Original Article

Does routine psychological screening of newly diagnosed rural cancer patients lead to better patient outcomes? Results of a pilot study

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Abstract

Background: Few studies have reported on the impact of screening on patient outcomes or clinical practice and research describing the implementation of psychosocial screening in rural services is scarce.

Aims: This study investigated the feasibility and utility of a psychological screening program in Australian rural oncology clinics.

Subjects & methods: A total of 83 newly diagnosed adult cancer patients, seen at one of three rural outpatient oncology clinics participated in this study.

Results: Nineteen of forty-three (44%) participants in the screening phase scored above cut-off score on the Distress Thermometer (DT), a validated screening tool for distress in cancer patients. The DT had acceptable sensitivity (86%) and specificity (77%) as a screening tool using another validated self-report measure of

psychological symptoms, the Psychological Symptoms Subscale of the Somatic and Psychological Health Report Short form, as a 'gold standard'. Screening with the DT did not significantly increase the rate of referrals to psychosocial staff of distressed individuals. However, screening with the DT reduced time to referral. The screened group reported significantly greater unmet needs in univariate ($P = 0.01$) and multivariate analyses ($P = 0.01$).

Conclusions: Psychological screening did not increase rates of referral to psychosocial support staff for patients with psychological morbidity. However, given the methodological limitations of this pilot study, the results should be interpreted with caution. The DT was found to have acceptable sensitivity and specificity to detect likely cases of psychological morbidity. Barriers to implementation of psychological screening in rural clinics and recommendations for future psychological screening programs at outpatient oncology clinics are discussed.

KEY WORDS: distress, oncology, psychological questionnaire, psychosocial screening, rural.

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Background

About a third of people diagnosed with cancer in Australia live in rural and regional areas, and people living in rural areas are demonstrated to have poorer access to services and survival rates compared with those in metropolitan areas.¹ Many studies report the difficulty health professionals face in detecting psychological problems among cancer patients^{2,3} and these difficulties might be accentuated in clinics in regional clinics because of the absence of local specialist services. While structured clinical interviews are 'gold-standard', a less costly and more time-efficient method is the use of standardised self-report questionnaires. International clinical guidelines^{4–6} recommend screening to identify

What is already known on this subject:

- Psychosocial screening tools are a reliable and valid method to detect distress among cancer patients and routine screening is recommended by clinical practices guidelines.
- Despite this, screening for distress is not yet routine practice in Australia, particularly in rural clinics.
- Few studies have explored the impact of screening on patient outcomes or patient attitudes to screening.

psychosocial concerns, but this is still not routine clinical practice, especially in smaller, rural clinics.

Studies of the impact of routine psychosocial screening on clinical practice and patient outcomes have produced equivocal results. These studies were conducted in large urban centres and focused on doctor-, rather than nurse-led screening.⁷⁻⁹ Practical barriers to screening include: time pressures, concerns about clinical relevance and costs associated with purchasing computerised screening equipment.¹⁰ An additional barrier to screening in rural areas is the scarcity of specialist psychosocial staff to whom patients can be referred, and the scarcity of local specialist medical staff to implement doctor-led psychosocial screening programs. Given the current recommendations for *all* services to adopt screening strategies, studies that explore the feasibility of nurse-led screening programs in rural clinics are urgently needed.

Aims and hypotheses

This pilot project aimed to: (i) prospectively investigate the feasibility and acceptability of introducing a routine psychological screening program for rural oncology clinics; (ii) explore the impact of screening on rates and timeliness of referral to psychosocial services; and (iii) provide pilot data on the acceptability and utility (sensitivity and specificity) of the distress thermometer (DT) as a screening tool within the rural Australian setting.

It was hypothesised that the introduction of routine screening would:

- Lead to improved detection and increased rates of referral of distressed individuals to psychosocial support staff
- Increase the timeliness of referral to psychosocial support staff
- Lead to lower levels of unmet needs at follow-up
- Be acceptable to patients.

