Anxiety symptoms as precursors of major depression and suicidal ideation

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Abstract

Background: Relative to depression symptoms, the role of anxiety symptoms in the development of depression and suicidal ideation has not been well established. This study aimed to identify the anxiety and depression symptoms that confer the greatest amount of risk for depression and suicidal ideation at the population level.

Method: The PATH through Life study is an Australian community-based longitudinal cohort study of 7,485 younger, middle-aged and older adults. Adjusted population attributable risk (PAR) for incident depression and suicidal ideation after four years was assessed for 18 symptoms of anxiety and depression.

Results: Anxiety symptoms contributed greater risk overall to both depression (45%) and suicidal ideation (23%) incidence than depression symptoms (35% and 16% respectively).

Anxiety symptoms had largest PARs among younger age groups.

Conclusions: Prevention programs for depression and suicide should aim to reduce anxiety symptoms in addition to depression symptoms, and target individuals reporting symptoms such as worrying or irritability.

Subclinical depression is known to be a strong risk factor for subsequent major depression [1; 2] and thoughts of suicide [3]. However, the role of anxiety symptoms in the development of depression [4] and suicidal ideation [3] is less clear. Although there may be complex etiological interactions between anxiety and depression [5], it is known that anxiety disorders have a high comorbidity with depression [6] and that anxiety disorders occur prior to the onset of depressive disorders in many individuals [7]. Of particular concern is the finding that the course of depression that is comorbid with anxiety or other disorders tends to be more severe than that for depression alone [8]. There is also considerable evidence that individuals with anxiety disorders are at increased risk of suicidal ideation [9; 10] and suicide attempt [9; 11], particularly among those with comorbid anxiety and depression [12-14]. However, the comparative predictive value of anxiety symptoms relative to depression symptoms for subsequent development of caseness for depression and suicidal ideation has not been well established.

A standard strategy to maximise the effectiveness of prevention efforts for any disorder is to target programs to those individuals who are at higher risk for disorder and to modify the specific risk factors that confer the most risk of developing disorders across the population. It is therefore important to identify the factors that are likely to make the most impact on prevalence rates in the population. Interventions that target the symptoms that confer the greatest vulnerability may be more successful than those that aim to reduce overall symptom levels more generally [see 4]. Using measures of population attributable risk, it is possible to quantify the risk of depression and suicidal ideation that are attributable to single or multiple factors [15; 16]. Such measures take into account both the prevalence of a risk factor in the population and the increased risk of depression or ideation that it confers. Consequently, the highest levels of attributable risk would only be seen for risk factors that have a combination of high prevalence in the community and that confer substantially

increased risk of depression or suicidal ideation. By taking prevalence into account, population attributable risk estimates can be used to estimate the proportion of cases of a disorder that can be attributed to a specific risk factor and to predict the potential impact of public health interventions on the health status of a population [17]. These are both important public health issues that are not adequately assessed by odds ratios alone.

The primary aim of the present study was to identify the anxiety and depression symptoms that conferred the greatest amount of risk for subsequent onset of major depressive disorder (MDD) and suicidal ideation in a community-based cohort after four year follow-up. In the present study, criteria for MDD and suicidal ideation were determined epidemiologically using the Patient Health Questionnaire (PHQ-9) [18] and the Psychiatric Symptom Frequency scale [19]. Furthermore, the study aimed to evaluate whether depression symptoms conferred more risk of developing MDD and suicidal ideation than anxiety symptoms. As the cohort consists of younger, midlife and older adults, a secondary aim was to examine whether there was age-based variation in the levels of risk attributable to these symptoms. Given the considerable focus of previous research on the role of depression symptoms in the development of depression and suicide, it was hypothesized that a greater proportion of the risk for incident depression and suicidal ideation would be attributable to depression symptoms than to anxiety symptoms. However, given the potential of anxiety to influence the onset of depression in younger adults [7], the predominance of depression effects would be lessened in the young adult cohort. It was also hypothesized that overall, depression and anxiety symptoms would more strongly account for the risk of depressive disorder and suicidal ideation in younger age groups, which tend to have more incident cases of depression and suicidal thoughts.

