



Research report

Type D (distressed) personality is associated with poor quality of life and mental health among 3080 cancer survivors

Floortje Mols ^{a,b,*}, Melissa S.Y. Thong ^{a,b}, Lonneke V. van de Poll-Franse ^{a,b},
Jan Anne Roukema ^{a,c}, Johan Denollet ^a

^a CoRPS-Center of Research on Psychology in Somatic diseases, Department of Medical Psychology, Tilburg University, The Netherlands

^b Comprehensive Cancer Centre South (CCCS), Eindhoven Cancer Registry, Eindhoven, The Netherlands

^c Department of Surgery, St. Elisabeth Hospital, Tilburg, The Netherlands

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ABSTRACT

Background: This study assessed the association between Type D personality (the conjoint effect of negative affectivity and social inhibition) and quality of life (QoL) and mental health of cancer survivors up to 10 years post-diagnosis.

Methods: All currently alive individuals diagnosed with endometrial or colorectal cancer between 1998 and 2007, or with lymphoma or multiple myeloma between 1999 and 2008 as registered in the Eindhoven Cancer Registry received a questionnaire on Type D personality (DS14), QoL (SF-36 or EORTC-QLQ-C30) and mental health (HADS).

Results: Of the 3080 survivors who responded (69%), 572 (19%) had a Type D personality. Type D survivors had clinically meaningful lower levels of general health, social functioning, role-function emotional, mental health and vitality compared to non-Type D's (SF-36: all P's < 0.001). They also reported clinically meaningful worse emotional and social functioning, global health status/QoL, and more fatigue (EORTC-QLQ-C30: all P's < 0.001). This was also confirmed by multivariate logistic regression analyses showing that cancer survivors with a Type D personality were more likely to experience a decreased QoL on all SF-36 and EORTC-QLQ-C30 scales (all ORs ranging between 1.88 and 5.56). The proportion of survivors reporting an impaired QoL was higher among Type D (35–64%) than non-Type D's (20–36%). Finally, Type D's were more likely to be depressed (44% vs. 13%; P < 0.0001) or anxious (51% vs. 14%; P < 0.0001).

Conclusions: Cancer survivors with a Type D personality are at increased risk of impaired QoL and mental health problems that cannot be explained by socio-demographic or clinical characteristics.

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1. Introduction

The prevalence of cancer is rising due to the increasing incidence of cancer in general, the aging of the population, and more effective treatments (Signaleringscommissie-Kanker, 2004). This has led to an increasing number of individuals

who are cured of their cancer or are living with it as a chronic disease (Ganz, 2009). Many of those survivors face continuing physical and mental problems due to cancer and its treatment.

Most survivorship studies focus on the role of clinical variables to explain differences in quality of life (QoL) between patients (Mols et al., 2006, 2008; van de Poll-Franse et al., 2007). However, there is still a significant gap in our understanding of the determinants of QoL and mental health status outcomes; the role of individual differences is under exposed. In addition to fighting the disease itself, the patient's personal mental management of the stresses associated with cancer is equally important (Spiegel, 2011). The holy grail of personalized

Abbreviations: DS14, Type D Personality Scale; ECR, Eindhoven Cancer Registry; HADS, Hospital Anxiety and Depression Scale; HRQL, health related quality of life; Type D, Distressed Personality.

* Corresponding author at: CoRPS, Department of Medical Psychology and Neuropsychology, Tilburg University, PO Box 90153, 5000 LE Tilburg, The Netherlands.

E-mail address: F.Mols@tilburguniversity.edu (F. Mols).

medicine, which is currently the dominant ambition of translational research, also implies that we can find better ways to identify those patients at risk for impaired QoL and mental health status. Individual differences in personality are important in this context.

In the cardiovascular field, Type D (distressed) personality has become an important research topic in recent years. Type D personality has been described as the tendency to experience a high joint occurrence of negative affectivity and social inhibition (Denollet, 2005). People that score high on negative affectivity have the tendency to experience negative emotions, while people that score high on social inhibition have the tendency not to express these emotions, because of fear of rejection or disapproval by others. Persons with high levels on *both* personality traits are classified as having a Type D personality (Denollet, 2005). Systematic reviews among cardiovascular patients (Denollet et al., 2010), non-cardiovascular patients (Mols and Denollet, 2010a), and healthy individuals (Mols and Denollet, 2010b) have shown that personality is a stable (Denollet, 2005) and powerful predictor of impaired QoL and mental health status, above and beyond clinical characteristics. However, studies on Type D personality among cancer survivors are scarce (Mols et al., 2010a). Therefore, the goal of this study was to examine whether Type D personality was associated with an increased risk of impaired QoL and mental health status among survivors of endometrial cancer, colorectal cancer, lymphoma or multiple myeloma.