What this study adds:

- This study found no increase in the rate of referral to a social worker or psychologist among patients who participated in distress screening.
- Barriers to screening in rural clinics are identified.
- Issues for consideration when implementing psychosocial screening at rural clinics are discussed.

It was further hypothesised that the DT would demonstrate satisfactory sensitivity and specificity as a screening tool in this population.

Methods

Clinics and patients

Three rural outpatient oncology clinics participated in this study. Inclusion criteria for patients in the study were: (i) newly diagnosed with malignant disease; (ii) 18 years of age or older; (iii) able to give informed consent; and (iv) able to read English proficiently. While all patients could potentially benefit from psychosocial screening, given the limited number of available nursing staff and the concerns about the impact of screening on their workload, it was elected to focus the present screening program only on newly diagnosed patients as the efficacy of the screening program being trialled by the present study was not yet clearly established.

Procedure

Nursing and psychosocial staff participated in a two-hour training session covering the rationale for screening, the screening instrument and the study procedure. Training additionally included suggestions for how to discuss the results of screening with patients who scored above cut-off, including: the timing of feedback, suggested wording for questions to explore psychosocial concerns, exploring patient interest in referral to psychosocial support staff and suggested wording for discussing the options, costs and practical issues involved in referral to other services. Eligible patients were informed of the study and invited to participate by oncology nursing staff at their first rural clinic visit. Data were collected from consecutive patients by oncology clinic nursing staff in two waves of data collection: an unscreened cohort and a screened cohort. The baseline questionnaire was completed immediately before an

initial oncologist rural clinic appointment or chemotherapy education session. For individuals who scored above the cut-off score, nursing staff were encouraged to assess problems and concerns and explore the patient's interest in receiving referral to psychosocial staff using the skills and strategies discussed in the initial training session. Patients were mailed a six-month follow-up questionnaire with a return envelope. An analysis of referral patterns pre- and post-implementation of screening was conducted by review of referral records and databases. Ethical approval to conduct this study was obtained from the appropriate institutional Human Research Ethics Committees.

Demographics and clinical features

Purpose-designed items were included to assess: age, marital status, occupation, language spoken at home and education level. Date of diagnosis, stage, type of surgery and treatment were extracted from medical records.

The screening instrument

The DT

Only participants in the screened cohort completed the DT at baseline. The DT is a single-item screening measure that identifies level and causes of distress. Respondents are asked to indicate their level of distress in the past week on a 11-point scale ranging from 0 ('None') to 10 ('Extreme'). The DT has been found to be reliable and valid with samples from North America,^{11,12} the UK¹³ and Japan.¹⁴ Despite being a recommended screening tool by peak cancer bodies in Australia, the DT has yet to be comprehensively validated with Australian cancer patients, although data on its psychometric properties are being collected in a number of large ongoing studies. Recent data support the use of 4 as an optimal cut-off score;⁵ however, because of resource limitations in psychosocial staff, it was decided to use the previously recommended cut-off score of 5.¹⁵

Gold-standard measure of psychological health

Somatic and Psychological Health Report Short form

All participants completed the Somatic and Psychological Health Report Short form (SPHERE-Short) at baseline. The SPHERE-Short is a 12-item questionnaire measuring common psychological and somatic distress developed and validated in Australia.^{16,17} The SPHERE-Short has two subscales: psychological symptoms

(PSYCH-6), and somatic symptoms. A score of ≥ 2 on the PSYCH-6 subscale indicates a likely case of psychological disorder. Internal consistency and temporal stability of the PSYCH-6 subscale of the SPHERE were high (Cronbach's $\alpha = 0.90$; intra-class correlation $r = 0.81$), and it was found to have predictive validity to detect formal psychiatric diagnoses and convergent validity with a measure of disability in a large study of Australian general practice patients.¹⁶ The SPHERE was included as a gold-standard measure against which to determine the sensitivity and specificity of the DT in this setting.