Method

Participants

The PATH Through Life Project is a population-based study examining the health and well-being of people who are 20-24, 40-44, and 60-64 years of age [20]. Each cohort is being followed up every four years over a total period of 20 years. Participants were randomly sampled from the electoral rolls for the city of Canberra, Australia, and in the neighbouring town of Queanbeyan. Registration on the electoral roll is compulsory for Australian citizens. Information about the representativeness of the sample has been detailed elsewhere [21]. Results presented here concern the first two waves of interviews conducted in 1999-2002 and 2003-2006 (recruitment was staggered by age group). At the first wave, interviews were completed with 7,485 participants: 2,404 in the 20-24 year age- group, 2,530 in the 40-44 group and 2,551 in the 60-64 group. Participation rates of those who were found to be in the appropriate age ranges were 58.6% for the 20-24s, 64.6% for the 40-44s and 58.3% for the 60-64s. Four years later, interviews were completed by 6,715 participants (89.7% follow-up rate): 2,139 (89.0%) aged 24-28, 2,354 (93.0%) 44-48 and 2,222 (87.8%) 64-68.

To ensure that analyses reflected incident cases of depression, participants who initially met criteria for depression or reported a lifetime history of depression were excluded from the analyses of the Wave 2 depression outcome. The sample selection process is shown in Figure 1. Initial criteria for depression were assessed using the Composite International Diagnostic Interview-Short Form (CIDI-SF) [22] for the 20s and 40s cohorts and the Patient Health Questionnaire (PHQ-9) [18] for the 60s cohort. Lifetime history of depression was reported using two items: “Have you ever in your life been markedly depressed; that is, for several weeks or more, you felt sad, lost interest in things and felt lacking in energy?” and “Did you see a counsellor or a doctor for it at the time?”. To account for possible lifetime depression, participants were excluded if they endorsed both of these items. Further exclusion

on the basis of missing outcome data was made, resulting in an analysis sample of 4,931 for the depression outcome that included 1,681 in the 20s cohort, 1,680 in the 40s and 1,570 in the 60s. For the suicidal ideation outcome, exclusions were made on the basis of suicidal ideation in the year before the first interview. Lifetime history of suicidal ideation was not assessed, due to the biases associated with long-term recall of suicidal ideation [23].

Exclusion on the basis of missing outcome data was also made, resulting in an analysis sample for the suicidal ideation outcome that included 1,561 in the 20s cohort, 1,883 in the 40s and 1,978 in the 60s.

Procedure

Participants were interviewed at a convenient location, usually their home or the Centre for Mental Health Research at the Australian National University. Most of the interview was self-completed on a palmtop or laptop computer. However, testing by the interviewer was required for the physical tests, some cognitive tests and a cheek swab used for genetic testing. Approval for the research was obtained from The Australian National University's Human Research Ethics Committee. All participants provided written informed consent to participate in the study.

Measures

The two outcome variables were onset of major depression and onset of suicidal ideation after four years. The depression outcome was assessed using the nine-item Patient Health Questionnaire [18], a self-report measure that uses DSM criteria to assess presence of mental disorders. The criterion and construct validity of the PHQ-9 have previously been demonstrated, with 73% sensitivity and 98% specificity in detecting major depression compared to clinician-based assessment of DSM criteria and strong relationships with

measures of functional impairment and health care use [18]. The measure also has sound internal consistency (Cronbach $\alpha > 0.85$ in multiple samples) and 48-hour test-retest reliability of 0.84 [24]. Presence of major depression disorder was defined based on the algorithm identified by the authors of the scales, specifically, presence of anhedonia or feelings of depression (first two items of PHQ-9) and five or more of the nine PHQ-9 items being rated as “more than half the days” or higher (or “several days” or higher for the suicidal ideation item).

The suicidal ideation outcome was assessed broadly, based on endorsement on one or more of three yes/no items from the Psychiatric Symptom Frequency scale [19]: “In the last year have you ever felt that life is hardly worth living”, “In the last year have you ever thought that you really would be better off dead?”, and “In the last year have you ever thought about taking your own life?”. The same criteria for the suicidal ideation outcome at wave 2 were applied to exclude participants reporting suicidal ideation at wave 1. Despite overlaps between depression and suicidal ideation, the two outcomes had a relatively high level of independence, with a Spearman correlation of 0.27.

The independent risk factors examined were the 18 depression and anxiety symptoms assessed in the Goldberg Depression and Anxiety Scales [25]. These scales provide binary (yes/no) self-report of symptom presence in the four weeks prior to the interview. Symptom scores from the Goldberg scales have a strong association with presence of major depression and generalised anxiety disorder, with sensitivity at specified cut points of 85% and 82% respectively and combined specificity of 91% for absence of psychiatric disorder [25]. In addition, age and gender were reported at the initial interview.

