reciprocity in Philippine society but can also reflect the financial difficulties of older people and their children. Older people's own poor socioeconomic condition may lead to psychological distress, but the knowledge that their children also experiencing similar poor economic conditions may reduce their subjective well-being.

8.2.4 The role of socioeconomic resources in explaining regional differences in DFLE in the Philippines

This study finds wide regional variation in DFLE among older men and women in the Philippines. Consistent with the predictions of fundamental cause theory, regional differences in DFLE can be explained by socioeconomic resources. Specifically, this research found several socioeconomic indicators, namely poverty incidence, GDP per capita and education, to be significantly associated with regional differences in DFLE in the Philippines. Findings of the study show that poverty incidence is negatively associated with DFLE, while higher education of both younger and older people is positively associated with DFLE. Poverty may limit older people's ability to access appropriate health care services, resulting in lower DFLE. Better education not only improves the socioeconomic condition and the ability to afford better health care, but it also enhances an individual's cognitive skills and learning, factors that are critical in maintaining positive health status (Lynch & Kaplan, 2000). This study also shows that being in the labour force, particularly among older men, is negatively associated with DFLE. This could be related to the type of work that older men in the Philippines do. Most older Filipino men work in manual occupations that have negative impact on health. One common example of manual occupations among older men is farming. Since most older Filipinos do not have social security they continue to work in these types of occupation even if they fall ill, hence higher labour force participation of older men is associated with lower DFLE.

8.3 Conclusion

This thesis has contributed to knowledge by showing that different types of resources, including children's education and social support, have wide-ranging implications for the health and well-being of older people. It furthers the fundamental cause theory, by broadening the definition of resources to include not only an individual's own resources, but the resources of other people that they have relationship. Specifically, the study shows that children's education is positively associated with older people's health, particularly among women. Living arrangement concordance has also been found to be associated with well-being of older Filipinos. These findings point to further refinement of the fundamental cause theory by demonstrating that one should not only consider the available resources, such as actual living arrangement, but should also consider whether the available resources are aligned with the ideal or preferred resources of older people. This is in line with the predictions of the cognitive dissonance theory, person-environment fit, and self-discrepancy theories that discordance between what people have and what they perceived to be the ideal state may result to poor well-being.

In addition to the availability of resources and their concordance with the preferred or ideal resources, this research demonstrates that the type of resources exchanged, and the direction of this intergenerational transfer also matter to the well-being of older people, as informed by the equity and social exchange theories. Both theories hypothesize that giving support compared with receiving support is not beneficial to well-being (Chen & Jordan, 2018; Peng, et al., 2018). However, this research did not find strong support for this hypothesis and even shows the opposite findings. This implies that application of these theories to examine the association between intergenerational support and well-being of older people should be sensitive to the type of resources that flow across generations and the direction of this flow. Different types of resources have different meanings for both the giver and the receiver, hence their implications for the well-being of older people will also be different. Departure of the current findings from findings of existing studies suggests that predictions of equity and social exchange theories are not universal and should consider the local context, such as the prevailing kinship system and traditional gender roles.

Overall, this thesis has also shown that the health and well-being of older people should not be examined in isolation but should be situated in the social relationships within which they are embedded: the family. This is very important particularly in the Philippine setting where the family remains the mainstay of support, and formal support system is relatively underdeveloped.

This study shows that older Filipinos reap the benefits of investing in the education of their children, as children's education represents an important familial resource that can be mobilized when older people experience health problems. While this study demonstrates that the upward transmission of resources can have a positive influence on the health status of older people, as in the case of children's education, this research also shows that the downward transmission of resources, in the case of social support, can have a favourable impact on older people's subjective well-being. Results show that older Filipinos who provide support to their children experience better subjective well-being than those who receive support from their children.

The type of the social environment where the transfer of social support takes place and the concordance of this environment with older people's preference also matter in relation to their well-being. Findings indicate that older people who have living arrangement discordance have poor self-rated health and lower subjective well-being than those with living arrangement concordance. Beyond the immediate social environment where older people conduct their daily lives, the larger socioeconomic conditions of the Philippines society also has an impact on the well-being of older people. Macro-level factors such as poverty incidence, regional economic conditions and access to health professionals, influence the well-being of older people.

Sex differences on the relationship between different types of resources and health and well-being of older people is also noted in the study. The positive association between having highly educated children and having living arrangement concordance is more consistent among older women than older men. Gender roles could be related to this sex differences. Domestic roles that women play over the life course makes them more valued as household members and makes them more emotionally connected to their children. This makes children more responsive to their parents' needs and facilitate older people's living arrangement concordance. These results could inform policy formulation in the Philippines and other low- or middle-income countries. Government efforts to encourage coresidence between children and older

people should also consider their living arrangement concordance, particularly among older women as it has important implications for their well-being. Improving financial independence of older people through employment opportunities or social pension could also benefit older people as it enhances their ability to provide financial support to their children, which is associated with positive well-being.

As the ageing of the population has significant implications for individuals, families, communities and the society at large (Knodel & Chayovan, 2009) the roles of each of these units in the health and well-being of older people should be examined simultaneously. This research has laid some groundwork towards this direction by looking at how different forms of resources at the individual, familial and societal level are associated with the health and well-being of older people. Future research should devote more attention to how these resources at different levels are intertwined to promote the well-being of older people. The use of qualitative and longitudinal data can enrich the insights derived from this current study.

Appendix

Table 9. 1. Counts of chronic disease, functional limitation, IADL and ADL difficulty

	Men	Women	Both sexes	p
Number of chronic disease				0.228
0	46.5	40.7	43.1	
1	30.0	33.6	32.1	
2	17.7	17.9	17.8	
3	4.8	6.4	5.7	
4	1.1	1.4	1.3	
5	0.0	0.0	0.0	
Number of functional limitation				0.063
0	52.2	39.1	44.5	
1	13.0	14.7	14.0	
2	9.9	11.2	10.7	
3	6.0	9.3	7.9	
4	5.4	6.0	5.7	
5	3.7	6.1	5.1	
6	4.4	5.3	4.9	
7	3.2	3.9	3.6	
8	0.7	1.0	0.9	
9	0.8	2.7	1.9	
10	0.7	0.8	0.7	
Number of IADL difficulty				0.332
0	83.6	79.7	81.3	
1	9.4	10.2	9.9	
2	2.7	3.9	3.4	
3	1.0	1.9	1.5	
4	1.4	1.4	1.4	
5	0.3	1.9	1.3	
6	0.9	0.7	0.8	
7	0.7	0.3	0.4	

	Men	Women	Both sexes	p
Number of ADL difficulty				0.100
0	87.8	82.5	84.7	
1	5.6	7.6	6.8	
2	1.3	2.3	1.9	
3	0.7	1.8	1.4	
4	0.8	0.9	0.9	
5	0.8	1.5	1.2	
6	1.1	2.2	1.7	
7	1.9	1.2	1.5	
Number of cases	1171	1161	2832	
% with angina, myocardial infarction	19.3	22.4	21.1	0.384
Number of cases	1156	1621	2777	
% with cancer	1.3	0.8	1.0	0.556
Number of cases	1162	1650	2812	
% with cerebrovascular disease (haemorrhage, infarction, stroke, etc.	9.4	8.6	8.9	0.572
Number of cases	1167	1656	2823	
% with high blood pressure	30.6	40.4	36.4	0.010
Number of cases	1155	1642	2797	
% with diabetes	9.0	11.3	10.4	0.100
Number of cases	1128	1606	2734	
% with respiratory illness	15.8	11.9	13.5	0.001
Number of cases	1164	1651	2815	

Table 9. 2. Logistic regression adjusted odds ratio for the presence of chronic disease among older Filipino men

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older Person's characteristics						
Age	1.02	0.876	0.96	0.771	0.96	0.760
Age squared	1.00	0.912	1.00	0.760	1.00	0.752
Currently married (ref =unmarried)	1.44	0.235	1.44	0.204	1.46	0.195
At least primary education (ref=below primary)	1.33	0.323	1.29	0.408		
Perceived income adequacy (ref =enough income)		0.380		0.372		0.277
Some difficulty	1.21	0.170	1.22	0.186	1.21	0.163
Considerable difficulty	1.00	0.984	1.02	0.938	0.98	0.945
Childhood poverty (ref=otherwise)	0.92	0.519	0.93	0.569	0.91	0.459
Childhood health (ref=otherwise)	1.02	0.910	1.04	0.828	1.05	0.792
Number of living children	0.98	0.097	0.99	0.330	0.99	0.460
Urban (ref =rural)	1.60	0.096	1.62	0.067	1.63	0.071
Child's characteristics						
Age			1.08	0.521	1.09	0.497
Age squared			1.00	0.495	1.00	0.480
Male (reference =female)			0.96	0.655	0.95	0.571
Married (ref=unmarried)			1.02	0.933	1.03	0.873
Education (ref= below secondary)				0.307		
Secondary			0.76	0.392		
Tertiary			0.85	0.113		
Residential Location (ref =coresident)				0.447		0.303
Lives next door			0.74	0.115	0.79	0.203
Lives in the same town			0.73	0.341	0.72	0.354
Lives in another town			0.76	0.353	0.76	0.380
Lives abroad			1.09	0.448	1.09	0.486
Interaction between parent's and child's education						
Below primary x secondary					0.71	0.295
Below primary x tertiary					1.28	0.187
Primary and above x secondary					1.37	0.626
Primary and above x tertiary					1.03	0.927
Primary and above x below secondary					1.93	0.143
Below primary x below secondary (ref)						
Number of cases	1141		1141		1141	

Table 9. 3. Logistic regression adjusted odds ratio for the presence of chronic disease among older Filipino women

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older Person's characteristics						
Age	1.42	0.028	1.45	0.030	1.47	0.041
Age squared	1.00	0.029	1.00	0.033	1.00	0.045
Currently married (ref =unmarried)	0.99	0.855	0.98	0.798	0.98	0.774
At least primary education (ref=below primary)	1.19	0.448	1.16	0.491		
Perceived income adequacy (ref =enough income)		0.976		0.983		0.970
Some difficulty	0.98	0.950	1.01	0.981	1.00	0.990
Considerable difficulty	0.93	0.825	0.94	0.845	0.92	0.800
Childhood poverty (ref=otherwise)	1.08	0.677	1.09	0.662	1.08	0.694
Childhood health (ref=otherwise)	0.85	0.437	0.88	0.506	0.88	0.490
Number of living children	1.00	0.918	1.01	0.888	1.00	0.944
Urban (ref =rural)	1.83	0.017	1.86	0.010	1.84	0.013
Child's characteristics						
Age			0.99	0.772	0.99	0.792
Age squared			1.00	0.979	1.00	0.971
Male (reference =female)			1.23	0.140	1.26	0.063
Married (ref=unmarried)			0.90	0.443	0.90	0.431
Education (ref= below secondary)				0.087		
Secondary			0.85	0.384		
Tertiary			1.06	0.758		
Residential Location (ref =coresident)				0.670		0.609
Lives next door			1.14	0.568	1.15	0.532
Lives in the same town			0.81	0.385	0.80	0.340
Lives in another town			1.06	0.854	1.05	0.859
Lives abroad			0.96	0.898	0.97	0.931
Interaction between parent's and child's education						
Below primary x secondary					0.75	0.528
Below primary x tertiary					1.25	0.468
Primary and above x secondary					1.13	0.721
Primary and above x tertiary					1.12	0.726
Primary and above x below secondary					1.12	0.856
Below primary x below secondary (ref)						
Number of cases	1608		1608		1608	

Table 9. 4. Logistic regression adjusted odds ratio for the presence of functional limitations among older Filipino men

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older Person's characteristics						
Age	0.51	0.056	0.46	0.069	0.46	0.068
Age squared	1.01	0.037	1.01	0.045	1.01	0.045
Currently married (ref =unmarried)	1.25	0.208	1.22	0.279	1.22	0.281
At least primary education (ref=below primary)	0.66	0.342	0.68	0.407		
Perceived income adequacy (ref =enough income)		0.005		0.015		0.016
Some difficulty	1.77	0.006	1.75	0.007	1.74	0.006
Considerable difficulty	1.65	0.025	1.56	0.091	1.55	0.089
Childhood poverty (ref=otherwise)	0.73	0.258	0.69	0.191	0.68	0.191
Childhood health (ref=otherwise)	1.08	0.859	1.07	0.880	1.08	0.876
Number of living children	0.99	0.662	1.00	0.914	1.00	0.948
Urban (ref =rural)	1.56	0.120	1.53	0.130	1.53	0.126
Child's characteristics						
Age			1.08	0.463	1.08	0.459
Age squared			1.00	0.388	1.00	0.386
Male (reference =female)			0.77	0.066	0.76	0.066
Married (ref=unmarried)			0.99	0.975	1.00	0.989
Education (ref= below secondary)				0.807		
Secondary			0.90	0.617		
Tertiary			0.92	0.514		
Residential Location (ref =coresident)				0.014		0.014
Lives next door			1.72	0.036	1.74	0.036
Lives in the same town			1.00	0.995	1.00	0.990
Lives in another town			1.07	0.743	1.07	0.745
Lives abroad			1.45	0.116	1.44	0.106
Interaction between parent's and child's education						
Below primary x secondary					0.87	0.589
Below primary x tertiary					0.99	0.976
Primary and above x secondary					0.66	0.319
Primary and above x tertiary					0.61	0.295
Primary and above x below secondary					0.71	0.526
Below primary x below secondary (ref)						
Number of cases	1141		1141		1141	

Table 9. 5. Logistic regression adjusted odds ratio for the presence of functional limitations among older Filipino women

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older Person's characteristics						
Age	0.74	0.053	0.75	0.124	0.78	0.184
Age squared	1.00	0.016	1.00	0.048	1.00	0.072
Currently married (ref =unmarried)	0.95	0.397	0.95	0.282	0.94	0.039
At least primary education (ref=below primary)	0.91	0.510	0.90	0.408		
Perceived income adequacy (ref =enough income)		0.003		0.005		0.003
Some difficulty	2.20	0.017	2.13	0.019	2.10	0.024
Considerable difficulty	2.83	0.000	2.84	0.001	2.78	0.000
Childhood poverty (ref=otherwise)	1.18	0.488	1.11	0.649	1.09	0.696
Childhood health (ref=otherwise)	0.89	0.709	0.93	0.793	0.94	0.824
Number of living children	0.98	0.536	0.98	0.541	0.98	0.469
Urban (ref =rural)	1.52	0.007	1.55	0.001	1.52	0.002
Child's characteristics						
Age			0.96	0.560	0.96	0.559
Age squared			1.00	0.456	1.00	0.458
Male (reference =female)			1.24	0.016	1.31	0.020
Married (ref=unmarried)			0.66	0.103	0.66	0.081
Education (ref= below secondary)				0.139		
Secondary			0.88	0.675		
Tertiary			0.72	0.295		
Residential Location (ref =coresident)				0.232		0.238
Lives next door			0.60	0.202	0.61	0.200
Lives in the same town			0.97	0.910	0.94	0.806
Lives in another town			0.93	0.611	0.94	0.623
Lives abroad			1.35	0.618	1.38	0.591
Interaction between parent's and child's education						
Below primary x secondary					0.63	0.219
Below primary x tertiary					0.86	0.706
Primary and above x secondary					0.93	0.875
Primary and above x tertiary					0.52	0.173
Primary and above x below secondary					0.64	0.261
Below primary x below secondary (ref)						
Number of cases	1608		1608		1608	

Table 9. 6. Logistic regression adjusted odds ratio for the existence of IADL difficulty among older Filipino men