2. Methods

2.1. Setting and participants

This secondary analysis used data from four large population-based longitudinal surveys on survivors of endometrial cancer, colorectal cancer, lymphoma and multiple myeloma. These studies were set up in 2008/2009 using data from the Eindhoven Cancer Registry (ECR), and were designed to evaluate various patient-reported outcomes (e.g. late effects, physical and mental health status) among cancer survivors.

The ECR compiles data of all individuals newly diagnosed with cancer in the southern part of the Netherlands, an area with 10 hospitals serving 2.3 million inhabitants (Janssen-Heijnen et al., 2005). All individuals diagnosed with endometrial cancer or colorectal cancer from 1998 to 2007, and all individuals diagnosed with Hodgkin or non-Hodgkin lymphoma or multiple myeloma from 1999 to 2008 as registered in the ECR were eligible for participation. However due to the large number of colorectal cancer survivors ($n = 5399$) a weighted random selection of 2219 patients based on tumor, sex, and year of diagnosis was made (Thong et al., 2011a; Thong et al., 2011b). The weights on tumor and sex were derived from the total distribution of colorectal cancer survivors in the ECR region. Patients with fewer years since diagnosis were over-sampled for inclusion in future follow-up assessments.

After excluding those patients who had cognitive impairment, had died prior to start of study (according to the ECR, the Central Bureau for Genealogy which collects information on all deceased Dutch citizens via the civil municipal registries, and hospital records) or had unverifiable addresses,

data collection started in 2008–2009. All studies were approved by a Medical Ethics Committee.

2.2. Data collection

Survivors were informed of the study via a letter from their (ex)-attending specialist. The letter explained that by completing and returning the enclosed questionnaire, patients consented to participate in the study and agreed to the linkage of the questionnaire data with their disease history in the ECR. Patients were reassured that non-participation had no consequences on their follow-up care or treatment. Non-respondents were sent a reminder letter and questionnaire within 2 months.

Survivors' sociodemographic and clinical information were available from the ECR which routinely collects data like date of diagnosis, tumor grade (1992), clinical stage (1992), treatment, and comorbidity at the time of diagnosis. Comorbidity at the time of the study was assessed with the adapted Self-administered Comorbidity Questionnaire (Sangha et al., 2003). Socioeconomic status was determined by an indicator developed by Statistics Netherlands (van Duijn and Keij, 2002). Questions on marital status, educational level, and current occupation were added to the questionnaire.

2.3. Type D personality

Type D personality was measured with the 14-item Type D Personality Scale (DS14) (Denollet, 2005). The DS14 is self-administered and takes only a few minutes to complete. The 14 items of this scale are answered on a 5-point response scale ranging from 0 (false) to 4 (true). Seven of these items refer to "Negative Affectivity" or the tendency to experience negative emotions in general. The remaining 7 items refer to the patient's level of "Social Inhibition" or the tendency to inhibit the expression of emotions in social relationships. Patients were categorized as Type D using a standardized cut-off score of ≥ 10 on both the negative affectivity and social inhibition subscales, following the protocol as previously established (Denollet, 2005). The DS14 is a valid and reliable scale with Cronbach's α of 0.88/0.86 and a test-retest reliability over a 3-month period of $r = 0.72/0.82$ for the two subscales, respectively (Denollet, 2005).

2.4. Quality of life

To evaluate the quality of life of cancer survivors included in this study, we used the SF-36 or the EORTC-QLQ-C30.

In the two studies on colorectal and endometrial cancer survivors, the Dutch version of the SF-36 questionnaire was used to assess QoL (Aronson et al., 1998). This questionnaire incorporates 8 domains: general health, physical functioning, role function-physical, bodily pain, vitality, social functioning, role function-emotional, and mental health (Aronson et al., 1998). According to standard scoring procedures, the subscales were linearly converted to a 0–100 scale, with higher scores indicating better functioning.

The EORTC-QLQ-C30 (Version 3.0), a 30-item self-report questionnaire, was used in our cohorts of lymphoma and multiple myeloma survivors to assess cancer-specific QoL (Niezgodna and Pater, 1993). It contains five functional scales on physical,

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