Analysis

Logistic regression analyses, adjusted for gender and initial age, were used to assess the association between each “risk factor” symptom at wave one and the onset of depression or suicidal ideation at wave two. The prevalence of each risk factor in the sample was calculated using contingency tables. Population attributable risk (PAR) was then calculated using the formula given by Fleiss [16] that takes into account both the adjusted odds of the outcome based on a single risk factor and the prevalence of that risk factor. The PAR for combined anxiety symptoms and combined depression symptoms was calculated using the method described by Bruzzi et al. [15]. Bootstrapping was conducted to estimate the standard error of the population attributable risk estimates [26]. This technique involved randomly drawing 7495 observations from the full sample of 7495 with replacement, repeating this process to create 1000 bootstrapped samples, calculating the anxiety and depression PAR for each sample and calculating a paired t-test using the 1000 bootstrapped samples. Subanalyses were conducted within each age group to assess differences in PAR across the life span, with odds ratios adjusted for gender and the symptom of interest.

Results

Sample characteristics

Characteristics of the full wave 2 sample are presented in Table 1. The p values presented in the table are based on χ^2 statistics for categorical variables and F statistics from one-way analyses of variance for continuous variables. They show significant differences between the three age cohorts on all demographic and mental health variables.

Approximately half of the sample was female and the level of education was relatively high in all age groups. Rates of depression were highest in the 20s and lowest in the 60s. The increase in depression prevalence in the 20s and 40s from wave 1 to wave 2 would be

primarily attributable to the change in instrument used in the two waves. The depression prevalence for the complete sample was 2.1% at wave 1 and 4.1% at wave 2. Overall, some form of suicidal thought was reported by 25.8% of the 20s cohort, 19.1% of the 40s and 9.7% of the 60s at the first wave (18.1% overall). These rates declined in all age groups at the second wave, with 18.8%, 15.8% and 7.4% respectively (14.0% overall) reporting suicidal thoughts. Of those who had depression at wave 1, 49.6% met criteria for comorbid generalised anxiety disorder (only assessed among the 20s and 40s cohort, based on CIDI-SF, [22]) while this figure was 55.4% at wave 2 (based on the GAD-7) [27]. Comorbidity with panic disorder was assessed only in the 60s cohort at wave 1 and in the full cohort at wave 2 based on the PHQ-panic [18], with rates of 15.2% and 21.0% respectively among those with depression.

Incidence of depression attributable to anxiety and depression symptoms

Table 2 shows the estimates of population attributable risk (PAR) for onset of depression after four years, based on the symptoms assessed at the first wave. The table also shows the odds ratios adjusted for age cohort and gender, and the prevalence of each symptom in the cohort. All adjusted odds ratios were significant at $p < 0.05$, indicating that each of the symptoms was associated with greater odds of depression. The presentation of anxiety and depression items in the table are sorted based on PAR. It is clear from the table that anxiety symptoms, in particular, worrying, irritability and difficulty relaxing, have the largest PARs as a result of their strong relationships with depression and relatively high prevalence in the sample. Overall, 45.1% of the incident cases of major depression at wave 2 were attributable to anxiety symptoms, while 34.8% were attributable to depression symptoms. Bootstrapping was used to estimate the mean difference between anxiety and depression symptom PARs (mean difference = 0.109), and the standard error of this estimate

(SE = 0.026), by calculating these PARs across 1000 bootstrapped samples which were sampled from the full cohort (n = 7495) with replacement. Based on a paired t-test, the difference between the estimated PARs for anxiety symptoms and depression symptoms was significant ($t_{4930} = 4.22$, $p < 0.001$).

In a follow-up analysis (not tabulated), the PARs were recalculated excluding participants with GAD at baseline, but only among the 20s and 40s samples for whom GAD criteria were assessed using the CIDI-SF. Although there was some attenuation of both PARs after the additional exclusion, anxiety symptoms still accounted for more risk of depression onset than did depression symptoms: 40.2% for anxiety symptoms and 29.5% for depression symptoms (compared to 58.0% and 43.0% respectively for the combined 20s and 40s cohorts when only depression was excluded).