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older Person's characteristics						
Age	0.59	0.237	0.50	0.103	0.49	0.111
Age squared	1.00	0.160	1.01	0.067	1.01	0.069
Currently married (ref =unmarried)	1.50	0.148	1.73	0.076	1.78	0.108
At least primary education (ref=below primary)	0.91	0.594	0.96	0.799		
Perceived income adequacy (ref =enough income)		0.056		0.081		0.062
Some difficulty	2.37	0.089	2.45	0.081	2.47	0.076
Considerable difficulty	2.90	0.010	2.75	0.019	2.87	0.015
Childhood poverty (ref=otherwise)	0.82	0.164	0.78	0.054	0.80	0.058
Childhood health (ref=otherwise)	1.64	0.026	1.57	0.068	1.56	0.073
Number of living children	0.99	0.781	1.00	0.991	1.00	0.972
Urban (ref =rural)	3.77	0.001	3.95	0.000	3.99	0.000
Child's characteristics						
Age			1.28	0.126	1.27	0.125
Age squared			1.00	0.132	1.00	0.125
Male (reference =female)			1.07	0.795	1.06	0.835
Married (ref=unmarried)			1.36	0.214	1.34	0.257
Education (ref= below secondary)				0.511		
Secondary			1.50	0.402		
Tertiary			0.83	0.596		
Residential Location (ref =coresident)				0.033		0.044
Lives next door			0.87	0.722	0.83	0.686
Lives in the same town			0.71	0.494	0.71	0.514
Lives in another town			0.95	0.879	0.97	0.917
Lives abroad			2.65	0.204	2.72	0.166
Interaction between parent's and child's education						
Below primary x secondary					1.47	0.338
Below primary x tertiary					0.56	0.334
Primary and above x secondary					1.15	0.864
Primary and above x tertiary					0.81	0.667
Primary and above x below secondary					0.57	0.467
Below primary x below secondary (ref)						
Number of cases	1141		1141		1141	

Table 9. 7. Logistic regression adjusted odds ratio for the presence of IADL difficulty among older Filipino women

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older Person's characteristics						
Age	1.25	0.361	1.33	0.246	1.37	0.199
Age squared	1.00	0.574	1.00	0.452	1.00	0.366
Currently married (ref =unmarried)	1.03	0.784	1.07	0.628	1.07	0.590
At least primary education (ref=below primary)	0.96	0.799	1.22	0.130		
Perceived income adequacy (ref =enough income)		0.021		0.223		0.317
Some difficulty	1.08	0.531	0.99	0.924	0.98	0.863
Considerable difficulty	1.80	0.003	1.49	0.073	1.44	0.107
Childhood poverty (ref=otherwise)	0.91	0.768	0.92	0.807	0.90	0.751
Childhood health (ref=otherwise)	0.85	0.113	0.89	0.319	0.88	0.342
Number of living children	0.95	0.031	0.96	0.129	0.96	0.126
Urban (ref =rural)	1.96	0.150	2.01	0.135	2.01	0.124
Child's characteristics						
Age			0.88	0.026	0.89	0.045
Age squared			1.00	0.047	1.00	0.073
Male (reference =female)			1.08	0.529	1.14	0.389
Married (ref=unmarried)			1.32	0.371	1.35	0.245
Education (ref= below secondary)				0.144		
Secondary			0.53	0.036		
Tertiary			0.39	0.040		
Residential Location (ref =coresident)				0.933		0.818
Lives next door			1.06	0.829	1.06	0.799
Lives in the same town			0.91	0.513	0.86	0.289
Lives in another town			0.97	0.896	0.92	0.638
Lives abroad			0.92	0.427	0.98	0.803
Interaction between parent's and child's education						
Below primary x secondary					0.46	0.187
Below primary x tertiary					0.68	0.516
Primary and above x secondary					0.93	0.854
Primary and above x tertiary					0.40	0.104
Primary and above x below secondary					1.80	0.590
Below primary x below secondary (ref)						
Number of cases	1608		1608		1608	

Table 9. 8. Logistic regression adjusted odds ratio for the presence of ADL difficulty among older Filipino men

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older Person's characteristics						
Age	0.90	0.678	0.89	0.590	0.90	0.608
Age squared	1.00	0.459	1.00	0.377	1.00	0.390
Currently married (ref =unmarried)	0.88	0.600	0.99	0.973	1.01	0.972
At least primary education (ref=below primary)	1.01	0.975	1.03	0.931		
Perceived income adequacy (ref =enough income)		0.007		0.013		0.009
Some difficulty	2.48	0.002	2.38	0.002	2.42	0.002
Considerable difficulty	1.76	0.169	1.58	0.280	1.60	0.256
Childhood poverty (ref=otherwise)	0.69	0.131	0.70	0.166	0.70	0.140
Childhood health (ref=otherwise)	1.38	0.201	1.40	0.208	1.41	0.219
Number of living children	1.04	0.286	1.04	0.405	1.03	0.430
Urban (ref =rural)	1.79	0.078	1.86	0.076	1.85	0.077
Child's characteristics						
Age			1.06	0.646	1.06	0.656
Age squared			1.00	0.707	1.00	0.715
Male (reference =female)			0.92	0.655	0.92	0.650
Married (ref=unmarried)			0.89	0.638	0.88	0.606
Education (ref= below secondary)				0.058		
Secondary			1.19	0.687		
Tertiary			0.70	0.432		
Residential Location (ref =coresident)				0.099		0.079
Lives next door			0.57	0.077	0.56	0.059
Lives in the same town			0.79	0.412	0.80	0.443
Lives in another town			0.94	0.789	0.94	0.815
Lives abroad			1.44	0.509	1.49	0.468
Interaction between parent's and child's education						
Below primary x secondary					1.36	0.499
Below primary x tertiary					0.62	0.383
Primary and above x secondary					1.10	0.850
Primary and above x tertiary					0.81	0.691
Primary and above x below secondary					1.19	0.856
Below primary x below secondary (ref)						
Number of cases	1141		1141		1141	

Table 9. 9. Logistic regression adjusted odds ratio for the presence of ADL difficulty among older Filipino women

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older Person's characteristics						
Age	0.83	0.194	0.84	0.133	0.86	0.220
Age squared	1.00	0.074	1.00	0.037	1.00	0.063
Currently married (ref =unmarried)	0.97	0.855	1.00	0.984	1.01	0.976
At least primary education (ref=below primary)	1.14	0.483	1.41	0.150		
Perceived income adequacy (ref =enough income)		0.000		0.004		0.005
Some difficulty	1.14	0.605	1.00	0.986	0.99	0.957
Considerable difficulty	2.97	0.000	2.43	0.001	2.40	0.001
Childhood poverty (ref=otherwise)	0.96	0.846	0.95	0.831	0.92	0.737
Childhood health (ref=otherwise)	0.98	0.932	1.01	0.982	1.01	0.986
Number of living children	0.99	0.839	1.00	0.908	0.99	0.738
Urban (ref =rural)	2.04	0.040	2.08	0.028	2.07	0.028
Child's characteristics						
Age			0.94	0.022	0.94	0.021
Age squared			1.00	0.073	1.00	0.080
Male (reference =female)			1.05	0.792	1.10	0.589
Married (ref=unmarried)			1.03	0.857	1.04	0.786
Education (ref= below secondary)				0.020		
Secondary			0.69	0.076		
Tertiary			0.40	0.003		
Residential Location (ref =coresident)				0.417		0.241
Lives next door			0.78	0.650	0.80	0.677
Lives in the same town			0.89	0.658	0.85	0.559
Lives in another town			1.13	0.666	1.12	0.683
Lives abroad			0.72	0.197	0.75	0.235
Interaction between parent's and child's education						
Below primary x secondary					0.51	0.005
Below primary x tertiary					0.58	0.007
Primary and above x secondary					1.22	0.600
Primary and above x tertiary					0.44	0.001
Primary and above x below secondary					1.29	0.588
Below primary x below secondary (ref)						
Number of cases	1608		1608		1608	

Table 9. 10. Logistic regression adjusted odds ratio for current smoking among older Filipino men

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older Person's characteristics						
Age	0.91	0.511	0.96	0.852	0.96	0.842
Age squared	1.00	0.962	1.00	0.818	1.00	0.820
Currently married (ref =unmarried)	0.51	0.122	0.51	0.136	0.52	0.140
At least primary education (ref=below primary)	0.94	0.763	0.99	0.967		
Perceived income adequacy (ref =enough income)		0.217		0.340		0.328
Some difficulty	1.11	0.704	1.06	0.840	1.07	0.809
Considerable difficulty	1.53	0.085	1.41	0.151	1.35	0.129
Childhood poverty (ref=otherwise)	1.15	0.355	1.22	0.197	1.19	0.217
Childhood health (ref=otherwise)	1.42	0.087	1.49	0.053	1.52	0.057
Number of living children	1.11	0.027	1.10	0.022	1.10	0.018
Urban (ref =rural)	0.90	0.746	0.92	0.740	0.92	0.753
Child's characteristics						
Age			0.97	0.674	0.98	0.734
Age squared			1.00	0.702	1.00	0.760
Male (reference =female)			1.09	0.665	1.10	0.664
Married (ref=unmarried)			0.89	0.629	0.89	0.670
Education (ref= below secondary)				0.007		
Secondary			0.53	0.027		
Tertiary			0.53	0.001		
Residential Location (ref =coresident)				0.616		0.582
Lives next door			0.87	0.747	0.90	0.811
Lives in the same town			1.30	0.366	1.31	0.360
Lives in another town			1.19	0.247	1.19	0.253
Lives abroad			0.89	0.665	0.91	0.718
Interaction between parent's and child's education						
Below primary x secondary					0.65	0.226
Below primary x tertiary					0.78	0.187
Primary and above x secondary					0.67	0.219
Primary and above x tertiary					0.60	0.005
Primary and above x below secondary					2.30	0.075
Below primary x below secondary (ref)						
Number of cases	1141		1141		1141	

Table 9. 11. Logistic regression adjusted odds ratio for current smoking among older Filipino women

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older Person's characteristics						
Age	1.16	0.505	1.10	0.678	1.09	0.691
Age squared	1.00	0.488	1.00	0.626	1.00	0.636
Currently married (ref =unmarried)	0.81	0.375	0.82	0.340	0.82	0.351
At least primary education (ref=below primary)	0.72	0.058	0.80	0.183		
Perceived income adequacy (ref =enough income)		0.819		0.853		0.861
Some difficulty	1.02	0.760	0.97	0.673	0.97	0.710
Considerable difficulty	1.21	0.533	1.15	0.668	1.16	0.647
Childhood poverty (ref=otherwise)	1.11	0.379	1.12	0.420	1.12	0.396
Childhood health (ref=otherwise)	1.30	0.377	1.33	0.353	1.33	0.352
Number of living children	1.08	0.292	1.10	0.194	1.10	0.197
Urban (ref =rural)	0.77	0.551	0.71	0.463	0.72	0.476
Child's characteristics						
Age			1.06	0.525	1.06	0.521
Age squared			1.00	0.606	1.00	0.606
Male (reference =female)			1.08	0.489	1.07	0.483
Married (ref=unmarried)			0.89	0.665	0.89	0.654
Education (ref= below secondary)				0.190		
Secondary			0.80	0.390		
Tertiary			0.62	0.061		
Residential Location (ref =coresident)				0.203		0.255
Lives next door			0.98	0.881	0.99	0.925
Lives in the same town			0.88	0.390	0.88	0.388
Lives in another town			0.69	0.018	0.69	0.024
Lives abroad			1.10	0.783	1.09	0.801
Interaction between parent's and child's education						
Below primary x secondary					0.80	0.545
Below primary x tertiary					0.55	0.004
Primary and above x secondary					0.60	0.001
Primary and above x tertiary					0.50	0.004
Primary and above x below secondary					0.70	0.279
Below primary x below secondary (ref)						

Table 9. 12. Logistic regression adjusted odds ratio for current drinking among older Filipino men

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older Person's characteristics						
Age	0.74	0.072	0.74	0.110	0.74	0.105
Age squared	1.00	0.150	1.00	0.175	1.00	0.168
Currently married (ref =unmarried)	0.63	0.085	0.64	0.091	0.64	0.094
At least primary education (ref=below primary)	1.14	0.629	1.12	0.704		
Perceived income adequacy (ref =enough income)		0.183		0.217		0.290
Some difficulty	1.01	0.973	0.96	0.840	0.96	0.822
Considerable difficulty	0.73	0.096	0.70	0.103	0.71	0.132
Childhood poverty (ref=otherwise)	1.29	0.031	1.26	0.018	1.26	0.018
Childhood health (ref=otherwise)	1.06	0.839	1.10	0.751	1.10	0.753
Number of living children	1.02	0.741	1.01	0.809	1.01	0.815
Urban (ref =rural)	0.83	0.120	0.83	0.200	0.83	0.213
Child's characteristics						
Age			1.06	0.390	1.06	0.371
Age squared			1.00	0.237	1.00	0.216
Male (reference =female)			1.07	0.497	1.06	0.516
Married (ref=unmarried)			0.58	0.007	0.58	0.006
Education (ref= below secondary)				0.062		
Secondary			1.33	0.230		
Tertiary			1.06	0.809		
Residential Location (ref =coresident)				0.781		0.833
Lives next door			1.17	0.550	1.17	0.539
Lives in the same town			1.22	0.491	1.21	0.496
Lives in another town			1.25	0.278	1.25	0.276
Lives abroad			1.49	0.306	1.49	0.306
Interaction between parent's and child's education						
Below primary x secondary					1.27	0.360
Below primary x tertiary					1.04	0.909
Primary and above x secondary					1.48	0.368
Primary and above x tertiary					1.14	0.701
Primary and above x below secondary					1.00	0.994
Below primary x below secondary (ref)						
Number of cases	1140		1140		1140	

Table 9. 13. Logistic regression adjusted odds ratio for current drinking among older Filipino women

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older Person's characteristics						
Age	1.30	0.134	1.18	0.516	1.20	0.521
Age squared	1.00	0.088	1.00	0.376	1.00	0.397
Currently married (ref =unmarried)	1.17	0.351	1.15	0.430	1.15	0.409
At least primary education (ref=below primary)	1.18	0.028	1.20	0.023		
Perceived income adequacy (ref =enough income)		0.064		0.106		0.089
Some difficulty	1.35	0.085	1.30	0.079	1.28	0.103
Considerable difficulty	0.88	0.309	0.84	0.173	0.84	0.162
Childhood poverty (ref=otherwise)	0.87	0.637	0.83	0.532	0.83	0.509
Childhood health (ref=otherwise)	1.34	0.170	1.28	0.218	1.29	0.208
Number of living children	0.99	0.884	1.00	0.905	1.00	0.960
Urban (ref =rural)	0.76	0.533	0.79	0.520	0.78	0.501
Child's characteristics						
Age			1.15	0.444	1.15	0.449
Age squared			1.00	0.537	1.00	0.540
Male (reference =female)			0.81	0.529	0.83	0.560
Married (ref=unmarried)			2.09	0.016	2.07	0.015
Education (ref= below secondary)				0.438		
Secondary			0.97	0.924		
Tertiary			0.80	0.535		
Residential Location (ref =coresident)				0.363		0.335
Lives next door			0.41	0.116	0.42	0.122
Lives in the same town			0.89	0.699	0.88	0.679
Lives in another town			1.14	0.558	1.18	0.489
Lives abroad			0.95	0.821	0.97	0.859
Interaction between parent's and child's education						
Below primary x secondary					0.69	0.317
Below primary x tertiary					0.75	0.605
Primary and above x secondary					1.14	0.751
Primary and above x tertiary					0.79	0.494
Primary and above x below secondary					0.63	0.209
Below primary x below secondary (ref)						
Number of cases	1608		1608		1608	

Table 9. 14. Logistic regression adjusted odds ratio for daily exercise among older Filipino men