The Supportive Care Needs Survey-Short form

Perceived unmet psychosocial needs were examined using the Supportive Care Needs Survey-Short Form (SCNS-short).¹⁸ The SCNS-short is a 34-item questionnaire on which respondents indicate their level of need for help in domains assessing psychological needs, health information needs, physical and daily living needs, patient care and support needs, and sexuality needs. Respondents indicate their level of unmet need using a 5-point Likert scale, where 1 = *no need-not applicable*; 2 = *no need-already satisfied*; 3 = *low need for help*; 4 = *moderate need for help*; 5 = *high need for help*. The SCNS-short has been demonstrated to have good construct validity and high internal consistency in studies of large Australian cancer patients ($n = 888$), including rural cancer patients (Cronbach's $\alpha \geq 0.84$).¹⁸

Patient attitudes towards screening

All participants in the screened cohort responded to six purpose-designed statements about the DT assessing attitudes towards screening. Respondents indicated their degree of agreement using a 5-point Likert response scale ranging from '*strongly agree*' to '*strongly disagree*', in order to descriptively explore acceptability and attitudes towards the DT.

Data analysis

Initially data were explored using descriptive statistics. Cohort differences in referral practices and unmet needs were explored using χ^2 and non-parametric statistics. In order to examine the impact of screening on unmet needs, variables found to be significant in univariate analyses were entered into a multiple linear regression analysis with total unmet needs as the dependent variable. The performance of the DT as a screening tool was investigated by exploring its sensitivity, specificity, positive predictive value (PPV) and negative predictive value to detect PSYCH-6 'cases'.

Results

Subjects and participation rate

Eighty-three of 102 (81%) eligible patients consented to participate in the study. Of these, 40 participants (48%) were recruited to the unscreened cohort and 43 (52%) to the screened cohort of the study. Sixteen participants (19%) died during the study period, two withdrew from the study at follow up and 52 returned completed follow-up questionnaires. Excluding those who died, the overall response rate to the six-month follow-up questionnaire was 77%.

Clinical and demographic features

Demographic and clinical characteristics of the sample are summarised in Table 1. The mean age at recruitment was 60 years (range = 33–85; SD = 10.5). Most participants (71%) had localised or locally advanced disease.

Referral practices for DT cases

Nineteen participants (44%) in the screening phase reported scores on the DT of 5 or more. Of these, 10 (53%) were referred to a social worker or psychologist. Reasons for non-referral included: not having a social worker or psychologist to refer to because of staff vacancies (four participants); clinic staff or patient attributing the level of distress reported to non-cancer-related factors (one participant); clinic staff not being able to contact the patient after screening to discuss referral (one participant); psychosocial concerns dealt with by discussion with clinic staff (one participant); or unstated (two participants). No instances of the patients declining a referral to a social worker or psychologist (where it was offered) were documented by clinic staff.

Referral practices for PSYCH-6 cases

In the pre-screening phase, 8 of 34 participants (24%) were PSYCH-6 cases compared with 14 of 40 participants (35%) in the screening phase. However, this difference was not statistically significant ($\chi^2 = 1.157$; d.f. = 1; $P = 0.282$).

Participants were more likely to be referred to a cancer care coordinator (CCC) than a psychosocial health professional. Of the eight PSYCH-6 cases in the pre-screening phase, six were referred to a CCC and five to a social worker/psychologist. In the screening phase, 11 of 14 likely cases were referred to the CCC and eight to a social worker/psychologist. As a result of the small number of cases, significance testing of differences between the pre-screening and screening cohorts was not possible. Interestingly, four of five participants in the