These findings are broken down by age cohort in Figure 2. Again, worrying, irritability and difficulty relaxing stand out as having the largest PARs, with worrying accounting for 72% of the risk for depression incidence in the 20s cohort. However, there were some distinct age differences. Presence of headaches or neck aches featured prominently for the 40s and 60s cohorts (48.5% and 57.3% respectively). Beyond headaches and neck aches, the symptoms that contributed most to depression incidence in the 60s cohort were lack of energy (44.9%), worries about health (39.5%) and difficulty concentrating (37.5%). As summarised in Table 3, anxiety and depression symptoms accounted for the greatest proportion of the incident depression cases in the 20s, and the least in the 60s. Likewise, the difference in PAR between anxiety symptoms and depression symptoms was pronounced in the 20s and 40s but marginal in the 60s. Note that the adjusted PAR for waking early in the 60s was negative (-13.1%).

Incidence of suicidal ideation attributable to anxiety and depression symptoms

The last column of Table 2 shows the estimates of PAR for onset of suicidal ideation after four years, based on the symptoms assessed at the first wave. All adjusted odds ratios were significant at $p < 0.05$ except for waking early ($p = 0.36$). The table shows that once again, the incidence of suicidal ideation attributable to anxiety symptoms (24.3% overall) was greater than that attributable to depression symptoms (16.1% overall). Irritability, feeling keyed up and worrying had the greatest PARs, which reflect odds ratios greater than 2 and symptom prevalence above 30% for these three symptoms. The magnitude of the PARs for suicidal ideation was less than those for depression, indicating that a smaller proportion of the incidence of suicidal ideation was attributable to depression and anxiety symptoms than for depression incidence. Using the bootstrap method, the mean difference between the PARs for anxiety and depression symptoms (0.062, SE = 0.023) on suicidal ideation was significant ($t_{5231} = 2.70$, $p = 0.007$). To examine whether the risk estimates were related to the low threshold used to characterise suicidal thoughts, the analyses were repeated with ideation assessed using only the item “In the last year have you ever thought about taking your own life?”. Participants reporting any level of suicidal thoughts at the first wave were once again excluded. In this follow-up analysis (not tabulated), the PARs for anxiety symptoms and depression symptoms were similar to the original analysis: 22.3% and 11.0% respectively.

Figure 3 plots the age-specific PARs for suicidal ideation. In contrast to depression, the 40s cohort had larger PARs than the 20s or 60s. In the 20s cohort, difficulty falling asleep had a stronger impact on suicidal ideation (23.2%) than in other age cohorts, with irritability (31.0%) being the only symptom with a greater PAR. The 40s cohort aligned with the overall findings, with feeling keyed up or irritable contributing more than 40% of the incidence of suicidal ideation. In the 60s cohort, feeling slowed up (37.6%), headaches or neck aches (29.9%) and lacking in energy (23.9%) were the symptoms most strongly contributing to suicidal ideation. Note that the PARs for waking early in the 20s (-2.1%) and lost weight in

the 60s (-1.4%) were negative. The age differences observed in Figure 3 are also evident in Table 3, which shows that the 40s cohort had higher PARs overall for both depression and anxiety symptoms than the other two age cohorts on the suicidal ideation outcome. Table 3 also indicates that the difference between the PARS for anxiety and depression symptoms was most narrow in the 60s cohort.

Discussion

The present study examined the proportion of the incidence of depression and suicidal ideation that was attributable to anxiety and depression symptoms in a cohort of approximately 5,000 community-dwelling adults. Contrary to hypotheses, anxiety symptoms were found to account for a larger proportion of depression incidence and suicidal ideation incidence than depression symptoms. Although anxiety symptoms tended to be slightly more prevalent in the cohort, many of them conferred greater odds of depression and/or suicidal ideation than the depression symptoms. Consequently, it appears that programs to prevent depression and suicide in the community may benefit from aiming to reduce anxiety symptoms in addition to depression symptoms. In particular, targeted depression programs may be more successful if they select individuals reporting symptoms such as worrying, irritability or difficulty relaxing, which may be overlooked by programs that define risk based on severity of depression symptoms. Likewise, targeted suicide prevention programs may benefit from selecting individuals who have signs of anxiety, particularly symptoms of agitation such as irritability, feeling keyed-up or worrying. These symptoms may be missed if depression severity is used as the criterion for entry into a targeted suicide prevention program. Indeed, core depression symptoms including loss of interest and feelings of hopelessness had only moderate impact on depression incidence and minor impact on the development of suicidal thoughts, although this was partly due to the low prevalence of these

symptoms in the community. While hopelessness is a strong risk factor for suicidal ideation [28], universal suicide prevention interventions that aim to reduce worrying and irritability may be more effective than interventions to reduce hopelessness.