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older Person's characteristics						
Age	1.09	0.505	1.09	0.490	1.10	0.531
Age squared	1.00	0.368	1.00	0.368	1.00	0.422
Currently married (ref =unmarried)	0.74	0.194	0.75	0.204	0.73	0.200
At least primary education (ref=below primary)	0.99	0.984	0.89	0.792		
Perceived income adequacy (ref =enough income)		0.636		0.676		0.476
Some difficulty	0.83	0.311	0.83	0.359	0.80	0.283
Considerable difficulty	0.83	0.516	0.86	0.640	0.91	0.809
Childhood poverty (ref=otherwise)	0.87	0.245	0.87	0.256	0.88	0.276
Childhood health (ref=otherwise)	1.29	0.470	1.35	0.375	1.35	0.383
Number of living children	0.99	0.519	0.98	0.384	0.98	0.338
Urban (ref =rural)	0.79	0.401	0.82	0.508	0.82	0.517
Child's characteristics						
Age			1.02	0.794	1.01	0.878
Age squared			1.00	0.923	1.00	0.988
Male (reference =female)			1.00	0.996	0.98	0.853
Married (ref=unmarried)			0.59	0.004	0.59	0.002
Education (ref= below secondary)				0.296		
Secondary			0.97	0.926		
Tertiary			1.18	0.657		
Residential Location (ref =coresident)				0.622		0.658
Lives next door			0.95	0.775	0.93	0.708
Lives in the same town			0.76	0.258	0.75	0.233
Lives in another town			1.10	0.493	1.11	0.439
Lives abroad			0.82	0.297	0.79	0.209
Interaction between parent's and child's education						
Below primary x secondary					0.63	0.087
Below primary x tertiary					0.81	0.538
Primary and above x secondary					0.73	0.452
Primary and above x tertiary					0.78	0.484
Primary and above x below secondary					0.28	0.122
Below primary x below secondary (ref)						
Number of cases	1130		1130		1130	

Table 9. 15. Logistic regression adjusted odds ratio for daily exercise among older women

	Model 1		Model 2		Model 3	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Older Person's characteristics						
Age	1.50	0.218	1.59	0.083	1.59	0.099
Age squared	1.00	0.204	1.00	0.076	1.00	0.092
Currently married (ref =unmarried)	1.00	0.984	1.02	0.907	1.03	0.897
At least primary education (ref=below primary)	1.42	0.157	1.44	0.155		
Perceived income adequacy (ref =enough income)		0.066		0.049		0.033
Some difficulty	0.86	0.227	0.83	0.149	0.84	0.158
Considerable difficulty	0.48	0.020	0.46	0.014	0.46	0.010
Childhood poverty (ref=otherwise)	1.16	0.158	1.15	0.270	1.16	0.251
Childhood health (ref=otherwise)	1.32	0.029	1.27	0.055	1.27	0.063
Number of living children	1.04	0.113	1.03	0.195	1.03	0.169
Urban (ref =rural)	0.64	0.377	0.61	0.325	0.61	0.337
Child's characteristics						
Age			0.97	0.652	0.97	0.636
Age squared			1.00	0.594	1.00	0.579
Male (reference =female)			0.84	0.209	0.83	0.150
Married (ref=unmarried)			0.82	0.225	0.83	0.233
Education (ref= below secondary)				0.055		
Secondary			1.60	0.011		
Tertiary			1.15	0.184		
Residential Location (ref =coresident)				0.638		0.709
Lives next door			1.19	0.192	1.17	0.210
Lives in the same town			1.01	0.978	1.01	0.955
Lives in another town			1.27	0.151	1.26	0.177
Lives abroad			0.79	0.409	0.79	0.388
Interaction between parent's and child's education						
Below primary x secondary					1.92	0.044
Below primary x tertiary					1.21	0.468
Primary and above x secondary					2.28	0.037
Primary and above x tertiary					1.87	0.062
Primary and above x below secondary					2.11	0.166
Below primary x below secondary (ref)						
Number of cases	1587		1587		1587	

Table 9. 16. Odds ratios from logistic regression models predicting healthy self-rated health among older Filipino men

	Model 1		Model 2		Model 3		Model 4	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
<i>Socioeconomic and demographic characteristics of older persons</i>								
Age	1.03	0.958	1.03	0.963	0.85	0.792	0.85	0.783
Age squared	1.00	0.920	1.00	0.929	1.00	0.799	1.00	0.788
Currently married (ref = unmarried)	0.95	0.769	0.88	0.546	1.02	0.914	0.96	0.845
At least primary education (ref=below primary)	1.49	0.014	1.50	0.010	1.53	0.000	1.54	0.000
Working (ref = not working)	1.67	0.035	1.68	0.037	1.41	0.033	1.41	0.041
Perceived income adequacy (ref = enough income)		0.183		0.194		0.183		0.206
Some difficulty	0.80	0.321	0.80	0.341	0.90	0.519	0.90	0.538
Considerable difficulty	0.40	0.049	0.40	0.054	0.43	0.049	0.43	0.059
Number of children	1.03	0.603	1.02	0.686	1.04	0.490	1.03	0.566
Urban (ref =rural)	0.64	0.120	0.63	0.109	0.73	0.405	0.73	0.375
<i>Socioeconomic and demographic characteristics of children</i>								
Age	1.00	0.988	1.00	0.975	0.99	0.921	0.99	0.950
Age squared	1.00	0.999	1.00	0.976	1.00	0.951	1.00	0.985
Sex composition (ref = both sons and daughters)		0.149		0.141		0.056		0.062
All sons	0.58	0.055	0.57	0.049	0.58	0.018	0.59	0.019
All daughters	0.77	0.570	0.77	0.575	0.64	0.419	0.66	0.448
All children are married (ref = at least one single)	1.08	0.809	1.10	0.735	1.21	0.476	1.24	0.389
Education composition (ref = no children with college education)		0.369		0.288		0.360		0.331
Some children with college education	1.22	0.349	1.23	0.314	1.28	0.227	1.28	0.192
All children with college education	1.42	0.133	1.44	0.097	1.42	0.151	1.41	0.131
All children are working (ref = at least one child is not working)	1.06	0.897	1.06	0.900	1.12	0.823	1.12	0.809
<i>Health conditions of older persons</i>								

	Model 1		Model 2		Model 3		Model 4	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
With chronic disease (ref = without chronic disease)					0.39	0.001	0.38	0.001
Functional limitation (ref = without functional limitation)					0.61	0.018	0.61	0.020
IADL (ref = without IADL)					0.71	0.598	0.69	0.566
ADL (ref = without ADL)					0.22	0.011	0.21	0.009
Living arrangements concordance (ref = coresidence concordance)				0.625				0.677
Independent living concordance			1.06	0.864			1.22	0.570
Independent living discordance			1.28	0.155			1.27	0.212
Coresidence discordance			1.10	0.787			0.92	0.799
Number of cases	1076		1076		1076		1076	

Table 9. 17. Odds ratios from logistic regression models predicting healthy self-rated health among older Filipino women

	Model 1		Model 2		Model 3		Model 4	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
<i>Socioeconomic and demographic characteristics of older persons</i>								
Age	0.94	0.645	0.98	0.900	0.93	0.526	0.97	0.828
Age squared	1.00	0.771	1.00	0.951	1.00	0.549	1.00	0.900
Currently married (ref = unmarried)	0.81	0.280	0.83	0.323	0.76	0.197	0.79	0.276
At least primary education (ref=below primary)	0.82	0.348	0.82	0.323	0.84	0.456	0.84	0.398
Working (ref = not working)	1.10	0.361	1.14	0.243	0.99	0.931	1.04	0.717
Perceived income adequacy (ref = enough income)		0.048		0.039		0.036		0.034
Some difficulty	1.12	0.708	1.10	0.753	1.24	0.490	1.20	0.568
Considerable difficulty	0.61	0.132	0.59	0.138	0.72	0.331	0.71	0.325
Number of children	1.05	0.327	1.04	0.482	1.04	0.466	1.03	0.610
Urban (ref =rural)	0.82	0.366	0.77	0.244	1.02	0.948	0.95	0.848
<i>Socioeconomic and demographic characteristics of children</i>								
Age	1.28	0.060	1.29	0.042	1.34	0.050	1.34	0.035
Age squared	1.00	0.066	1.00	0.047	1.00	0.059	1.00	0.041
Sex composition (ref = both sons and daughters)		0.195		0.151		0.226		0.180
All sons	1.57	0.349	1.57	0.363	1.78	0.244	1.76	0.272
All daughters	2.36	0.063	2.56	0.055	2.25	0.085	2.39	0.070
All children are married (ref = at least one single)	0.85	0.521	0.96	0.854	0.83	0.477	0.95	0.837
Education composition (ref = no children with college education)		0.465		0.552		0.440		0.479
Some children with college education	1.33	0.259	1.29	0.293	1.37	0.178	1.33	0.199
All children with college education	1.10	0.828	1.06	0.897	0.97	0.930	0.90	0.772
All children are working (ref = at least one child is not working)	1.22	0.516	1.27	0.466	1.28	0.310	1.34	0.265

	Model 1		Model 2		Model 3		Model 4	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
<i>Health conditions of older persons</i>								
With chronic disease (ref = without chronic disease)					0.47	0.000	0.46	0.000
Functional limitation (ref = without functional limitation)					0.53	0.001	0.54	0.003
IADL (ref = without IADL)					1.21	0.625	1.11	0.767
ADL (ref = without ADL)					0.66	0.307	0.65	0.285
Living arrangements concordance (ref = coresidence concordance)				0.001				0.001
Independent living concordance			0.48	0.048			0.46	0.088
Independent living discordance			0.95	0.802			0.86	0.449
Coresidence discordance			0.27	0.003			0.23	0.001
Number of cases	1473		1473		1473		1473	

Table 9. 18. Odds ratios from multinomial logistic regression models predicting life satisfaction among older Filipino men

	Model 1		Model 2		Model 3		Model 4	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
Somewhat satisfied vs not satisfied								
<i>Socioeconomic and demographic characteristics of older persons</i>								
Age	0.99	0.968	1.02	0.917	0.94	0.679	0.95	0.765
Age squared	1.00	0.970	1.00	0.850	1.00	0.731	1.00	0.840
Currently married (ref = unmarried)	1.89	0.065	2.13	0.034	1.89	0.055	2.15	0.027
At least primary education (ref=below primary)	0.92	0.859	0.92	0.872	0.88	0.762	0.88	0.774
Working (ref = not working)	0.94	0.500	0.94	0.564	0.84	0.163	0.83	0.148
Perceived income adequacy (ref = enough income)		0.138		0.179		0.108		0.121
Some difficulty	0.39	0.034	0.39	0.028	0.42	0.057	0.42	0.059
Considerable difficulty	0.24	0.001	0.25	0.001	0.25	0.001	0.26	0.001
Number of children	1.10	0.253	1.11	0.216	1.11	0.246	1.11	0.200
Urban (ref =rural)	0.35	0.039	0.36	0.048	0.36	0.037	0.37	0.049
<i>Socioeconomic and demographic characteristics of children</i>								
Age	0.98	0.822	0.98	0.852	0.97	0.741	0.97	0.795
Age squared	1.00	0.752	1.00	0.751	1.00	0.676	1.00	0.688
Sex composition (ref = both sons and daughters)		0.672		0.706		0.670		0.729
All sons	1.97	0.054	2.01	0.067	1.82	0.084	1.88	0.097
All daughters	1.02	0.982	1.15	0.898	0.90	0.923	1.06	0.957
All children are married (ref = at least one single)	1.43	0.273	1.48	0.165	1.38	0.333	1.44	0.162
Education composition (ref = no children with college education)		0.205		0.245		0.270		0.276
Some children with college education	0.87	0.513	0.84	0.435	0.92	0.670	0.88	0.558
All children with college education	3.47	0.030	3.35	0.038	3.73	0.028	3.48	0.034
All children are working (ref = at least one child is not working)	1.09	0.829	1.10	0.826	1.16	0.711	1.19	0.682

	Model 1		Model 2		Model 3		Model 4	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
<i>Health conditions of older persons</i>								
With chronic disease (ref = without chronic disease)					0.76	0.544	0.71	0.410
Functional limitation (ref = without functional limitation)					0.59	0.088	0.57	0.075
IADL (ref = without IADL)					1.39	0.467	1.42	0.462
ADL (ref = without ADL)					0.65	0.431	0.64	0.406
Living arrangements concordance (ref = coresidence concordance)				0.714				0.668
Independent living concordance			0.81	0.833			0.85	0.868
Independent living discordance			0.68	0.117			0.67	0.136
Coresidence discordance			0.51	0.362			0.40	0.248
Very satisfied vs not satisfied								
<i>Socioeconomic and demographic characteristics of older persons</i>								
Age	1.02	0.895	1.04	0.785	0.90	0.369	0.91	0.357
Age squared	1.00	0.873	1.00	0.750	1.00	0.412	1.00	0.424
Currently married (ref = unmarried)	1.81	0.142	2.08	0.101	1.79	0.101	2.07	0.075
At least primary education (ref=below primary)	1.04	0.900	1.05	0.883	1.01	0.976	1.02	0.958
Working (ref = not working)	0.80	0.233	0.80	0.234	0.69	0.060	0.69	0.064
Perceived income adequacy (ref = enough income)								
Some difficulty	0.29	0.010	0.28	0.009	0.32	0.016	0.32	0.019
Considerable difficulty	0.13	0.001	0.14	0.002	0.14	0.001	0.14	0.002
Number of children	1.10	0.362	1.11	0.336	1.12	0.295	1.12	0.271
Urban (ref =rural)	0.23	0.001	0.23	0.001	0.23	0.001	0.24	0.001
<i>Socioeconomic and demographic characteristics of children</i>								
Age	0.96	0.734	0.97	0.775	0.96	0.725	0.97	0.792
Age squared	1.00	0.651	1.00	0.664	1.00	0.632	1.00	0.657
Sex composition (ref = both sons and daughters)								
All sons	3.14	0.260	3.21	0.261	2.97	0.273	3.08	0.267

	Model 1		Model 2		Model 3		Model 4	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
All daughters	1.16	0.878	1.28	0.803	1.02	0.982	1.19	0.865
All children are married (ref = at least one single)	1.27	0.396	1.35	0.318	1.25	0.422	1.35	0.279
Education composition (ref = no children with college education)								
Some children with college education	0.97	0.874	0.94	0.725	0.99	0.952	0.94	0.766
All children with college education	4.16	0.007	4.11	0.009	4.38	0.010	4.17	0.011
All children are working (ref = at least one child is not working)	1.15	0.699	1.16	0.725	1.27	0.517	1.31	0.529
<i>Health conditions of older persons</i>								
With chronic disease (ref = without chronic disease)					0.89	0.818	0.85	0.713
Functional limitation (ref = without functional limitation)					0.68	0.080	0.65	0.103
IADL (ref = without IADL)					1.27	0.536	1.28	0.517
ADL (ref = without ADL)					0.22	0.003	0.22	0.003
Living arrangements concordance (ref = coresidence concordance)								
Independent living concordance			0.58	0.552			0.64	0.605
Independent living discordance			0.66	0.081			0.65	0.106
Coresidence discordance			0.51	0.171			0.39	0.073
Number of cases	1077		1077		1077		1077	

Table 9. 19. Odds ratios from multinomial logistic regression models predicting life satisfaction among older Filipino women

