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Original article

Factors associated with psychological distress amongst outpatient chemotherapy patients: An analysis of depression, anxiety and stress using the DASS-21

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ABSTRACT

Aim: This study sought to identify clinical, demographic and service-related factors associated with psychological distress amongst outpatient chemotherapy patients.

Background: Distress in cancer patients leads to increased risk of psychological comorbidity, contributing to sub-optimal treatment adherence and potentially leading to poorer health outcomes. Screening and recognition of distress and risk factors is an important aspect of holistic care within a multidisciplinary team environment.

Methods: Data were obtained via survey and chart review of ambulatory chemotherapy patients at three public tertiary referral hospitals in Perth, Western Australia. The DASS-21 was used to screen for psychological distress. Regression analyses were used to assess the relationship between distress and a range of cancer, socioeconomic and treatment factors.

Results: Patients with a Karnofsky Performance Score ≤ 80 (*OR* 3.8, *95% CI* [1.7, 78.7]) and average waiting time (between oncology outpatient appointment and commencement of chemotherapy infusion) > 60 min (*OR* 2.4, *95% CI* [1.04, 5.5]) were at increased risk of moderate-severe distress. Patients with a household income between $AU 50–75,000 p.a. had a lower risk of distress compared to < $25,000 p.a. (*OR* 0.05, *95% CI* [0.01, 0.52]). On sub-scale analysis, depression and anxiety contributed more to overall distress than the stress sub-scales.

Conclusions: Performance status, waiting times and household income were key predictors of distress. Findings could assist clinicians to identify higher-risk population subsets that could benefit from targeted screening and additional psychological and social work support. Findings could also assist administrators to consider the contribution of modifiable factors such as waiting times to patient distress.

1. Introduction

An ageing population worldwide is associated with an increase in the incidence and prevalence of cancer.(Cancer Australia, 2017)A combination of advances in surgical, radiation and systemic treatment modalities have driven improvements in five year survival from 47% to 67% between 1983 and 87 and 2008–2012 (Cancer Australia, 2017). As such, there is a growing population of cancer survivors (either being treated or having completed treatment) with unique health and psychological needs.

Psychological distress is defined as "*a multifactorial unpleasant emotional experience of a psychological (ie, cognitive, behavioural, emotional), social, and/or spiritual nature that may interfere with the ability to cope effectively with cancer, its physical symptoms, and its treatment.*" (National Comprehensive Cancer Network, 2003) As distress incorporates both anxiety and depression, it is an important psychological

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comorbidity that warrants monitoring as it may have flow-on effects to overall patient outcomes. This common but poorly recognised comorbidity occurs in approximately 35% of cancer patients during diagnosis, treatment or after treatment completion and is associated with poorer outcomes (Zabora et al., 2001). Distress is under-recognised by health professionals, with patients frequently under-reporting its symptoms. Fewer than half of "distressed" cancer patients are referred for further psychological assessment (Bidstrup, Johansen, & Mitchell, 2011; Kadan-Lottick et al., 2005). Accordingly, chronic distress has been linked with increased symptom reporting, increased healthcare utilisation, reduced quality of life, and poorer long-term health outcomes including survival (Bidstrup et al., 2011). Psychological distress can be associated with the physical side-effects of treatment and often occurs in conjunction with depression and anxiety. An estimated 30–40% of solid tumour and haematology patients have co-morbid mood disorders including depression and anxiety (Mitchell et al., 2011). The clinical relevance of screening, diagnosing and managing psychological distress is well established (Kissane, 2009; Pinquart & Duberstein, 2010).

The prevalence and severity of distress varies according to social, demographic, cancer and treatment related factors (Bergerot, Araujo, & Tróccoli, 2014; Trask & Griffith, 2004). Single patients with metastatic cancer are more likely to report distress during treatment (Akechi et al., 2011; Andreu et al., 2012). Generally, females have a higher risk of distress than males, but this pattern varies by cancer type (Bergerot et al., 2014). Side-effects of treatment such as peripheral neuropathy, fatigue, nausea, vomiting, insomnia, xerostomia and pain have been identified as important contributors to distress (Akechi et al., 2011; Andreu et al., 2012; Bergerot et al., 2014).

However, other factors may also contribute to distressed patients. Waiting times between doctors' appointments have been linked to anxiety related problems, including severe fatigue, anticipatory nausea and vomiting, frustration and stress (Mitchell, 2013a; van Laar et al., 2013). Household income, presence of dependents, travel time and other demographic factors may also contribute to patient distress (Bergerot et al., 2014).