The symptoms that had the greatest impact on depression incidence also tended to have a larger impact on suicidal ideation incidence, although the overall impact of mental health symptoms was less for suicidal ideation. It is likely that there is a greater range of determinants of suicidal ideation than depression, many of which may be beyond the realm of mental health symptoms. Emergence of suicidal ideation may also be less predictable than onset of depression. Nevertheless, the patterns of attributable risk for both depression and suicidal ideation were quite consistent within age cohorts. Physical symptoms such as headaches and neck aches and lacking energy accounted for a greater proportion of depression and suicidal ideation incidence in the older cohort. This finding may be reflective of depression being expressed differently across the lifespan, with physical health becoming an important determinant of mental wellbeing in later life [see 29]. Age-related changes in the determinants of depression may also explain why the differences between the attributable risk for anxiety and depression symptoms narrowed in the older cohort. Poor sleep in general had a moderate to large impact on depression incidence, although the effects were confined to younger cohorts and more specific sleep problems such as early wakefulness and difficulty falling asleep had much smaller impacts.

The mechanisms for the effects of anxiety symptoms on depression and suicidal ideation warrant further research. The findings may partly be explained by developmental or time course explanations. Specifically, “pure” depression may manifest earlier than comorbid anxiety and depression, as anxiety tends to occur earlier than depression [7]. However, a similar proportion of individuals who met criteria for depression at wave 1 had comorbid generalised anxiety compared to those who had incident depression at wave 2 (50% at wave 1

vs. 55% at wave 2), so this explanation does not fully account for the stronger effects of anxiety. Furthermore, the difference between PARs remained after accounting for initial presence of GAD in the 20s and 40s cohorts. Another explanation could be that the increased PARs for anxiety symptoms simply reflect that anxiety symptoms as measured by the Goldberg scale are more common than the depression symptoms. However, the odds ratios for anxiety symptoms were comparable to those for the depression symptoms. The effects of anxiety symptoms on suicidality are more consistent with the literature, which shows strong evidence that individuals with anxiety disorders are at increased risk of suicidal ideation [10]. Theoretical models have tended to distinguish depression as the primary determinant of suicidal thoughts but anxiety and agitation as stronger determinants for the propensity to enact suicidal behaviours [10]. However there is growing evidence for the importance of anxiety in the development of suicidal ideation [9; 10; 30; 31]. Investigation into common neurobiological pathways involved in anxiety, depression and suicidality may shed further light on the observed relationships [32].

While there were many strengths of the current study, including the large population-based dataset, the use of incidence outcome measures and the examination of a wide range of symptoms across adulthood, some limitations to the findings should be noted. Prior episodes of depression and suicidal ideation may have been missed, particularly from the period long before the wave 1 interview. Participants who had experienced an episode of depression may not have sought help from a doctor. Conversely, some of the reported lifetime depression episodes may not have met clinical criteria. Likewise, the suicidal ideation measure did not take into account the frequency or severity of the ideation and may have been subject to recall biases. Nevertheless, the suicidal ideation findings remained when only overt thoughts of suicide were examined. A full clinical interview may have been more accurate in assessing the depression and suicidality outcomes, although such an assessment was not feasible in the

context of a large epidemiological study. Assessments were only completed every four years, with reports on suicidality based on the year prior to assessment. The episodic nature of suicidality and depression may have resulted in missed episodes and underestimates of risk. Finally, additional analyses that account for a range of other risk factors, such as physical health, social support, substance use, personality and genetic markers may lead to a better understanding of the mechanisms underlying the observed relationships.

Conclusion

Based on the findings in the present cohort, more of the incidence of depression and suicidal ideation was attributable to anxiety symptoms than depression symptoms at the population level. Community-based prevention programs may increase their effectiveness if they target individuals experiencing symptoms of anxiety including worry, irritability and difficulty relaxing. Such programs should also consider aiming to reduce anxiety symptoms in addition to depression symptoms. Different patterns of risk across adulthood also indicate that prevention programs that are tailored to individual circumstances, such as age, may be more successful than generic programs.