	Model 1		Model 2		Model 3		Model 4	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
Somewhat satisfied vs not satisfied								
<i>Socioeconomic and demographic characteristics of older persons</i>								
Age	1.46	0.299	1.46	0.323	1.38	0.322	1.36	0.354
Age squared	1.00	0.288	1.00	0.313	1.00	0.314	1.00	0.347
Currently married (ref = unmarried)	1.16	0.613	1.21	0.581	1.16	0.589	1.23	0.495
At least primary education (ref=below primary)	0.77	0.306	0.77	0.292	0.79	0.333	0.80	0.329
Working (ref = not working)	1.31	0.073	1.34	0.090	1.27	0.147	1.31	0.153
Perceived income adequacy (ref = enough income)		0.084		0.084		0.100		0.097
Some difficulty	0.53	0.170	0.54	0.189	0.56	0.143	0.56	0.181
Considerable difficulty	0.28	0.018	0.28	0.016	0.32	0.016	0.33	0.016
Number of children	1.01	0.891	1.01	0.750	1.01	0.907	1.01	0.801
Urban (ref =rural)	0.69	0.016	0.70	0.033	0.75	0.111	0.77	0.159
<i>Socioeconomic and demographic characteristics of children</i>								
Age	0.91	0.325	0.91	0.260	0.95	0.635	0.95	0.570
Age squared	1.00	0.231	1.00	0.221	1.00	0.466	1.00	0.396
Sex composition (ref = both sons and daughters)		0.035		0.045		0.030		0.014
All sons	0.63	0.628	0.63	0.634	0.64	0.652	0.64	0.654
All daughters	0.70	0.486	0.69	0.486	0.66	0.445	0.66	0.441
All children are married (ref = at least one single)	0.85	0.328	0.90	0.710	0.80	0.018	0.86	0.424
Education composition (ref = no children with college education)		0.167		0.309		0.247		0.299
Some children with college education	1.55	0.123	1.54	0.096	1.49	0.127	1.46	0.127
All children with college education	2.84	0.187	2.92	0.186	2.56	0.273	2.64	0.255
All children are working (ref = at least one child is not working)	1.02	0.843	1.02	0.794	1.05	0.801	1.05	0.796

	Model 1		Model 2		Model 3		Model 4	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
<i>Health conditions of older persons</i>								
With chronic disease (ref = without chronic disease)					0.99	0.973	0.99	0.972
Functional limitation (ref = without functional limitation)					0.72	0.456	0.72	0.389
IADL (ref = without IADL)					1.59	0.400	1.59	0.393
ADL (ref = without ADL)					0.43	0.029	0.41	0.036
Living arrangements concordance (ref = coresidence concordance)				0.742				0.588
Independent living concordance			0.73	0.594			0.60	0.436
Independent living discordance			0.79	0.325			0.70	0.168
Coresidence discordance			0.78	0.757			0.72	0.679
Very satisfied vs not satisfied								
<i>Socioeconomic and demographic characteristics of older persons</i>								
Age	1.87	0.058	1.86	0.084	1.64	0.053	1.62	0.067
Age squared	1.00	0.066	1.00	0.089	1.00	0.075	1.00	0.091
Currently married (ref = unmarried)	1.21	0.336	1.24	0.354	1.19	0.430	1.26	0.319
At least primary education (ref=below primary)	0.94	0.747	0.95	0.785	0.97	0.901	0.99	0.971
Working (ref = not working)	0.88	0.464	0.92	0.696	0.79	0.263	0.84	0.448
Perceived income adequacy (ref = enough income)								
Some difficulty	0.36	0.048	0.37	0.058	0.38	0.043	0.39	0.059
Considerable difficulty	0.09	0.001	0.10	0.001	0.11	0.001	0.12	0.001
Number of children	1.00	0.967	1.00	0.868	1.00	0.947	1.00	0.969
Urban (ref =rural)	0.44	0.106	0.45	0.091	0.51	0.215	0.53	0.216
<i>Socioeconomic and demographic characteristics of children</i>								
Age	0.85	0.087	0.83	0.212	0.88	0.089	0.87	0.155
Age squared	1.00	0.049	1.00	0.165	1.00	0.052	1.00	0.127
Sex composition (ref = both sons and daughters)								
All sons	0.69	0.699	0.67	0.666	0.74	0.754	0.72	0.728

	Model 1		Model 2		Model 3		Model 4	
	Odds ratio	p	Odds ratio	p	Odds ratio	p	Odds ratio	p
All daughters	1.27	0.648	1.22	0.704	1.19	0.741	1.14	0.806
All children are married (ref = at least one single)	0.83	0.431	0.84	0.635	0.82	0.170	0.87	0.554
Education composition (ref = no children with college education)								
Some children with college education	1.85	0.045	1.83	0.050	1.71	0.052	1.66	0.061
All children with college education	4.52	0.032	4.47	0.037	3.88	0.062	3.85	0.061
All children are working (ref = at least one child is not working)	1.46	0.087	1.47	0.083	1.43	0.091	1.44	0.064
Health conditions of older persons								
With chronic disease (ref = without chronic disease)					0.96	0.921	0.93	0.879
Functional limitation (ref = without functional limitation)					0.74	0.319	0.73	0.284
IADL (ref = without IADL)					1.16	0.804	1.15	0.809
ADL (ref = without ADL)					0.19	0.022	0.17	0.024
Living arrangements concordance (ref = coresidence concordance)								
Independent living concordance			0.99	0.977			0.73	0.584
Independent living discordance			0.70	0.126			0.57	0.034
Coresidence discordance			0.62	0.603			0.51	0.462
Number of cases	1475		1475		1475		1475	

Table 9. 20. Coefficients from ordinary least squares (OLS) regression models predicting psychological well-being among older Filipino men

	Model 1		Model 2		Model 3		Model 4	
	Coefficient	p	Coefficient	p	Coefficient	p	Coefficient	p
<i>Socioeconomic and demographic characteristics of older persons</i>								
Age	-0.15	0.657	-0.15	0.640	-0.51	0.114	-0.52	0.113
Age squared	0.00	0.779	0.00	0.752	0.00	0.125	0.00	0.122
Currently married (ref = unmarried)	0.51	0.187	0.38	0.448	0.60	0.211	0.48	0.418
At least primary education (ref=below primary)	0.28	0.278	0.29	0.260	0.22	0.318	0.23	0.295
Working (ref = not working)	0.58	0.130	0.59	0.118	0.19	0.449	0.20	0.434
Perceived income adequacy (ref = enough income)		0.011		0.009		0.046		0.046
Some difficulty	-1.29	0.002	-1.29	0.002	-0.96	0.019	-0.97	0.018
Considerable difficulty	-1.72	0.002	-1.76	0.001	-1.47	0.008	-1.50	0.009
Number of children	-0.07	0.450	-0.07	0.396	-0.05	0.502	-0.06	0.449
Urban (ref =rural)	-0.48	0.027	-0.51	0.027	-0.23	0.243	-0.26	0.227
<i>Socioeconomic and demographic characteristics of children</i>								
Age	0.05	0.716	0.04	0.771	0.09	0.546	0.08	0.583
Age squared	0.00	0.706	0.00	0.747	0.00	0.488	0.00	0.519
Sex composition (ref = both sons and daughters)		0.022		0.020		0.019		0.022
All sons	0.12	0.848	0.10	0.876	0.09	0.874	0.08	0.888
All daughters	-1.09	0.047	-1.21	0.050	-1.31	0.015	-1.35	0.019
All children are married (ref = at least one single)	0.25	0.470	0.27	0.408	0.31	0.148	0.32	0.137
Education composition (ref = no children with college education)		0.030		0.029		0.001		0.002
Some children with college education	0.08	0.732	0.13	0.521	0.05	0.828	0.07	0.693
All children with college education	1.34	0.041	1.43	0.029	1.23	0.040	1.27	0.035
All children are working (ref = at least one child is not working)	-0.24	0.674	-0.25	0.653	-0.09	0.874	-0.09	0.870

	Model 1		Model 2		Model 3		Model 4	
	Coefficient	p	Coefficient	p	Coefficient	p	Coefficient	p
<i>Health conditions of older persons</i>								
With chronic disease (ref = without chronic disease)					-0.46	0.233	-0.45	0.258
Functional limitation (ref = without functional limitation)					-0.89	0.003	-0.86	0.003
IADL (ref = without IADL)					-0.64	0.145	-0.65	0.118
ADL (ref = without ADL)					-2.45	0.004	-2.45	0.004
Living arrangements concordance (ref = coresidence concordance)				0.091				0.175
Independent living concordance			-0.21	0.607			0.04	0.917
Independent living discordance			0.39	0.474			0.37	0.453
Coresidence discordance			0.84	0.249			0.42	0.503
Number of cases	1065		1065		1065		1065	

Table 9. 21. Coefficients from ordinary least squares (OLS) regression models predicting psychological well-being among older Filipino women

	Model 1		Model 2		Model 3		Model 4	
	Coefficient	p	Coefficient	p	Coefficient	p	Coefficient	p
<i>Socioeconomic and demographic characteristics of older persons</i>								
Age	0.09	0.739	0.12	0.656	0.03	0.915	0.06	0.815
Age squared	0.00	0.669	0.00	0.584	0.00	0.975	0.00	0.880
Currently married (ref = unmarried)	0.80	0.150	0.82	0.122	0.71	0.197	0.76	0.138
At least primary education (ref=below primary)	0.81	0.007	0.80	0.009	0.85	0.005	0.84	0.005
Working (ref = not working)	-0.29	0.171	-0.28	0.207	-0.57	0.038	-0.54	0.047
Perceived income adequacy (ref = enough income)		0.001		0.002		0.004		0.005
Some difficulty	-0.86	0.083	-0.88	0.070	-0.71	0.141	-0.73	0.116
Considerable difficulty	-1.97	0.000	-1.98	0.000	-1.65	0.001	-1.65	0.001
Number of children	-0.05	0.048	-0.06	0.077	-0.07	0.117	-0.08	0.123
Urban (ref =rural)	0.21	0.384	0.18	0.393	0.51	0.103	0.49	0.094
<i>Socioeconomic and demographic characteristics of children</i>								
Age	-0.08	0.157	-0.08	0.184	-0.07	0.128	-0.08	0.170
Age squared	0.00	0.101	0.00	0.066	0.00	0.074	0.00	0.058
Sex composition (ref = both sons and daughters)		0.691		0.682		1.000		0.996
All sons	-0.09	0.893	-0.07	0.919	0.00	0.999	0.01	0.990
All daughters	0.21	0.458	0.25	0.405	-0.01	0.988	0.03	0.938
All children are married (ref = at least one single)	-0.07	0.844	0.01	0.968	0.03	0.913	0.15	0.522
Education composition (ref = no children with college education)		0.015		0.014		0.005		0.001
Some children with college education	0.98	0.004	0.97	0.003	0.89	0.012	0.86	0.012
All children with college education	1.59	0.003	1.60	0.002	1.31	0.001	1.31	0.001
All children are working (ref = at least one child is not working)	0.49	0.295	0.51	0.283	0.44	0.172	0.47	0.159
<i>Health conditions of older persons</i>								
With chronic disease (ref = without chronic disease)					-0.58	0.031	-0.59	0.037
Functional limitation (ref = without functional limitation)					-0.75	0.107	-0.73	0.131

	Model 1		Model 2		Model 3		Model 4	
	Coefficient	p	Coefficient	p	Coefficient	p	Coefficient	p
IADL (ref = without IADL)					-1.34	0.003	-1.39	0.003
ADL (ref = without ADL)					-0.67	0.003	-0.72	0.006
Living arrangements concordance (ref = coresidence concordance)				0.237				0.015
Independent living concordance			-0.53	0.190			-0.70	0.195
Independent living discordance			-0.02	0.952			-0.19	0.535
Coresidence discordance			-0.37	0.291			-0.75	0.021
Number of cases	1452		1452		1452		1452	

Publications based on this study

Abalos, J. B., Saito, Y., Cruz, G. T., & Booth, H. (2018). Who cares? Provision of care and assistance among older persons in the Philippines. *Journal of Aging and Health*, 30(10), 1536–1555. <https://doi.org/10.1177/0898264318799219>.

Abalos, J.B. (2018). Older persons in the Philippines: A demographic, socioeconomic and health profile. *Ageing International*, 1-25. <https://doi.org/10.1007/s12126-018-9337-7>

Abalos, J.B. & Booth, H. (Forthcoming). Regional differences in functional difficulty and disability free life expectancy (DFLE) among older persons in the Philippines. Accepted for publication in *Asian Population Studies*.

Conference presentations based on this study

Abalos, J.B. (2016). “Explaining regional variations in health expectancy in the Philippines”. Paper presented in *Australian Population Association Biennial Conference 2016*. Sydney Australia. 29 November- 2 December 2016

Abalos, J.B. (2016). “Living arrangements of older persons in the Philippines”. Paper presented in *15th National Conference of Emerging Researchers in Ageing (ERA) Pathways to Ageing Well*. The Australian National University (ANU), Canberra, Australia. 31 October-1 November 2016.

Abalos, J.B. (2016). “Cross-national differences in living arrangements among older persons in Southeast Asia”. Poster presented in *European Population Conference 2016*. Mainz, Germany. 31 August- 3 September 2016.

Abalos, J.B. (2016). “Regional differences in functional difficulty and health expectancy among older persons in the Philippines”. Poster presented in *28th REVES Meeting* held on 8-10 June 2016 in Vienna, Austria.

Abalos, J.B. (2016). “Provision of care and exchange of support among older persons in the Philippines”. Paper presented in *Long-term Care for Elderly in ASEAN Plus Three* held on 1-2 March 2016 in Asia Research Institute (ARI), National University of Singapore.

Abalos, J.B. (2015). “Gender differences in functional difficulty and health expectancy among older persons in the Philippines”. Poster presented in the *Annual Meeting of the Population Association of America (PAA)* held on 30 April - 2 May 2015 in San Diego, California.

Abalos, J.B. (2014). “Gender differences in health expectancy among older persons in the Philippines”. Paper presented in the *17th Biennial Conference of the Australian Population Association* held on 3-5 December 2014 in Hobart, Tasmania.

References

- Abalos, J. B. (2014). Trends and determinants of age at union of men and women in the Philippines. *Journal of Family Issues*, 35(12), 1624-1641.
- Abalos, J. B. (2017). Divorce and separation in the Philippines: Trends and correlates. *Demographic Research*, 36, 1515-1548.
- Abalos, J. B., Saito, Y., Cruz, G. T., & Booth, H. (2018). Who cares? Provision of care and assistance among older persons in the Philippines. *Journal of Aging and Health*, 30(10), 1536-1555.
- Abejo, S. (1995). *The size, structure and life cycle of family households in the Philippines* (Doctor of Philosophy), Australian National University, Canberra, Australia.
- Abejo, S. (2004). *The living arrangements of the elderly in the Philippines*. Paper presented at the 9th National Convention on Statistics (NCS), Manila, Philippines.
- Abenoja, M. K. (1990). World's apart? Gender divide in the conditions of elderly Filipinos. *Philippine Quarterly of Culture and Society*, 275-290.
- Agree, E. M., Biddlecom, A. E., Chang, M.-C., & Perez, A. E. (2002). Transfers from older parents to their adult children in Taiwan and the Philippines. *Journal of Cross-Cultural Gerontology*, 17(4), 269-294.
- Al Hazzouri, A. Z., Sibai, A. M., Chaaya, M., Mahfoud, Z., & Yount, K. M. (2011). Gender Differences in Physical Disability Among Older Adults in Underprivileged Communities in Lebanon. *Journal of Aging and Health*, 23(2), 367-382.
doi:10.1177/0898264310385454
- Alampay, L. P. (2014). Parenting in the Philippines. In H. Selin (Ed.), *Parenting Across Cultures : Childrearing, Motherhood and Fatherhood in Non-Western Cultures* (pp. 105-122). Dordrecht, Netherlands: Springer.
- Alexandre, T. d. S., Corona, L. P., Nunes, D. P., Ferreira Santos, J. L., de Oliveira Duarte, Y. A., & Lebrao, M. L. (2014). Disability in instrumental activities of daily living among older adults: gender differences. *Revista De Saude Publica*, 48(3), 378-389.
doi:10.1590/s0034-8910.2014048004754
- Amshoff, S. K., & Reed, D. B. (2005). Health, work, and safety of farmers ages 50 and older. *Geriatric Nursing*, 26(5), 304-308.
- An, J.-Y., An, K., O'Connor, L., & Wexler, S. (2008). Life satisfaction, self-esteem, and perceived health status among elder Korean women: Focus on living arrangements. *Journal of Transcultural Nursing*, 19(2), 151-160. doi:10.1177/1043659607313070

