The association between Type D personality and illness perceptions in colorectal cancer survivors: A study from the population-based PROFILES registry ☆

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ABSTRACT

Objective: To examine the association between Type D personality and illness perceptions among colorectal cancer survivors 1–10 years post-diagnosis.
Methods: Data from two population-based surveys on colorectal cancer survivors was used. Patients diagnosed between 1998 and 2009, as registered in the Eindhoven Cancer Registry, received a questionnaire on Type D personality (DS14) and illness perceptions (B-IPQ); 81% ($n = 3977$) responded.
Results: 750 (19%) patients had a Type D personality. They believe their illness has significantly more serious consequences, will last significantly longer, and experience significantly more symptoms that they attribute to their illness. Also, they are more concerned about their illness, and their disease more often influences them emotionally. Differences regarding 'consequences', 'concern' and 'emotional response' were also clinically relevant. The majority of patients stated that the cause of their disease was unknown (23.3%), hereditary (20.3%), lifestyle (15.1%), psychological distress (11.9%) or other (11.6%). Significant differences in perceptions on cause of disease between Type Ds and non-Type Ds were found for psychological distress (16.2 vs. 10.9%; $p < 0.01$), randomness (1.7 vs. 5.3%; $p < 0.01$) and unknown (18.8 vs. 24.4%; $p < 0.01$). Multivariate analyses showed that Type D was negatively associated with 'coherence' and positively with 'consequences', 'timeline', 'identity', 'concern', and 'emotional representation'.
Conclusions: These results elucidate the associations between personality and illness perceptions, demonstrating their close interrelatedness. Our study may be helpful in further developing theoretical models regarding giving meaning to illness and the illness perceptions that the illness elicits. Future studies should investigate whether interventions can positively impact illness perceptions of Type D cancer patients.

Introduction

Type D (distressed) personality has become an important research topic in the field of medical psychology in recent years. It has been described as the tendency to experience a high joint occurrence of negative affectivity and social inhibition [1]. People who score high on negative affectivity have the tendency to experience negative emotions, while people who score high on social inhibition have the tendency not to express these emotions, because of fear of rejection or disapproval by others. Those with high levels on *both* personality traits are classified as having a Type D personality [1].

Systematic reviews among various patient groups [2,3] and healthy individuals [4] have shown that Type D personality is a stable [1,5] and powerful predictor of impaired quality of life and mental health status, above and beyond clinical characteristics. Also, studies have shown that individuals with a Type D personality reported higher rates of medically documented comorbidity [6,7], more somatic complaints [8–11], and report to feel more bothered by their illness [7,12,13] compared to those without this personality type. Findings on health care utilization among those with a Type D personality are mixed. While some studies have shown that patients with a Type D personality are less likely to seek appropriate medical care [9,12,14,15], a recent publication among cancer survivors concluded the opposite [7].

There is still a significant gap in our understanding of the determinants of these poor health outcomes among patients with a Type D personality. Perhaps the way people perceive their illness can shed some

new light onto this area, since patients' illness perceptions are believed to determine their behavioral and emotional self-regulation following a health threat [16]. A recent study among post myocardial infarction patients showed that those with a Type D personality possess a distinct profile of health beliefs compared to those without this personality type [17]. They believed that their illness had more serious consequences, will last significantly longer, will be significantly less controllable by them or through treatment, and they experienced significantly more symptoms that they attributed to their illness. Also, they were more concerned about their illness, experienced more emotions as a result of it, and found their illness to be less comprehensible [17].

Patients respond to their symptoms and signs of illness by forming cognitive and emotional representations of the illness that lead to coping responses [18]. However, the study among myocardial infarction patients showed that personality might influence the way people perceive their illness [17]. Besides that study, the influence of Type D personality on illness perceptions has not been investigated before. Because cancer patients with a Type D personality experience a lower quality of life and mental health status [19], report higher rates of comorbid conditions [7], and report to feel more bothered these conditions [7], assessing illness perceptions among cancer patients with and without a Type D personality seems warranted. Therefore, the goal of this study was to examine whether colorectal cancer survivors between 1 and 10 years after diagnosis with a Type D personality have different illness perceptions compared to non-Type Ds.