TABLE 1: *Clinical and demographic features of the sample (n = 83)*

Characteristic	Mean (range/SD)	Number	Percentage (%)†
Age (years)	60 (33–85/10.5)		
Time since diagnosis (days)	58 (3–1125/125)		
Sex			
Male		45	54.2
Female		38	45.7
Type of cancer			
Colorectal		19	22.9
Breast		25	30.1
Lung		12	14.5
Other		11	13.2
Haematological		8	9.6
Skin		5	6.0
Unknown primary		3	3.6
Stage of disease			
Localised/locally advanced		59	71.1
Advanced or metastatic		24	28.9
Type of treatment			
Surgery		63	75.9
Chemotherapies		55	66.3
Radiotherapy		44	53.0
Endocrine therapies		27	32.5
Marital status			
Married/de facto		61	75.3
Single		2	2.5
Divorced/separated/ widowed		20	22.2
Education			
Year 10 or below		41	51.9
Year 12		17	21.5
Diploma/trade		16	20.3
University level		5	6.3
Language spoken at home			
English		78	96.3
French		1	1.2
German		1	1.2
Dutch		1	1.2
Employment			
Full time		8	9.9
Part time		7	8.6
Retired		48	59.3
Unemployed		2	2.5
Self-employed		9	11.1
Home duties		6	7.4
Other		1	1.2

†Valid percentage.

pre-screening phase and seven of eight participants in the screening phase who were PSYCH-6 cases and referred to a social worker or psychologist were seen at one clinic where the social worker was resident within the clinic, suggesting that resident staff facilitated referral.

Time to referral

The average time to referral to a social worker or psychologist in the pre-screening phase for PSYCH-6 cases was 14 days and in the screening phase it was 5 days.

Unmet needs six months after initial contact with the clinic among screened and unscreened participants

Contrary to our hypothesis that screening would reduce unmet needs, participants in the screened cohort reported significantly higher levels of overall unmet needs (Mann-Whitney $U = 100.0$; $Z = -2.53$; $P = 0.0$), psychological needs ($U = 147.5$; $Z = -2.21$; $P = 0.02$), information needs ($U = 142.0$; $Z = -2.32$; $P = 0.02$) and physical and daily living needs ($U = 163.5$; $Z = -2.05$; $P = 0.04$) compared with the unscreened cohort. No significance difference was found between the unscreened and screened cohorts on sexuality needs.

Multivariate analysis

Multiple regression analysis revealed that differences in unmet needs between the unscreened and screened cohort remained significant ($B = 20.77$; $\beta = 0.50$; $t = 2.79$; $P = 0.01$), controlling for type of treatment received. This suggests that the screened group reported higher levels of unmet need than the unscreened group, overall.

Patient acceptability survey

Most screened participants (96%) either 'agreed' or 'strongly agreed' that the DT was easy to understand. Most (86%) did not believe that the screening questions were too personal or upsetting (92%). Interestingly, 84% 'agreed' or 'strongly agreed' that all patients attending the oncology clinic should be asked the screening questions in order to encourage people to talk about the issues surveyed, and 93% 'agreed' or 'strongly agreed' that they appreciated being asked about their emotional well-being during their cancer treatment.

Performance of the DT as a screening tool

The DT was found to have both excellent sensitivity (86%) and substantial specificity (77%) in correctly

identifying PSYCH-6 cases.¹⁹ The negative predictive value of the DT was 90% and PPV was 66%, compared with the PSYCH-6. Convergent validity of the DT was supported by significant positive correlations between psychological symptoms (PSYCH-6 $r = 0.52$; $P = 0.00$; SPHERE $r = 0.54$; $P = 0.00$), somatic symptoms ($r = 0.48$; $P = 0.00$) and unmet needs ($r = 0.53$; $P = 0.01$).

Discussion

The results of this study failed to support the primary hypothesis that screening leads to improved detection and increased rates of referral of psychologically distressed individuals. Possibly, this failure was related to insufficient power. Alternatively, like many rural health services, the practice conditions facing participating clinics varied from site to site and there might have been a positive impact of screening at some clinics that was obscured by the aggregation of results. Also, during the study period there were extended periods of vacancy in psychosocial positions at two clinics, a known barrier to screening. Among participants who were successfully screened and referred on, time to referral was shorter by nine days. Furthermore, screening was clearly an acceptable and welcomed practice among participants in this study, as has been found in Britain.¹³

Participants in the screened cohort reported more unmet needs than the unscreened cohort. This might have been because only half of those who scored above cut-off on the DT were referred to specialist psychosocial staff. Perhaps screening without follow up raises patients' expectations and leads to patients' reporting higher levels of unmet needs. This hypothesis warrants further exploration.