- Ananta, A., & Arifin, E. N. (2009). Older persons in Southeast Asia: From liability to asset. *Older Persons in Southeast Asia: An Emerging Asset*, 3-46.
- Andrade, F. C. D., Guevara, P. E., Lebrão, M. L., de Oliveira Duarte, Y. A., & Santos, J. L. F. (2011). Gender differences in life expectancy and disability-free life expectancy among older adults in Sao Paulo, Brazil. *Women's Health Issues*, 21(1), 64-70.
- Antonucci, T. C., & Ajrouch, K. J. (2007). Social resources. In H. Mollenkopf & A. Walker (Eds.), *Quality of Life in Old Age International and Multi-disciplinary perspectives* (pp. 49-64). The Netherlands: Springer.
- Antonucci, T. C., & Akiyama, H. (1987). Social networks in adult life and a preliminary examination of the convoy model. *Journal of Gerontology*, 42(5), 519-527.
- Antonucci, T. C., Akiyama, H., & Sherman, A. M. (2007). Social networks, support, and integration.
- Apinonkul, B., Soonthorndhada, K., Vapattanawong, P., Aekplakorn, W., & Jagger, C. (2015). Gender differences in health expectancies across the disablement process among older Thais. *PLoS One*, 10(3), e0121310.
- Apinonkul, B., Soonthorndhada, K., Vapattanawong, P., Jagger, C., & Aekplakorn, W. (2016). Regional and gender differences in years with and without mobility limitation in the older population of Thailand. *PLoS One*, 11(5).
doi:10.1371/journal.pone.0153763
- Asis, M. M., Domingo, L., Knodel, J., & Mehta, K. (1995). Living arrangements in four Asian countries: a comparative perspective. *J Cross Cult Gerontol*, 10(1-2), 145-162.
doi:10.1007/BF00972034
- Bao, L. (2016). *Intergenerational support and well-being of older adults in changing family contexts*. (Doctor of Philosophy), University of Maryland.
- Beales, S. (2000). Why we should invest in older women and men: the experience of HelpAge International. *Gender & Development*, 8(2), 9-18.
- Beard, V. A., & Kunharibowo, Y. (2001). Living arrangements and support relationships among elderly Indonesians: Case studies from Java and Sumatra. *International Journal of Population Geography*, 7(1), 17-33.
- Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck Depression inventory- 25 years of evaluation. *Clinical Psychology Review*, 8(1), 77-100. doi:10.1016/0272-7358(88)90050-5

- Berkman, L. F., Glass, T., Brissette, I., & Seeman, T. E. (2000). From social integration to health: Durkheim in the new millennium☆. *Social Science & Medicine*, 51(6), 843-857.
- Biddlecom, A. E., & Domingo, L. J. (1996). Aging trends—the Philippines. *Journal of cross-cultural gerontology*, 11(1), 109-114.
- Blau, P. (1964). *Exchange and power in social life*. New York: Wiley.
- Bongaarts, J. (2001). Household size and composition in the developing world in the 1990s. *Population Studies*, 55(3), 263-279.
- Booth, H. (2018). The process of population ageing and its challenges. In Z. Zhao & A. Hayes (Eds.), *Routledge handbook of Asian demography* (pp. 431-455). London: Routledge.
- Bowling, A. (2004). A taxonomy and overview of quality of life. In J. Brown, A. Bowling, & T. Flynn (Eds.), *Models of Quality of Life: A Taxonomy and Systematic Review of the Literature*. Sheffield: University of Sheffield, FORUM Project.
- Bowling, A. (2007). Quality of life in older age: what older people say *Quality of life in old age* (pp. 15-30): Springer.
- Bradley, R., H., & Corwyn, R., F. (2002). Socioeconomic status and child development. *Annual Review of Psychology*, 53(1), 371-399.
- Bulatao, R. A. (1975). *The Value of Children: A Cross-National Study, Volume Two. Philippines*. Honolulu: East-West Population Institute.
- Burgio, A., Murianni, L., & Folino-Gallo, P. (2009). Differences in life expectancy and disability free life expectancy in Italy. A challenge to health systems. *Social Indicators Research*, 92(1), 1-11.
- Cabigon, J. V. (2009). *2000 life tables for the Philippines, its regions and provinces by sex*. Mandaluyong city: Commission on population with funding support from United Nations Population Fund.
- Caplan, R. D. (1987). Person-environment fit theory and organizations- Commensurate dimensions, time perspectives, and mechanisms. *Journal of Vocational Behavior*, 31(3), 248-267. doi:10.1016/0001-8791(87)90042-x
- Carlos, C. R. (1999). Concerns of the elderly in the Philippines. *Philippine Social Sciences Review*, 56(1-4), 1-40.

- Carp, F. M., & Carp, A. (1984). A complementary/congruence model of well-being or mental health for the community elderly *Elderly people and the environment* (pp. 279-336): Springer.
- Case, A., & Deaton, A. S. (2005). Broken down by work and sex: How our health declines *Analyses in the Economics of Aging* (pp. 185-212): University of Chicago Press.
- Castillo, G. (1977). *Beyond Manila: Philippine rural problems in perspective* (Vol. 2). Los Banos: University of the Philippines.
- Chan, A. (1997). An overview of the living arrangements and social support exchanges of older Singaporeans. *Asia-Pacific Population Journal*, 12(4), 35-50.
- Chan, A. (2005). Aging in Southeast and East Asia: issues and policy directions. *Journal of Cross-Cultural Gerontology*, 20(4), 269-284.
- Chan, A., & Jatrana, S. (2007). Gender differences in health among older Singaporeans. *International Sociology*, 22(4), 463-491. doi:10.1177/0268580907078009
- Chandola, T., Clarke, P., Morris, J., & Blane, D. (2006). Pathways between education and health: a causal modelling approach. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 169(2), 337-359.
- Chant, S. (1997). Marginal (m) others: Lone parents and female household headship in the Philippines. *The European Journal of Development Research*, 9(2), 1-34.
- Chao, R., & Tseng, V. (2002). Parenting of Asians. In M. Bornstein (Ed.), *Handbook of Parenting. Vol. 4: Social conditions and applied parenting* (pp. 59-93). Mahwah, NJ: Erlbaum.
- Chao, S. F. (2011). Assessing social support and depressive symptoms in older Chinese adults: A longitudinal perspective. *Aging & Mental Health*, 15(6), 765-774. doi:10.1080/13607863.2011.562182
- Chen, F., Bao, L., Shattuck, R. M., Borja, J. B., & Gultiano, S. (2017). Implications of Changes in Family Structure and Composition for the Psychological Well-Being of Filipino Women in Middle and Later Years. *Research on Aging*, 39(2), 275-299. doi:10.1177/0164027515611181
- Chen, F., & Short, S. E. (2008). Household context and subjective well-being among the oldest old in China. *Journal of Family Issues*, 29(10), 1379-1403.
- Chen, J., & Jordan, L. P. (2018). Intergenerational support and life satisfaction of young-, old-and oldest-old adults in China. *Aging & Mental Health*, 22(3), 412-420.
- Chen, T. (2018). Living arrangement preferences and realities for elderly Chinese: implications for subjective wellbeing. *Ageing & Society*, 1-25.

- Chen, X., & Silverstein, M. (2000). Intergenerational social support and the psychological well-being of older parents in China. *Research on Aging*, 22(1), 43-65.
- Cheshire, A., Barlow, J. H., & Powell, L. A. (2010). The psychosocial well-being of parents of children with cerebral palsy: a comparison study. *Disability and Rehabilitation*, 32(20), 1673-1677. doi:10.3109/09638281003649920
- Cheung, K. S. L., & Yip, P. S. F. (2010). Trends in healthy life expectancy in Hong Kong SAR 1996–2008. *European Journal of Ageing*, 7(4), 257-269.
- Choo, E., & Denny, M. (2006). Wearing out—the decline in health. *University of Toronto, Department of Economics, Working Papers*.
- Cohen, P. N., & Casper, L. M. (2002). In whose home? Multigenerational families in the United States, 1998–2000. *Sociological Perspectives*, 45(1), 1-20.
- Cohen, S. (2004). Social relationships and health. *American Psychologist*, 59(8), 676.
- Collas-Monsod, S., Monsod, T. C., & Ducanes, G. M. (2004). Philippines' progress towards the Millennium Development Goals: geographical and political correlates of subnational outcomes. *Journal of Human Development*, 5(1), 121-149.
- Concepcion, M. B., & Perez, A. E. (2006). Intergenerational support mechanisms for Filipino elderly. *Handbook of Asian aging*, 293-317.
- Cong, Z., & Silverstein, M. (2008). Intergenerational support and depression among elders in rural China: Do daughters in-law matter? *Journal of Marriage and Family*, 70(3), 599-612.
- Costello, M. A. (1994). The elderly in Filipino households: current status and future prospects. *Philippine Sociological Review*, 42(1/4), 53-77.
- Council, N. R. (2010). *Preparing for the challenges of population aging in Asia: strengthening the scientific basis of policy development*: National Academies Press.
- Crimmins, E. (2004). Trends in the health of the elderly. *Annual Review of Public Health*, 25, 79-98.
- Cruz, G. T. (2007). Active life expectancy of Filipino older people. *Philippine Population Review*, 6(1), 87-101.
- Cruz, G. T. (2013). *Family support and disability among Filipino older people*. Paper presented at the 27th IUSSP Population Conference, Busan, South Korea.
- Cruz, G. T., Abalos, J., Lavares, M., Natividad, J., & Saito, Y. (2009). Changing social structures and the well-being of the older Filipinos. *Transactions of the National Academy of Science and Technology (Philippines)*, 31(2), 197-222.

- Cruz, G. T., & Camhol, A. N. (2014). Family and state roles in promoting the wellbeing of Filipinos. In A. T. Torres & L. L. Samson (Eds.), *Aging in Asia-Pacific: Balancing the state and the family* (pp. 3-25). Quezon City: Philippine Social Science Center.
- Cruz, G. T., Natividad, J. N., Gonzales, M. L., & Saito, Y. (2016). *Aging in the Philippines: Findings from the 2007 Philippine study on aging*. Quezon City: University of the Philippine Population Institute and Demographic Research and Development Foundation Inc.
- Cruz, G. T., Saito, Y., & Natividad, J. N. (2007). Active life expectancy and functional health transition among Filipino older people. *Canadian Studies in Population*, 34(1), 29-47.
- Cunningham, S. A., Yount, K. M., Engelman, M., & Agree, E. (2013). Returns on lifetime investments in children in Egypt. *Demography*, 50(2), 699-724.
- Cutler, D. M., Lleras-Muney, A., & Vogl, T. (2008). *Socioeconomic status and health: Dimensions and mechanisms*. National Bureau of Economic Research (NBER) Working Paper, (14333). NBER, Cambridge, MA.
- DaVanzo, J., & Chan, A. (1994). Living arrangements of older Malaysians: Who coresides with their adult children? *Demography*, 31(1), 95-113.
- Davey, A., & Eggebeen, D. J. (1998). Patterns of intergenerational exchange and mental health. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 53(2), P86-P95.
- de Guzman, E. A., Go, E. M., & Yordan, E. S. (1995). Gender differentials in the Philippines: an analysis of the 1990 census.
- De Neve, J.-W., & Harling, G. (2017). Offspring schooling associated with increased parental survival in rural KwaZulu-Natal, South Africa. *Social Science & Medicine*, 176, 149-157.
- De Walque, D. (2007). Does education affect smoking behaviors?: Evidence using the Vietnam draft as an instrument for college education. *Journal of Health Economics*, 26(5), 877-895.
- Deeg, D., J.H. (2007). Health and quality of life. In H. Mollenkopf & W. A. (Eds.), *Quality of life in old age: International and multi-disciplinary perspectives* (pp. 195-213). The Netherlands: Springer.
- Deeg, D. J. H., Verbrugge, L. M., & Jagger, C. (2002). Disability measurement. In J.-M. Robine, C. Jagger, C. D. Mathers, E. M. Crimmins, & R. M. Suzman (Eds.), *Determining health expectancies* (pp. 203-219). Chichester, UK: John Wiley.

- Department of Social Welfare and Development. (2010). *DSWD long term care program for senior citizens (LTCSC) general implementing guidelines*.
- DeSalvo, K. B., Bloser, N., Reynolds, K., He, J., & Muntner, P. (2006). Mortality prediction with a single general self-rated health question. *Journal of General Internal Medicine*, 21(3), 267.
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, 125(2), 276.
- Diwan, S., Lee, S. E., & Sen, S. (2011). Expectations of filial obligation and their impact on preferences for future living arrangements of middle-aged and older Asian Indian immigrants. *Journal of cross-cultural gerontology*, 26(1), 55-69.
- Do, Y. K., & Malhotra, C. (2012). The effect of coresidence with an adult child on depressive symptoms among older widowed women in South Korea: an instrumental variables estimation. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 67(3), 384-391.
- Domingo, L. (1994). The Family and Women in an Ageing Society: the Philippine Situation. *Australian Journal on Ageing*, 13(4), 178-181.
- Domingo, L. J., & Asis, M. M. B. (1995). Living arrangements and the flow of support between generations in the Philippines. *Journal of Cross-Cultural Gerontology*, 10(1-2), 21-51.
- Domingo, L. J., & Casterline, J. B. (1992). Living arrangements of the Filipino elderly. *Asia-Pacific Population Journal*, 7(3), 63-88.
- Dong, X., Chang, E.-S., Wong, E., & Simon, M. (2012). A qualitative study of filial piety among community dwelling, Chinese, older adults: changing meaning and impact on health and well-being. *Journal of Intergenerational Relationships*, 10(2), 131-146.
- Dong, X., Zhang, M., & Simon, M. A. (2014). The Expectation and Perceived Receipt of Filial Piety Among Chinese Older Adults in the Greater Chicago Area. *Journal of Aging and Health*, 26(7), 1225-1247. doi:10.1177/0898264314541697
- Eguez-Guevara, P., & Andrade, F. C. D. (2015). Gender differences in life expectancy with and without disability among older adults in Ecuador. *Archives of Gerontology and Geriatrics*, 61(3), 472-479. doi:10.1016/j.archger.2015.08.012
- Elder, G. H. J. (1998). The life course as developmental theory. *Child Development*, 69(1), 1-12.

- Elkins, R. M., Pincus, D. B., & Comer, J. S. (2014). A Psychometric Evaluation of the Panic Disorder Severity Scale for Children and Adolescents. *Psychological Assessment*, 26(2), 609-618. doi:10.1037/a0035283
- Fauth, E. B., Zarit, S. H., & Malmberg, B. (2008). Mediating relationships within the Disablement Process model: a cross-sectional study of the oldest-old. *European Journal of Ageing*, 5(3), 161-179. doi:10.1007/s10433-008-0092-6
- Femia, E. E., Zarit, S. H., & Johansson, B. (2001). The disablement process in very late life: A study of the oldest-old in Sweden. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences*, 56(1), P12-P23. doi:10.1093/geronb/56.1.P12
- Fernández-Ballesteros, R. (2002). Social support and quality of life among older people in Spain. *Journal of Social Issues*, 58(4), 645-659.
- Ferraro, K. F., & Su, Y.-p. (1999). Financial strain, social relations, and psychological distress among older people: A cross-cultural analysis. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 54(1), S3-S15.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Evanston, IL: Row, Peterson.
- Flieger, W., & Cabigon, J. V. (1994). *Life table estimates for the Philippines, its regions and provinces, by sex: 1970, 1980 & 1990*: Health Finance Development Project.
- Fountoulakis, K. N., Bech, P., Panagiotidis, P., Siamouli, M., Kantartzis, S., Papadopoulou, A., . . . Kaprinis, G. S. (2007). Comparison of depressive indices: Reliability, validity, relationship to anxiety and personality and the role of age and life events. *Journal of Affective Disorders*, 97(1-3), 187-195. doi:10.1016/j.jad.2006.06.015
- Fouweather, T., Gillies, C., Wohland, P., Van Oyen, H., Nusselder, W., Robine, J.-M., . . . Team, J. E. (2015). Comparison of socio-economic indicators explaining inequalities in Healthy Life Years at age 50 in Europe: 2005 and 2010. *The European Journal of Public Health*, 25(6), 978-983.
- Frankenberg, E., & Kuhn, R. S. (2004). The role of social context in shaping intergenerational relations in Indonesia and Bangladesh. *Annual Review of Gerontology and Geriatrics*, 24(1), 177-199.
- Friedman, E. M., & Mare, R. D. (2014). The schooling of offspring and the survival of parents. *Demography*, 51(4), 1271-1293.
- Fukuda, Y., Nakamura, K., & Takano, T. (2004). Municipal socioeconomic status and mortality in Japan: sex and age differences, and trends in 1973–1998. *Social Science & Medicine*, 59(12), 2435-2445.