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Table 1: Descriptive statistics for the complete Wave 2 sample (N = 6715)

	20s cohort (N = 2,139)			40s cohort (N = 2,354)		60s cohort (N = 2,222)			
	N	Frequency	Percent	Frequency	Percent	Frequency	Percent	χ^2	p
Female gender	6715	1126	52.6%	1251	53.1%	1075	48.4%	12.30	0.002
Married / de facto relationship, wave 1	6698	509	24.0%	1869	79.4%	1758	79.2%	1882.57	<0.001
Current depression, wave 1	6684	56	2.6%	54	2.3%	33	1.5%	7.28	0.026
Lifetime depression, wave 1	6681	405	19.1%	636	27.2%	605	27.3%	51.83	<0.001
Current depression, wave 2	6639	127	6.0%	104	4.5%	42	1.9%	46.08	<0.001
Suicidal ideation items									
Life not worth living, wave 1	6680	493	23.2%	410	17.5%	196	8.8%	166.34	<0.001
Better off dead, wave 1	6680	311	14.7%	262	11.2%	110	5.0%	114.68	<0.001
Thought about taking life, wave 1	6681	268	12.6%	200	8.5%	63	2.8%	143.58	<0.001
Life not worth living, wave 2	6659	373	17.5%	351	15.0%	154	7.0%	114.49	<0.001
Better off dead, wave 2	6662	254	11.9%	207	8.8%	90	4.1%	88.80	<0.001
Thought about taking life, wave 2	6656	204	9.6%	154	6.6%	48	2.2%	105.14	<0.001
	N	Mean	SD	Mean	SD	Mean	SD	F	p
Years of education	6574	14.24	1.49	14.44	2.27	13.93	2.63	30.37	<0.001
PHQ-9 depression score	6639	5.10	4.63	3.99	4.30	2.48	3.22	220.95	<0.001

Notes: Current depression assessed using CIDI-SF in 20s & 40s cohorts at wave 1, PHQ-9 in 60s cohort at wave 1 and PHQ-9 in all cohorts at wave 2; p values are based on χ^2 statistics for categorical variables and F statistics from one-way analyses of variance for continuous variables

Table 2: Population attributable risk for the onset of depression (n = 4,931) and suicidal ideation (n = 5,422) after four years based on anxiety and depression symptoms

	Depression onset (n = 4,931)			Suicidal ideation onset (n = 5,422)		
	Adjusted odds ratio	Prevalence	Population Attributable Risk	Adjusted odds ratio	Prevalence	Population Attributable Risk
Anxiety symptoms			45.1%			24.3%
worrying	4.91	33.7%	56.9%	2.07	31.4%	25.1%
irritable	4.08	36.3%	52.8%	2.34	34.2%	31.4%
difficulty relaxing	4.47	30.4%	51.3%	1.82	28.7%	19.0%
sleeping poorly	3.70	32.2%	46.5%	1.63	31.3%	16.5%
headaches/neck aches	2.84	41.6%	43.3%	1.71	42.1%	23.1%
keyed-up	2.94	33.8%	39.6%	2.17	33.9%	28.4%
difficulty falling asleep	3.46	23.9%	37.0%	1.63	23.0%	12.7%
worried about health	3.19	25.4%	35.7%	1.82	24.1%	16.5%
somatic symptoms	3.32	20.9%	32.7%	1.63	20.1%	11.3%
Depression symptoms			34.8%			16.1%
felt slowed up	3.95	28.4%	45.6%	1.85	27.7%	19.0%
difficulty concentrating	3.99	26.6%	44.3%	2.18	24.2%	22.2%
lacking energy	3.20	33.1%	42.1%	1.70	32.5%	18.6%
lost interest	5.29	16.4%	41.4%	1.69	12.9%	8.2%
felt hopeless	6.03	11.0%	35.6%	2.55	7.2%	10.0%
lost confidence	5.26	12.7%	35.1%	1.91	9.9%	8.2%
feel worse in mornings	2.95	21.8%	29.9%	1.61	20.0%	10.8%
waking early	1.46	42.4%	16.2%	1.10	42.3%	4.1%
lost weight	3.66	4.7%	11.1%	1.56	3.7%	2.0%

Note: Symptoms are ordered based on PAR for depression; “somatic symptoms” indicates presence of trembling, tingling, dizzy spells, sweating, diarrhoea, or needing to pass water more often than usual

Table 3: Population attributable risk for the onset of depression and suicidal ideation by age cohort, based on overall anxiety symptoms and overall depression symptoms

	Depression at wave 2			Suicidal ideation at wave 2		
	20s	40s	60s	20s	40s	60s
Anxiety symptoms at wave 1	51.5%	40.1%	25.7%	16.9%	28.3%	15.1%
Depression symptoms at wave 1	38.5%	28.9%	21.5%	5.9%	17.2%	12.7%

Figure 1: Selection of participants into the analyses

Figure 2: Gender-adjusted population attributable risk for onset of depression by age cohort

Figure 3: Gender-adjusted population attributable risk for onset of suicidal ideation by age cohort