The majority of participants who scored above a cut-off of 5 on the DT were referred to a CCC, suggesting that most distressed individuals are seen by nurse CCCs. Possibly, this is because CCCs are often clinic-based and more available to generalist nurses than specialist psychosocial services. Alternatively, as psychosocial roles are relatively new to rural areas, it might be that nursing staff are more comfortable referring to CCCs because of greater familiarity with the CCC role. In addition to advanced clinical practice skills, care coordinators have advanced practice skills in eliciting and responding to patients' emotional concerns as well as providing basic psychosocial intervention (e.g. psycho-education). Given the current expansion of the CCC role, the findings of the present study underline the importance of ensuring that cancer CCCs are adequately trained to assess psychosocial concerns, remediate those concerns that fall within the scope of their practice, and to identify and refer on those patients with concerns that require specialist mental health training. Clinic-based

CCCs might be the best positioned staff in rural clinics to administer and coordinate psychosocial screening programs given the dual nature of their roles and their ability to provide basic psychosocial intervention.

The performance of the DT as a screening tool in the present study compares favourably with the results of a meta-analysis of nine studies involving 1477 patients of DT's performance as a screening tool.²⁰ Because of the modest PPV of the DT, other researchers have proposed a multi-stage screening process that uses further 'gold-standard' questionnaires to diagnose true cases of psychological morbidity.²¹ However, in rural clinics where psychosocial staff are often limited and the nature of nursing practice is generalist, nursing staff education that assists nursing staff in exploring psychosocial issues identified on screening, and distinguishing those requiring referral from those who do not, might be more effective.

The results of the present study provide preliminary evidence for the validity of the DT in an Australian sample. Further validation of the instrument in larger samples of Australian patients is warranted to confirm these preliminary findings.

Limitations and clinical implications of the study

A small sample size and inconsistent screening were study limitations. The initial clinic visit was selected as the time point for screening in order to: capture as many participants as possible in the screening program; demonstrate that staff are committed to psychosocial assessment; and provide early intervention. However, the first clinic visit might not be the optimal time to screen in small rural clinics. A further limitation of this study was that data were not collected on the degree to which nursing staff implemented the assessment procedures discussed in the initial training session when participants were identified as having clinical levels of distress. Nor were data collected from participants on their perceptions of the assessment of their concerns or offers of referral following screening. Future studies might benefit from the inclusion of these outcomes.

While structured clinical interview is the optimal gold-standard assessment, this study chose to compare the performance of the DT with a validated self-report measure of psychological symptoms (SPHERE) because of resource limitations. Future studies exploring the validity and utility of the DT in Australia would benefit from the inclusion of interview-based method for assessing distress against which to compare the DT.

Implementation of screening needs to be conducted in a systematic fashion, with adequate resources and more extensive training and ongoing support for staff involved in its implementation.²² A common problem in

rural contexts is the lack of specialist staff. Where psychosocial staff are limited, a focus on enhancing patient education about psychosocial issues coupled with avenues for self-referral is recommended.

Many rural clinics only have visiting specialists and time pressures at these clinics are often even greater than those at metropolitan hospitals. For this reason, this study focused on the use and interpretation of screening by nursing staff. Future studies that compare doctor-led screening with nursing-led screening interventions in rural areas are warranted given the equivocal findings of the present study.

Conclusions

This study highlights some of the challenges involved in implementing psychosocial screening in rural clinics. The results should not discourage psychosocial screening but rather point to issues to consider when implementing screening programs in rural oncology services, such as timing of screening, enhancing staff skills in discussing the results of screening and ensuring the continued availability of psychosocial services.

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Author contributions

B.T. and P.B. contributed to the design, implementation, data analysis and reporting of results. R.S.-H. contributed to the design, data analysis and reporting. Members of the Greater Southern Area Health Service Screening Collaborative Group contributed to the design, implementation and reporting of results.

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