- Gavrilov, L. A., & Heuveline, P. (2003). Aging of population. *The encyclopedia of population*, 1, 32-37.
- Gaymu, J., & Springer, S. (2010). Living conditions and life satisfaction of older Europeans living alone: a gender and cross-country analysis. *Ageing & Society*, 30(7), 1153-1175.
- George, L. K. (2006). Perceived quality of life. In L. K. G. R. H. Binstock (Ed.), *Handbook of aging and the social sciences*, sixth edition (pp. 320–336). San Diego, CA: Academic Press.
- George, L. K. (2010). Still happy after all these years: Research frontiers on subjective well-being in later life. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 65(3), 331-339.
- Giang, T. L., & Pfau, W. D. (2007). Patterns and determinants of living arrangements for the elderly in Vietnam.
- Gibson, D. (1996). Broken down by age and gender - "The problem of old women" redefined. *Gender & Society*, 10(4), 433-448. doi:10.1177/089124396010004005
- Gierveld, J., Dykstra, P. A., & Schenk, N. (2012). Living arrangements, intergenerational support types and older adult loneliness in Eastern and Western Europe. *Demographic Research*, 27, 167-200.
- Gomes, C. (2007). Intergenerational exchanges in Mexico: Types and intensity of support. *Current Sociology*, 55(4), 545-560.
- Graham, H. (1983). A labour of love. *Finch J, Drowes E. A labour of love: Women, work and caring*. London: Routledge, Kegan Paul, 13-30.
- Guan, J., Li, H., Sun, H., Wang, T., & Wu, W. (2015). The impact of a discrepancy between actual and preferred living arrangements on life satisfaction among the elderly in China. *Clinics*, 70(9), 623-627. doi:10.6061/clinics/2015(09)05
- Guo, M., Chi, I., & Silverstein, M. (2017). Intergenerational support and depression among Chinese older adults: do gender and widowhood make a difference? *Ageing & Society*, 37(4), 695-724.
- Gutiérrez-Fisac, J. L., Gispert, R., & Solà, J. (2000). Factors explaining the geographical differences in Disability Free Life Expectancy in Spain. *Journal of Epidemiology & Community Health*, 54(6), 451-455.
- Haber, L. D. (1990). Issues in the definition of disability and the use of disability survey data. *Disability statistics: An assessment*, 35-51.

- Henning-Smith, C. (2016). Quality of life and psychological distress among older adults: The role of living arrangements. *Journal of Applied Gerontology*, 35(1), 39-61.
- Hermalin, A. I. (2002). Theoretical perspectives, measurement issues, and related research. *The well-being of the elderly in Asia*, 101-141.
- Hermalin, A. I., Ofstedal, M. B., & Tesfai, R. (2007). Future characteristics of the elderly in developing countries and their implications for policy. *Asian Population Studies*, 3(1), 5-36.
- Hermalin, A. I., Roan, C., & Perez, A. (1998). The Emerging Role of Grandparents in Asia A.
- Hermalin, A. I., & Yang, L. S. (2004). Levels of support from children in Taiwan: Expectations versus reality, 1965–99. *Population and Development Review*, 30(3), 417-448.
- Herrin, A. N. (2002). *Population policy in the Philippines, 1969-2002*. Retrieved from
- Higgins, E. T. (1987). Self-discrepancy - A theory relating self and affect. *Psychological Review*, 94(3), 319-340. doi:10.1037//0033-295x.94.3.319
- Higgins, J. P., Thompson, S. G., Deeks, J. J., & Altman, D. G. (2003). Measuring inconsistency in meta-analyses. *BMJ: British Medical Journal*, 327(7414), 557.
- Hoang, C. T. (2015). Modes of Care for the Elderly in Vietnam: Adaptation to Change.
- Holden, K. C., & Smock, P. J. (1991). The economic costs of marital dissolution: Why do women bear a disproportionate cost? *Annual Review of Sociology*, 17(1), 51-78.
- Hollnsteiner, M. R. (1970). Reciprocity in the lowland Philippines. In F. Lynch & A. de Guzman (Eds.), *Four readings on Philippine values* (pp. 65-88). Quezon City: Ateneo de Manila University Press.
- Homas, G. C. (1961). *Social behavior: Its elementary forms*. New York: Harcourt.
- Hosseinpoor, A. R., Williams, J. S., Jann, B., Kowal, P., Officer, A., Posarac, A., & Chatterji, S. (2012). Social determinants of sex differences in disability among older adults: a multi-country decomposition analysis using the World Health Survey. *International journal for equity in health*, 11(1), 52.
- Hughes, M. E., & Waite, L. J. (2002). Health in household context: Living arrangements and health in late middle age. *Journal of Health and Social Behavior*, 43(1), 1.
- Idler, E. L., & Benyamini, Y. (1997). Self-rated health and mortality: A review of twenty-seven community studies. *Journal of Health and Social Behavior*, 38(1), 21-37. doi:10.2307/2955359

- Ingersoll-Dayton, B., & Saengtienchai, C. (1999). Respect for the elderly in Asia: Stability and change. *The International Journal of Aging and Human Development*, 48(2), 113-130.
- Jagger, C., Gillies, C., Moscone, F., Cambois, E., Van Oyen, H., Nusselder, W., & Robine, J.-M. (2008). Inequalities in healthy life years in the 25 countries of the European Union in 2005: a cross-national meta-regression analysis. *The Lancet*, 372(9656), 2124-2131.
- Jagger, C., Hauet, E., & Brouard, N. (2001). *Health expectancy calculation by the Sullivan method: A practical guide*. REVES Paper n°408
- Jeon, G.-S., Jang, S.-N., Rhee, S.-J., Kawachi, I., & Cho, S.-I. (2007). Gender differences in correlates of mental health among elderly Koreans. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences*, 62(5), S323-S329.
doi:10.1093/geronb/62.5.S323
- Jitapunkul, S., Kunanusont, C., Phoolcharoen, W., Suriyawongpaisal, P., & Ebrahim, S. (2003). Disability-free life expectancy of elderly people in a population undergoing demographic and epidemiologic transition. *Age and ageing*, 32(4), 401-405.
- Johar, M., & Maruyama, S. (2014). Does coresidence improve an elderly parent's health? *Journal of Applied Econometrics*, 29(6), 965-983.
- Jones, G. (2008). Changing marriage patterns in Asia. In Z. Zhao & A. Hayes (Eds.), *Routledge handbook of Asian demography* (pp. 351–369). London: Routledge.
- Kahana, E. (1975). A congruence model of person-environment interaction. In P. G. Windley, T. O. Byerts, & F. G. Ernst (Eds.), *Theory development in environment and ageing*. Washington DC: Gerontological Society.
- Kahana, E., & Kahana, B. (1996). Conceptual and empirical advances in understanding aging well through proactive adaptation. In V. Bengtson (Ed.), *Adulthood and aging: Research on continuities and discontinuities* (pp. 18-41). New York: Springer.
- Kahana, E., Liang, J., & Felton, B. J. (1980). Alternative models of person-environment fit: Prediction of morale in three homes for the aged. *Journal of Gerontology*, 35(4), 584-595.
- Kahana, E., Lovegreen, L., Kahana, B., & Kahana, M. (2003). Person, environment, and person-environment fit as influences on residential satisfaction of elders. *Environment and Behavior*, 35(3), 434-453. doi:10.1177/0013916503251447
- Kahn, R. L., & Juster, F. T. (2002). Well-Being: concepts and measures. *Journal of Social Issues*, 58(4), 627-644.

- Kandiyoti, D. (1988). Bargaining with patriarchy. *Gender & Society*, 2(3), 274-290.
- Karagiannaki, E. (2011). Changes in the living arrangements of elderly people in Greece: 1974–1999. *Population Research and Policy Review*, 30(2), 263-285.
- Katz, R. (2009). Intergenerational family relations and subjective well-being in old age: A cross-national study. *European Journal of Ageing*, 6(2), 79-90.
- Kawachi, I., & Berkman, L. F. (2001). Social ties and mental health. *Journal of Urban Health*, 78(3), 458-467.
- Kim, C.-S., & Rhee, K.-O. (1997). Variations in preferred living arrangements among Korean elderly parents. *Journal of Cross-Cultural Gerontology*, 12(2), 189-202.
- Kim, H. K., Hisata, M., Kai, I., & Lee, S. K. (2000). Social support exchange and quality of life among the Korean elderly. *Journal of cross-cultural gerontology*, 15(4), 331-347. doi:10.1023/a:1006765300028
- Kim, I. K., & Kim, C.-S. (2003). Patterns of family support and the quality of life of the elderly. *Social Indicators Research*, 62(1-3), 437-454 %@ 0303-8300.
- Kinsella, K., & Phillips, D. R. (2005). Global aging: The challenge of success. *Population Bulletin*, 60(1), 3-40.
- Knodel, J. (1999). The demography of Asian ageing: past accomplishments and future challenges. *Asia-Pacific Population Journal*, 14(4), 39-56.
- Knodel, J. (2014). Is intergenerational solidarity really on the decline? Cautionary evidence from Thailand. *Asian Population Studies*, 10(2), 176-194. doi:10.1080/17441730.2014.902160
- Knodel, J., & Chayovan, N. (1997). Family support and living arrangements of Thai elderly. *Asia-Pacific Population Journal*, 12(4), 51-68.
- Knodel, J., & Chayovan, N. (2008). Intergenerational relationships and family care and support for Thai elderly. *Ageing International*, 33(1-4), 15-27.
- Knodel, J., & Chayovan, N. (2009). Older persons in Thailand: a demographic, social and economic profile. *Ageing International*, 33(1-4), 3-14.
- Knodel, J., & Chayovan, N. (2012). Inter-generational family care for and by older people in Thailand. *International Journal of Sociology and Social Policy*, 32(11/12), 682-694.
- Knodel, J., Chayovan, N., & Siriboon, S. (1996). Familial support and the life course of Thai elderly and their children. In T. Hareven (Ed.), *Aging and generational relations over the life course: a historical and cross-cultural perspective* (pp. 438–461). Berlin: Walter de Gruyter.

- Knodel, J., & Debavalya, N. (1997). Living arrangements and support among the elderly in South-East Asia: An introduction. *Asia Pacific Population Journal*, 12, 5-16.
- Knodel, J., Friedman, J., Anh, T. S., & Cuong, B. T. (2000a). Intergenerational exchanges in Vietnam: Family size, sex composition, and the location of children. *Population Studies-a Journal of Demography*, 54(1), 89-104. doi:10.1080/713779067
- Knodel, J., Friedman, J., Si Anh, T., & Cuong, B. T. (2000b). Intergenerational exchanges in Vietnam: Family size, sex composition, and the location of children. *Population Studies*, 54(1), 89-104.
- Knodel, J., & Ofstedal, M. B. (2002). Patterns and determinants of living arrangements. In A. I. Hermalin (Ed.), *The well-being of the elderly in Asia: a four-country comparative study* (pp. 143-184). Ann Arbor: The University of Michigan Press.
- Knodel, J., & Ofstedal, M. B. (2003). Gender and aging in the developing world: Where are the men? *Population and Development Review*, 29(4), 677-698.
- Knodel, J., Ofstedal, M. B., & Hermalin, A. I. (2002). The demographic, socioeconomic, and cultural context of the four study countries. In A. I. Hermalin (Ed.), *The well-being of the elderly in Asia: a four-country comparative study* (pp. 25-64). Ann Arbor: The University of Michigan Press.
- Knodel, J., & Saengtienchai, C. (1999). Studying living arrangements of the elderly: Lessons from a quasi-qualitative case study approach in Thailand. *Journal of Cross-Cultural Gerontology*, 14(3), 197-220.
- Knodel, J., Saengtienchal, C., & Sittitrai, W. (1995). Living arrangements of the elderly in Thailand: Views of the populace. *Journal of Cross-Cultural Gerontology*, 10(1-2), 79-111.
- Kooshlar, H., Yahaya, N., Hamid, T. A., Samah, A. A., & Jou, V. S. (2012). Living arrangement and life satisfaction in older Malaysians: the mediating role of social support function. *PLoS One*, 7(8), e43125.
- Krause, N. (1995). Assessing stress-buffering effects: A cautionary note. *Psychology and Aging*, 10(4), 518.
- Krause, N., & Liang, J. (1993). Stress, social support, and psychological distress among the Chinese elderly. *Journals of Gerontology*, 48(6), P282-P291. doi:10.1093/geronj/48.6.P282
- Kuh, D., Hardy, R., Langenberg, C., Richards, M., & Wadsworth, M. E. J. (2002). Mortality in adults aged 26-54 years related to socioeconomic conditions in childhood and

- adulthood: post war birth cohort study. *British Medical Journal*, 325(7372), 1076-1080. doi:10.1136/bmj.325.7372.1076
- Kunst, A. E., Groenhouf, F., Mackenbach, J. P., The, E., Borgan, J.-K., Costa, G., . . . Giraldez, M. d. R. (1998). Mortality by occupational class among men 30–64 years in 11 European countries. *Social Science & Medicine*, 46(11), 1459-1476.
- Kurimori, S., Fukuda, Y., Nakamura, K., Watanabe, M., & Takano, T. (2006). Calculation of prefectural disability-adjusted life expectancy (DALE) using long-term care prevalence and its socioeconomic correlates in Japan. *Health Policy*, 76(3), 346-358.
- Laguna, E. (2013). *Intergenerational exchange of support and international migration in the Philippines (Unpublished doctoral thesis)*. University of Bremen, Bremen, Germany.
- Lai, D. W. (2005). Cultural factors and preferred living arrangement of aging Chinese Canadians. *Journal of Housing for the Elderly*, 19(2), 71-86.
- Lamb, V. L. (1999). *Active life expectancy of the elderly in selected Asian countries*. NUPRI Research Paper Series, (69). Nihon University. Population Research Institute. Tokyo, Japan.
- Lawrence, R. H., & Jette, A. M. (1996). Disentangling the disablement process. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences*, 51(4), S173-S182. doi:10.1093/geronb/51B.4.S173
- Lawton, M. P. (1991). Background: A multidimensional view of quality of life in frail elders. In J. L. J.E. Birren, J. Rowe, & D. Deutchman (Ed.), *The concept and measurement of quality of life in the frail elderly* (pp. 3-27). San Diego: Academic Press.
- Lawton, M. P. (1997). Measures of quality of life and subjective well-being. *Generations*, 21, 45-47.
- Lawton, M. P., & Brody, E. M. (1969). Assessment of older people: self-maintaining and instrumental activities of daily living. *The Gerontologist*, 9(3_Part_1), 179-186.
- Lee, C., Gleib, D. A., Goldman, N., & Weinstein, M. (2017). Children's education and parents' trajectories of depressive symptoms. *Journal of Health and Social Behavior*, 58(1), 86-101.
- Lee, G. R. (1988). Aging and intergenerational relations. *Journal of Family Issues*, 8(4), 448-450.
- Lee, G. R., Dwyer, J. W., & Coward, R. T. (1993). Gender differences in parent care: Demographic factors and same-gender preferences. *Journal of Gerontology*, 48(1), S9-S16.