Demographic factors such as employment and distance travelled for treatment have not been directly linked to increased distress, although they have been associated with poorer quality of life more generally. Distance travelled is associated with patient compliance with treatment and poorer treatment outcomes (Payne et al., 2001; Payne, Jarrett, & Jeffs, 2000). Patients report dissatisfaction with travel resulting from associated fatigue, loss of social support, cost, stress and anxiety (Iredale, Hilgart, & Hayward, 2011).

Our study sought to assess the level of distress amongst patients diagnosed with cancer whilst receiving chemotherapy. Additionally we aimed to conduct a comprehensive survey to determine whether other demographic, socioeconomic and treatment related factors such as waiting times were associated with distress. These factors might identify "at risk patients" who may in turn require additional allied health, medical or nursing supports in order to maximize their health outcome. Screening patients for modifiable predictors of distress will assist clinicians in providing appropriate interventions in a timely manner.

2. Method

A cross-sectional study was conducted to identify characteristics associated with a higher risk of psychological distress for outpatient chemotherapy populations in the three tertiary referral hospitals in Perth, Western Australia as part of a broader study which explored patients' preferred timing of chemotherapy. The study was approved by the Human Research Ethics Committee at Sir Charles Gairdner Hospital HREC (Ref#2014–035).

2.1. Participants

Consecutive eligible patients receiving systemic treatment (eg chemotherapy, immunotherapy, bisphosphonate) on the same day as their medical appointment (TSD) or on an alternative day (TOD) were invited to participate. Inclusion criteria were: (1) ambulatory patients receiving chemotherapy in outpatient clinics; (2) aged 18 or older (3) able to read and/or speak English; (4) considered by the attending nurse to be physically well enough to complete the survey; (5) patients who had received chemotherapy at least once previously in their current regimen. Inclusion criteria were kept broad in order to attempt to capture a near complete cross-section of our outpatient population. The requirements that patients speak English and be physically well enough to complete survey were necessary from a practical perspective. Patients commencing a regimen were excluded from the survey, as this patient group exhibits higher levels of distress when compared to patients who are stable on a particular regimen (Decat, de Araujo, & Stiles, 2011).

2.2. Measures

A modified version of the Chemotherapy Infusion Preference Study questionnaire (described elsewhere (Lau, Watson, & Hasani, 2014)) was used. The questionnaire was divided into 4 sections relating to: i) demographic data, ii) treatment related details, iii) preference scheduling oncology appointments and chemotherapy infusion and, iv) distress measured using the 21-item Depression Anxiety and Stress Scale (DASS-21).

The DASS-21 is an abbreviated version of the empirically developed Depression Anxiety Stress Scales. The DASS-21 is divided into 3 subsections of 7 questions, pertaining to depression (DASS-D), anxiety (DASS-A) and stress (DASS-S). The DASS-D measures hopelessness, low self-esteem and low positive affect, DASS-A measures autonomic arousal, physiological hyperarousal and the subjective feeling of fear and DASS-S measures stress through reported frequency of symptoms relating to tension, agitation and negative affect (Antony, 1998). Each of these constructs is interrelated and their combined score can be used to screen for general psychological distress (Antony, 1998; Crawford & Henry, 2003). The DASS-21 has demonstrated excellent internal consistency in a variety of populations including healthy adults, and older adults, ranging from 0.904–0.97, (Crawford & Henry, 2003; Gloster et al., 2008) and, due to its brevity, is better suited to clinical and research settings than the longer version. It has been validated to measure components of distress in a wide range of psychiatric and medical settings, and research settings, as well as non-clinical groups, (Clara, Cox, & Enns, 2001; Daza et al., 2002; Antony, 1998; Henry & Crawford, 2005) and performs similarly to other measures such as the Hospital Anxiety and Depression Scale (Osman et al., 2012).

Further information, including type of cancer, type of treatment and intent was gathered from patients' medical records. To determine the impact of distance travelled upon levels of distress, participants' usual residence were classification according to the 2006 Australian Statistical Geographical Standard (ASGS).(Australian Government Department of Health and Doctor Connect, 2017)Postcodes falling within RA1 were considered to be 'inner city'. To account for the adverse effects of chemotherapy treatment, the emetogenicity of patients' chemotherapy regimens were identified from the eviQ version 1.4.0 database (Cancer Institute NSW, 2017).

A pilot questionnaire was tested with 12 patients at one hospital outpatient clinic in order to assess its acceptability and ease of understanding.

2.3. Procedures

Data were collected from patients between May and November 2014. Eligible participants were approached in the chemotherapy suite,