Methods

Setting and participants

Data collection was done within PROFILES (Patient Reported Outcomes Following Initial treatment and Long term Evaluation of Survivorship). PROFILES is a registry for the study of the physical and psychosocial impact of cancer and its treatment from a dynamic, growing population-based cohort of both short- and long-term cancer survivors [20]. PROFILES contains a large web-based component and is linked directly to clinical data from the Eindhoven Cancer Registry (ECR), which 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 [21]. Data from the PROFILES registry will be available for non-commercial scientific research, subject to study question, privacy and confidentiality restrictions, and registration (www.profilesregistry.nl).

For this study, data from two large population-based surveys on survivors of colorectal cancer was used [22,23]. These surveys were set up in January 2009 and December 2010 with the goal to evaluate various patient-reported outcomes (e.g. late effects, physical and mental health status) among colorectal cancer survivors. For the 2009 survey, all individuals diagnosed with colorectal cancer from 1998 to 2007 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, gender, and year of diagnosis was made [22,23]. Patients with fewer years since diagnosis were oversampled. For the 2010 survey, all individuals diagnosed with colorectal cancer from 2000 to 2009 as registered in the ECR were eligible for participation (except those already included in the 2009 survey). In both surveys, patients who had cognitive impairment, those who died prior to start of study (according to the ECR, hospital records, and the Central Bureau for Genealogy which collects information on all deceased Dutch citizens via the civil municipal registries) or those with unverifiable addresses, were excluded. Both studies were approved by the Medical Ethics Committee of the Maxima Medical Centre in the Netherlands and carried out to conform to the Helsinki Declaration.

Data collection

Details of the PROFILES data collection method have been previously described [20]. In summary, survivors were informed of the study via a letter from their (ex-)attending specialist. The 2009 letter explained that by completing and returning the enclosed paper-and-pencil questionnaire, patients consented to participate in the study and agreed to the linkage of the questionnaire data with their disease history in the ECR. The 2010 letter included a link to a secure website, a login name, and a password, so that interested patients could provide informed consent and complete questionnaires online. If the patient did not have access to the internet, or preferred written rather than digital communication, (s)he could return our postcard by mail after which (s)he received our paper-and-pencil version of the informed consent form and questionnaire. In both studies, patients were reassured that non-participation had no consequences on their follow-up care or treatment. Non-respondents were sent a reminder letter and paper-and-pencil questionnaire within 2 months.

Demographic and clinical characteristics

Survivors' sociodemographic and clinical information was available from the ECR which routinely collects data like date of diagnosis, tumor grade [24], clinical stage [24], and primary treatment. Comorbidity at the time of the study was assessed with the adapted Self-administered Comorbidity Questionnaire [25]. Socioeconomic status was determined by an indicator developed by Statistics Netherlands [26]. Questions on marital status, educational level, and employment status were added to the questionnaire.

Type D personality

Type D personality was measured with the Dutch 14-item Type D Personality Scale (DS14) [1]. 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" (NA) or the tendency to experience negative emotions in general. The remaining 7 items refer to the patient's level of "Social Inhibition" (SI) or the tendency to inhibit the expression of emotions in social interaction. Patients were categorized as having a Type D personality using a standardized cut-off score of ≥10 on both the negative affectivity and social inhibition subscales, following the protocol as previously established [1]. 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 [1].

Illness perceptions

Illness perceptions were assessed using the Dutch version of the Brief Illness Perception Questionnaire (B-IPQ), an eight-item instrument used to assess cognitive and emotional representations of the illness [27]. The B-IPQ uses a single-item scale approach to assess perceptions on a continuous linear 0–10 point scale. Five of the items assess cognitive illness representations: 1. How much does your illness affect your life (consequences)? 2. How long do you think your illness will continue (timeline)? 3. How much control do you feel you have over your illness (personal control)? 4. How much do you think your treatment can help your illness (treatment control)? and 5. How much do you experience symptoms from your illness (identity)? Two items assess emotional representations: 6. How concerned are you about your illness (concern)? and 7. How much does your illness affect you emotionally (emotional representation)? One item assesses illness comprehensibility: 8. How well do you understand