- Lee, G. R., Netzer, J. K., & Coward, R. T. (1995a). Depression among older parents: The role of intergenerational exchange. *Journal of Marriage and the Family*, 823-833.
- Lee, H. J., Lyu, J., Lee, C. M., & Burr, J. A. (2014). Intergenerational financial exchange and the psychological well-being of older adults in the Republic of Korea. *Aging & Mental Health*, 18(1), 30-39.
- Lee, M.-L., Lin, H.-S., & Chang, M.-C. (1995b). Living arrangements of the elderly in Taiwan: Qualitative evidence. *Journal of Cross-Cultural Gerontology*, 10(1-2), 53-78.
- Lee, W. K.-m., & Kwok, H.-K. (2005). Differences in expectations and patterns of informal support for older persons in Hong Kong: Modification to filial piety. *Ageing International*, 30(2), 188-206.
- Lee, Y.-J., & Chuang, Y.-L. (2003). Children's education, intergenerational support, and elderly parents' health in Taiwan. *Development and Society*, 32(1), 1-26.
- Lee, Y.-S. (2017). Is giving or receiving psychologically beneficial to older mothers in South Korea? Importance of marital status. *Journal of Women & Aging*, 29(2), 137-149.
- Leonardi, M., Bickenbach, J., Ustun, T. B., Kostanjsek, N., & Chatterji, S. (2006). The definition of disability: what is in a name? *The Lancet*, 368(9543), 1219-1221.
- Lepore, S. J., Glaser, D. B., & Roberts, K. J. (2008). On the positive relation between received social support and negative affect: a test of the triage and self-esteem threat models in women with breast cancer. *Psycho-Oncology*, 17(12), 1210-1215.
- Li, S., Song, L., & Feldman, M. W. (2009). Intergenerational support and subjective health of older people in rural China: A gender-based longitudinal study. *Australasian Journal on Ageing*, 28(2), 81-86.
- Li, T., Fok, H. K., & Fung, H. H. (2011). Is reciprocity always beneficial? Age differences in the association between support balance and life satisfaction. *Aging & Mental Health*, 15(5), 541-547.
- Link, B. G., & Phelan, J. (1995). Social conditions as fundamental causes of disease. *Journal of Health and Social Behavior*, 80-94.
- Link, B. G., Phelan, J. C., Miech, R., & Westin, E. L. (2008). The resources that matter: fundamental social causes of health disparities and the challenge of intelligence. *Journal of Health and Social Behavior*, 49(1), 72-91.
- Litwin, H. (2004). Intergenerational exchange and mental health in later-life—the case of older Jewish Israelis. *Aging & Mental Health*, 8(3), 196-200.

- Liu, J., Chen, G., Chi, I., Wu, J., Pei, L., Song, X., . . . Zheng, X. (2010). Regional variations in and correlates of disability-free life expectancy among older adults in China. *BMC Public Health*, 10. doi:10.1186/1471-2458-10-446
- Liu, X., Liang, J., & Gu, S. (1995). Flows of social support and health status among older persons in China. *Social Science & Medicine*, 41(8), 1175-1184.
- Loeb, M. E., Eide, A. H., & Mont, D. (2008). Approaching the measurement of disability prevalence: the case of Zambia. *ALTER-European Journal of Disability Research/Revue Européenne de Recherche sur le Handicap*, 2(1), 32-43.
- Logan, J. R., & Bian, F. (1999). Family values and coresidence with married children in urban China. *Social Forces*, 77(4), 1253-1282.
- Logan, J. R., Bian, F. Q., & Bian, Y. J. (1998). Tradition and change in the urban Chinese family: The case of living arrangements. *Social Forces*, 76(3), 851-882. doi:10.2307/3005696
- Lopata, H. Z. (2002). Widower, widow: How same? How different? *The Gerontologist*, 42(4), 564-566.
- Lopez, M. E. (1991). *The Filipino family as home for the aged*. Retrieved from
- Lowenstein, A., Katz, R., & Gur-Yaish, N. (2007). Reciprocity in parent-child exchange and life satisfaction among the elderly: a cross-national perspective. *Journal of Social Issues*, 63(4), 865-883.
- Lowry, D. (2010). *The Disablement process among elderly Chinese* (10-708). Retrieved from
- Lu, L., & Argyle, M. (1992). Receiving and giving support: Effects on relationships and well-being. *Counselling Psychology Quarterly*, 5(2), 123-133.
- Lusterio-Berja, C. (2007). The emergence of multigenerational households: The role of early union. *Philippine Population Review*, 7, 71-86.
- Lynch, F. (1970). Social acceptance reconsidered. In F. Lynch & A. de Guzman (Eds.), *Four readings on Philippine values*. Quezon City Ateneo de Manila University Press.
- Lynch, J., & Kaplan, G. (2000). *Socioeconomic position* (Vol. 2000): Social epidemiology. New York: Oxford University Press.
- Mackenbach, J. P., Kunst, A. E., Cavelaars, A. E., Groenhouf, F., Geurts, J. J., & Health, E. W. G. o. S. I. i. (1997). Socioeconomic inequalities in morbidity and mortality in western Europe. *The Lancet*, 349(9066), 1655-1659.
- Madhavan, S., Clark, S., Beguy, D., Kabiru, C. W., & Gross, M. (2017). Moving beyond the household: Innovations in data collection on kinship. *Population Studies*, 71(1), 117-132.

- Mao, X., & Han, W. J. (2018). Living Arrangements and Older Adults' Psychological Well-Being and Life Satisfaction in China: Does Social Support Matter? *Family Relations*.
- Mapa, D. S., Bersales, L. G. S., Albis, M. L. F., & Daquis, J. C. P. (2011). *Determinants of poverty in elderly-headed households in the Philippines*. University of the Philippines School of Statistics (UPSS) Working Paper, (2011-04). Quezon City, Philippines.
- Martin, L. G. (1989). Living arrangements of the elderly in Fiji, Korea, Malaysia, and the Philippines. *Demography*, 26(4), 627-643. doi:10.2307/2061262
- Mason, K. O. (1992). Family change and support of the elderly in Asia: What do we know? *Asia-Pacific Population Journal*, 7(3), 13-32.
- Mc Bride, M. R. (2006). Filipino American families. In G. Yeo & D. Gallagher-Thompson (Eds.), *Ethnicity and the dementias* (pp. 189-207). New York: Taylor & Francis.
- Medina, B. T. G. (2015). *The Filipino family (3rd ed.)*. Quezon City: University of the Philippines Press.
- Mehio-Sibai, A., Beydoun, M. A., & Tohme, R. A. (2009). Living arrangements of ever-married older Lebanese women: is living with married children advantageous? *Journal of cross-cultural gerontology*, 24(1), 5-17.
- Mehta, K., Osman, M. M., & Alexander, L. E. (1995). Living arrangements of the elderly in Singapore: Cultural norms in transition. *Journal of Cross-Cultural Gerontology*, 10(1-2), 113-143.
- Mendoza, M. L. (2001). *The crisis of management culture in the Philippines: Neither East Asian nor Western*. Paper presented at the 3rd EUROSEAS Conference in London, UK and the 4th European Philippine Studies Conference in Alcoba, Spain on September.
- Mercado, R. (1990). Characteristics of the aged. In I. Domingo, I. Zosa-Feranil, & e. al (Eds.), *Socioeconomic consequences of aging population: insights from the Philippine experience* (pp. 26-44). Manila: Demographic Research and Development Foundation, Inc.
- Midlarsky, E. (1991). Helping as coping. In M. S. Clark (Ed.), *Review of Personality and Social Psychology* (pp. 239-264). Newbury Park, NJ: Sage.
- Minagawa, Y., & Saito, Y. (2018). An analysis of factors related to disability-free life expectancy at 65 years of age across Japanese prefectures in 2010. *European Journal of Ageing*, 15(1), 15-22.
- Minnesota Population Center. (2018). Integrated public use microdata series, International: Version 7.1 [dataset].
- Morada, M. P., Morada, H. B., & de Guzman, E. T. (1986). The elderly population of the Philippines, 1980: characteristics and concerns. *Philippine Population Journal*, 2(1-4), 115-134.

- Mossey, J. M., & Shapiro, E. (1982). Self-rated health: a predictor of mortality among the elderly. *American Journal of Public Health*, 72(8), 800-808.
- Mujahid, G. (2006). Population ageing in East and South-East Asia: current situation and emerging challenges. *Editorial Advisory Board*, 21(3), 136.
- Murray, C. J. L., Salomon, J. A., & Mathers, C. (2000). A critical examination of summary measures of population health. *Bulletin of the World Health Organization*, 78(8), 981-994.
- Nagi, S. Z. (1976). An epidemiology of disability among adults in the United States. *The Milbank Memorial Fund Quarterly. Health and Society*, 439-467.
- National Statistics Office [NSO]. (2010). *The 2010 census of population and housing (CPH) enumerator's manual*. Manila: NSO.
- National Statistics Office [NSO]. (2012). *2010 Census of Population and Housing Report No. 1-A National Capital Region Population by Province, City/Municipality, and Barangay*. Manila: National Statistics Office.
- National Statistics Office [NSO], & ICF Macro. (2009). *Philippine national demographic and health survey 2008*. Calverton: NSO & ICF Macro.
- National Statistics Office [NSO], & Macro International Inc. [MI]. (1994). *National demographic survey 1993*. Calverton: NSO and MI.
- Natividad, J. N. (2000). Ageing in the Philippines: An overview. *Ageing in the Asia-Pacific region: Issues, policies and future trends*, 267-283.
- Natividad, J. N., & Cruz, G. T. (1997). Patterns in living arrangements and familial support for the elderly in the Philippines. *Asia-Pacific Population Journal*, 12(4), 17-34.
- Natividad, J. N., Saito, Y., & Cruz, G. T. (2014). Work, retirement and the gender divide in the Philippines. *Gender and Ageing: Southeast Asian Perspectives*, 229, 315.
- Ng, S. T., & Hamid, T. A. (2013). Effects of work participation, intergenerational transfers and savings on life satisfaction of older Malaysians. *Australasian Journal on Ageing*, 32(4), 217-221.
- Ngin, C., & DaVanzo, J. (1999). Parent-child coresidence and quasi-coresidence in peninsular Malaysia. *Asian Journal of Social Science*, 27(2), 43-63.
- Nguyen, L. T., Saito, Y., Phan, H. T. M., & Nguyen, L. T. N. (2012). *Health expectancy and its variations in Vietnam*. Paper presented at the 24th REVES meeting, Taichung, Taiwan. <http://reves.site.ined.fr/en/>
- Ofstedal, M. B., Knodel, J., & Chayovan, N. (1999). Intergenerational support and gender: A comparison of four Asian countries. *Asian Journal of Social Science*, 27(2), 21-41.

- Ofstedal, M. B., Zimmer, Z., Cruz, G. T., Chan, A., & Lin, Y.-H. (2002). *Self-assessed health expectancy among older Asians: a comparison of Sullivan and multistate life table methods*. Comparative study of the elderly in Asia, (03-60). Ann Arbor:University of Michigan Population Studies Center.
- Pacquiao, D. F. (2008). People of Filipino heritage. In L. D. Purnell & B. T. Paulanka (Eds.), *Transcultural health care: A culturally competent approach* (3rd ed., pp. 175-195). Philadelphia: F.A. Davis.
- Panigrahi, A. K. (2009). Living Arrangements Preferences of Elderly: Evidence from Field Study in Orissa. *Indian Journal of*, 517(3), 535-544.
- Peek, M. K., Ottenbacher, K. J., Markides, K. S., & Ostir, G. V. (2003). Examining the disablement process among older Mexican American adults. *Social Science & Medicine*, 57(3), 413-425. doi:10.1016/s0277-9536(02)00367-2
- Peng, C., Kwok, C. L., Law, Y. W., Yip, P. S., & Cheng, Q. (2018). Intergenerational support, satisfaction with parent–child relationship and elderly parents’ life satisfaction in Hong Kong. *Aging & Mental Health*, 1-11.
- Phelan, J. C., Link, B. G., Diez-Roux, A., Kawachi, I., & Levin, B. (2004). “Fundamental causes” of social inequalities in mortality: a test of the theory. *Journal of Health and Social Behavior*, 45(3), 265-285.
- Philippine Statistics Authority. (2010). *Life table of the Philippines prepared by the interagency working group*. Philippine Statistics Authority. Manila.
- Philippine Statistics Authority, & ICF International. (2014). *Philippines national demographic and health survey 2013*. Manila, Philippines: Philippine Statistics Authority & ICF International.
- Philippine Statistics Authority (PSA), & ICF. (2018). *Philippines National Demographic and Health Survey 2017*. Quezon City, Philippines, and Rockville, Maryland, USA: PSA and ICF.
- Phillips, D. R., Siu, O. L., Yeh, A. G. O., & Cheng, K. H. C. (2005). The impacts of dwelling conditions on older persons' psychological well-being in Hong Kong: the mediating role of residential satisfaction. *Social Science & Medicine*, 60(12), 2785-2797. doi:10.1016/j.socscimed.2004.11.027
- Phua, V. C., Kaufman, G., & Park, K. S. (2001). Strategic adjustments of elderly Asian Americans: Living arrangements and headship. *Journal of Comparative Family Studies*, 32(2), 263-+.

- Pinquart, M., & Sorensen, S. (2000). Influences of socioeconomic status, social network, and competence on subjective well-being in later life: A meta-analysis. *Psychology and Aging, 15*(2), 187-224. doi:10.1037//0882-7974.15.2.187
- Pongiglione, B., De Stavola, B. L., & Ploubidis, G. B. (2015). A systematic literature review of studies analyzing inequalities in health expectancy among the older population. *PLoS One, 10*(6), e0130747.
- Pope, A. M., & Tarlov, A. R. (1991). *Disability in America: Toward a national agenda for prevention*: National Academies Press.
- Pyke, K. D., & Bengtson, V. L. (1996). Caring more or less: Individualistic and collectivist systems of family eldercare. *Journal of Marriage and the Family, 379-392*.
- Quashie, N. T. (2015). Who Supports Whom? Gender and Intergenerational Transfers in Post-Industrial Barbados. *Journal of Cross-Cultural Gerontology, 30*(2), 189-216. doi:10.1007/s10823-015-9260-2
- Quintos, M. A. M. (2016). *Trends in regional differences in maternal mortality in the Philippines in the last four decades*. Paper presented at the International Conference on Research in Social Sciences, Humanities and Education (SSHE-2016), Cebu, Philippines.
- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*(3), 385-401.
- Ramos, M., & Wilmoth, J. (2003). Social relationships and depressive symptoms among older adults in southern Brazil. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 58*(4), S253-S261.
- Randall, S., & Coast, E. (2015). Poverty in African households: the limits of survey and census representations. *The Journal of Development Studies, 51*(2), 162-177.
- Ravesteijn, B., Kippersluis, H. v., & Doorslaer, E. v. (2018). The wear and tear on health: What is the role of occupation? *Health Economics, 27*(2), e69-e86.
- Reiss, I. L., & Lee, G. R. (1988). *Family systems in America*. New York, NY: Holt, Rinehart and Winston.
- Ren, Q., & Treiman, D. J. (2015). Living arrangements of the elderly in China and consequences for their emotional well-being. *Chinese Sociological Review, 47*(3), 255-286.
- Reyes-Beaman, S., Jagger, C., Garcia-Pena, C., Munoz, O., Beaman, P. E., Stafford, B., & National Group of Research on Ageing. (2005). Active life expectancy of older

- people in Mexico. *Disability and Rehabilitation*, 27(5), 213-219.
doi:10.1080/09638280400006424
- Risseuw, C. (2001). Policy issues of inclusion and exclusion in relation to gender and ageing in the south. *The European Journal of Development Research*, 13(2), 26-48.
- Robine, J. M., & Ritchie, K. (1991). Healthy life expectancy: evaluation of global indicator of change in population health. *BMJ*, 302(6774), 457-460.
- Rodell, P. A. (2002). *Culture and customs of the Philippines*. Westport: Greenwood Press.
- Ross, C. E., & Mirowsky, J. (2002). Family relationships, social support and subjective life expectancy. *Journal of Health and Social Behavior*, 469-489.
- Ryan, A. K., & Willits, F. K. (2007). Family ties, physical health, and psychological well-being. *Journal of Aging and Health*, 19(6), 907-920.
- Saito, Y., Robine, J.-M., & Crimmins, E. M. (2014). The methods and materials of health expectancy. *Statistical Journal of the IAOS*, 30(3), 209-223.
- Samanta, T., Chen, F., & Vanneman, R. (2014). Living arrangements and health of older adults in India. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 70(6), 937-947.
- Sarmiento, E. M. (1990). Family structure and relations of the elderly. In L. J. Domingo, I. Zosa-Feranil, & e. al (Eds.), *Socio-economic consequences of aging population: Insights from the Philippine experience* (pp. 80-109). Manila: Demographic Research and Development Foundation, Inc.
- Schatz, E., Seeley, J., & Zalwango, F. (2018). Intergenerational care for and by children: Examining reciprocity through focus group interviews with older adults in rural Uganda. *Demographic Research*, 38, 2003-2026.
- Schwarz, B., Albert, I., Trommsdorff, G., Zheng, G., Shi, S., & Nelwan, P. R. (2010). Intergenerational support and life satisfaction: A comparison of Chinese, Indonesian, and German elderly mothers. *Journal of Cross-Cultural Psychology*, 41(5-6), 706-722.
- Sereny, M. (2011). Living arrangements of older adults in China: The interplay among preferences, realities, and health. *Research on Aging*, 33(2), 172-204.
- Sereny, M., D, & Gu, D. (2011). Living arrangement concordance and its association with self-rated health among institutionalized and community-residing older adults in China. *Journal of cross-cultural gerontology*, 26(3), 239-259.

- Siedlecki, K. L., Salthouse, T. A., Oishi, S., & Jeswani, S. (2014). The relationship between social support and subjective well-being across age. *Social Indicators Research*, 117(2), 561-576.
- Silverstein, M., Chen, X., & Heller, K. (1996). Too much of a good thing? Intergenerational social support and the psychological well-being of older parents. *Journal of Marriage and the Family*, 970-982.
- Silverstein, M., Cong, Z., & Li, S. (2006). Intergenerational transfers and living arrangements of older people in rural China: Consequences for psychological well-being. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 61(5), S256-S266.
- Silverstein, M., Lowenstein, A., Katz, R., Gans, D., Fan, Y. K., & Oyama, P. (2013). Intergenerational Support and the Emotional Well-being of Older Jews and Arabs in Israel. *Journal of Marriage and Family*, 75(4), 950-963.
- Smits, A., van Gaalen, R. I., & Mulder, C. H. (2010). Parent-Child Coresidence: Who Moves in With Whom and for Whose Needs? *Journal of Marriage and Family*, 72(4), 1022-1033. doi:10.1111/j.1741-3737.2010.00746.x
- Sobieszczyk, T., Knodel, J., & Chayovan, N. (2003). Gender and wellbeing among older people: evidence from Thailand. *Ageing and Society*, 23, 701-735. doi:10.1017/s0144686x03001429
- Sommer, K. L., & Bourgeois, M. J. (2010). Linking the perceived ability to influence others to subjective well-being: A need-based approach. *Social Influence*, 5(3), 220-244.
- Song, L., Li, S., Zhang, W., & Feldman, M. W. (2008). Intergenerational support and self-rated health of the elderly in rural China: An investigation in Chaohu, Anhui province *Healthy longevity in China* (pp. 235-249): Springer.
- Stiefel, M. C., Perla, R. J., & Zell, B. L. (2010). A healthy bottom line: healthy life expectancy as an outcome measure for health improvement efforts. *The Milbank Quarterly*, 88(1), 30-53.
- Stoller, E. P. (1985). Exchange patterns in the informal support networks of the elderly - The impact of reciprocity on morale. *Journal of Marriage and the Family*, 47(2), 335-342. doi:10.2307/352133
- Sullivan, D. F. (1971). Single index of mortality and morbidity. *Health Services Report*, 86(4), 347-354. doi:10.2307/4594169

- Sung, K.-t. (2001). Family support for the elderly in Korea: Continuity, change, future directions, and cross-cultural concerns. *Journal of Aging & Social Policy*, 12(4), 65-79.
- Suthers, K., Saito, Y., & Crimmins, E. (2003). Emotional well-being among older persons: A comparative analysis of the 70+ population in Japan and the United States *Advances in quality-of-life theory and research* (pp. 41-50): Springer.
- Szinovacz, M. E. (2000). Changes in housework after retirement: A panel analysis. *Journal of Marriage and Family*, 62(1), 78-92.
- Takagi, E., & Saito, Y. (2013). A longitudinal analysis of the impact of family support on the morale of older parents in Japan: does the parent's normative belief in filial responsibilities make a difference? *Ageing & Society*, 33(6), 1053-1076.
- Tareque, M. I., Begum, S., & Saito, Y. (2013). Gender differences in disability-free life expectancy at old ages in Bangladesh. *Journal of Aging and Health*, 25(8), 1299-1312.
- Tareque, M. I., Begum, S., & Saito, Y. (2014). Inequality in disability in Bangladesh. *PLoS One*, 9(7), e103681.
- Tareque, M. I., Tiedt, A. D., Islam, T. M., Begum, S., & Saito, Y. (2017). Gender differences in functional disability and self-care among seniors in Bangladesh. *BMC Geriatrics*, 17. doi:10.1186/s12877-017-0577-2
- Teerawichitchainan, B., Pothisiri, W., & Long, G. T. (2015). How do living arrangements and intergenerational support matter for psychological health of elderly parents? Evidence from Myanmar, Vietnam, and Thailand. *Social Science & Medicine*, 136, 106-116.
- Tesch-Römer, C., von Kondratowitz, H. J., & Motel-Klingebiel, A. (2001). Quality of life in the context of intergenerational solidarity. In S. O. D. K. Herlofson (Ed.), *Ageing, intergenerational relations, care systems and quality of life* (pp. 63-73). Oslo, Nova.
- Thibaut, J. W., & Kelley, H. (1959). *The social psychology of groups*. Oxford: John Wiley.
- Thomas, P. A. (2010). Is it better to give or to receive? Social support and the well-being of older adults. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 65B(3), 351-357.
- Thornton, A., Chang, M. C., & Sun, T. H. (1984). Social and economic change, intergenerational relationships, and family formation in Taiwan. *Demography*, 21(4), 475-499. doi:10.2307/2060911

- Torres, A. T. (1994). Coping strategies of female-headed households in urban poor communities in the Philippines. *Review of Women's Studies*, 4(1).
- Torssander, J. (2013). From child to parent? The significance of children's education for their parents' longevity. *Demography*, 50(2), 637-659.
- Torssander, J. (2014). Adult children's socioeconomic positions and their parents' mortality: a comparison of education, occupational class, and income. *Social Science & Medicine*, 122, 148-156.
- Treas, J., & Cohen, P. N. (2006). Maternal coresidence and contact: Evidence from cross-national surveys. In G. A.H., C. Chu, & S. Tuljapurkar (Eds.), *Allocating public and private resources across generations* (pp. 117-137). Dordrecht: Springer.
- Ugargol, A. P., Hutter, I., James, K., & Bailey, A. (2016). Care needs and caregivers: Associations and effects of living arrangements on caregiving to older adults in India. *Ageing International*, 41(2), 193-213.
- United Nations. (2007). *Research Agenda on Ageing for the 21st Century: 2007 Update*. New York: United Nations Programme on Ageing and International Association of Gerontology
- and Geriatrics: New York: United Nations.
- United Nations. (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.
- United Nations Statistics Division. (2018). Population by age, sex and urban/rural residence. Retrieved from <http://data.un.org/Data.aspx?d=POP&f=tableCode%3a22>
- University of the Philippines Population Institute [UPPI]. (1981). *To have or not to have: perspectives of three generations on the value of children*. Quezon City: UPPI.
- Velkoff, V. A. (2001). *Living arrangements and well-being of the older population: Future research directions*: United Nations, Department of Economic and Social Affairs, Population
- Verbrugge, L. M., & Jette, A. M. (1994). The disablement process. *Social Science & Medicine*, 38(1), 1-14.
- Victor, C. (2010). The demography of ageing. *The SAGE handbook of social gerontology*, 61-74.
- Waite, L. J. (2009). Marital history and well-being in later life *International handbook of population aging* (pp. 691-704): Springer.

- Waite, L. J., & Hughes, M. E. (1999). At risk on the cusp of old age: Living arrangements and functional status among black, white and Hispanic adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 54(3), S136-S144.
- Walker, A., & Mollenkopf, H. (2007). International and multi-disciplinary perspectives on quality of life in old age: Conceptual issues *Quality of life in old age* (pp. 3-13): Springer.
- Walster, E., & Berscheid, E. (1973). New directions in equity research. *Journal of Personality and Social Psychology*, 25(2), 151-176. doi:10.1037/h0033967
- Walster, E., Walster, G. W., & Berscheid, E. (1978). Equity: Theory and research.
- Wang, J., Chen, T., & Han, B. (2014). Does co-residence with adult children associate with better psychological well-being among the oldest old in China? *Aging & Mental Health*, 18(2), 232-239.
- Wheaton, F. V., & Crimmins, E. M. (2016). Female disability disadvantage: a global perspective on sex differences in physical function and disability. *Ageing & Society*, 36(6), 1136-1156. doi:10.1017/s0144686x15000227
- Williams, L., Zhang, R., & Packard, K. C. (2017). Factors affecting the physical and mental health of older adults in China: the importance of marital status, child proximity, and gender. *SSM-population health*, 3, 20-36.
- Wohland, P., Rees, P., Gillies, C., Alvanides, S., Matthews, F. E., O'Neill, V., & Jagger, C. (2014). Drivers of inequality in disability-free expectancy at birth and age 85 across space and time in Great Britain. *Journal of Epidemiology and Community Health*, jech-2014-204083.
- Wolf, M. (1972). *Women and the family in rural Taiwan*: Stanford University Press.
- World Health Organization (WHO). (1997). *The world health report 1997: Conquering suffering, enriching humanity*. Geneva, Switzerland: World Health Organization.
- World Health Organization [WHO]. (2001). *International classification of functioning, disability and health: ICF*: Geneva: World Health Organization.
- Wu, Z., & Schimmele, C. M. (2008). Living arrangements and psychological disposition of the oldest old population in China *Healthy longevity in China* (pp. 197-213): Springer.
- Yahirun, J. J., Sheehan, C. M., & Hayward, M. D. (2016). Adult children's education and parents' functional limitations in Mexico. *Research on Aging*, 38(3), 322-345.
- Yahirun, J. J., Sheehan, C. M., & Hayward, M. D. (2017). Adult children's education and changes to parents' physical health in Mexico. *Social Science & Medicine*, 181, 93-101.

- Yang, L., Martikainen, P., & Silventoinen, K. (2016). Effects of individual, spousal, and offspring socioeconomic status on mortality among elderly people in China. *Journal of Epidemiology*, 26(11), 602-609.
- Ye, M., Chen, Y., & Peng, Y. (2017). A New Era in Living Arrangements: Determinants of Quality of Life Among Chinese Older Adults *Family, Work and Wellbeing in Asia* (pp. 43-64): Springer.
- Yong, V., & Saito, Y. (2009). Trends in healthy life expectancy in Japan: 1986–2004. *Demographic Research*, 20, 467-494.
- Yong, V., Saito, Y., & Chan, A. (2011). Gender differences in health and health expectancies of older adults in Singapore: an examination of diseases, impairments, and functional disabilities. *Journal of Cross-Cultural Gerontology*, 26(2), 189-203.
doi:10.1007/s10823-011-9143-0
- Yount, K. M. (2005). The patriarchal bargain and intergenerational coresidence in Egypt. *The Sociological Quarterly*, 46(1), 137-164.
- Yount, K. M., & Khadr, Z. (2008). Gender, social change, and living arrangements among older Egyptians during the 1990s. *Population Research and Policy Review*, 27(2), 201-225.
- Yu, J., Yan, Z., & Li, J. (2016). Living arrangement and its association with residential needs of community-dwelling older adults in China. *Psychology and Psychotherapy*, 6(1), 1-7.
- Zhang, W., Li, S., & Silverstein, M. (2005). The effects of inter-generational support on the mortality of older people in rural China. *Asian Population Studies*, 1(3), 325-338.
- Zhou, M., & Qian, Z. (2008). Social support and self-reported quality of life China's oldest old *Healthy longevity in China* (pp. 357-376): Springer.
- Zimmer, Z. (2005). Health and living arrangement transitions among China's oldest-old. *Research on Aging*, 27(5), 526-555.
- Zimmer, Z. (2006). Disability and active life expectancy among older Cambodians. *Asian Population Studies*, 2(2), 133-148.
- Zimmer, Z. (2008). Poverty, wealth inequality and health among older adults in rural Cambodia. *Social Science & Medicine*, 66(1), 57-71.
doi:10.1016/j.socscimed.2007.08.032
- Zimmer, Z., & Amornsirisomboon, P. (2001). Socioeconomic status and health among older adults in Thailand: an examination using multiple indicators. *Social Science & Medicine*, 52(8), 1297-1311. doi:10.1016/s0277-9536(00)00232-x

- Zimmer, Z., Hanson, H. A., & Smith, K. R. (2016). Offspring socioeconomic status and parent mortality within a historical population. *Demography*, 53(5), 1583-1603.
- Zimmer, Z., Hermalin, A. I., & Lin, H.-S. (2002a). Whose education counts? The added impact of adult-child education on physical functioning of older Taiwanese. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 57(1), S23-S32.
- Zimmer, Z., & Kim, S. K. (2001). Living arrangements and socio-demographic conditions of older adults in Cambodia. *Journal of cross-cultural gerontology*, 16(4), 353-381. doi:10.1023/a:1014582603718
- Zimmer, Z., & Kwong, J. (2003). Family size and support of older adults in urban and rural China: Current effects and future implications. *Demography*, 40(1), 23-44.
- Zimmer, Z., Martin, L. G., Ofstedal, M. B., & Chuang, Y.-L. (2007). Education of adult children and mortality of their elderly parents in Taiwan. *Demography*, 44(2), 289-305.
- Zimmer, Z., Natividad, J., Lin, H. S., & Chayovan, N. (2000). A cross-national examination of the determinants of self-assessed health. *Journal of Health and Social Behavior*, 41(4), 465-481. doi:10.2307/2676298
- Zimmer, Z., Natividad, J. N., Ofstedal, M. B., & Lin, H.-S. (2002b). Physical and mental health of the elderly. In A. I. Hermalin (Ed.), *The well-being of the elderly in Asia: a four-country comparative study* (pp. 361-411). Ann Arbor: The University of Michigan Press.
- Zsembik, B. A. (1996). Preference for coresidence among older Latinos. *Journal of Aging Studies*, 10(1), 69-81.
- Zunzunegui, M. V., Beland, F., & Otero, A. (2001). Support from children, living arrangements, self-rated health and depressive symptoms of older people in Spain. *International Journal of Epidemiology*, 30(5), 1090-1099.