

Summary

Examination of the Factors Related to Health Anxiety among Adults within the scope of Cognitive Behavioral Model

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Health anxiety is defined as an experience includes extreme attention and worry towards health which develops with misinterpretation of bodily sensations or changes as signs of a serious illness (Asmundson, Abramowitz, Richter, & Whedon, 2010; Reiser, McMillan, Wright, & Asmundson, 2014). Health anxiety may have effect on various factors. Two of these factors are abnormal illness behaviors and quality of life. Abnormal illness behavior is person's continuous inconvenient and dysfunctional behavioral reaction style towards a symptom, illness or health status despite the related information, evaluation of the situation and proper care are provided by the doctor (Pilowsky, 1986). It is known that people with high health anxiety use medical services more, have higher medical expenses (Barksy, Ettner, Horsky, & Bates, 2001; Lee, Creed, Ma, & Leung, 2015; Rask et al., 2016), have higher rates of online searching about their diagnoses and symptoms (Eastin & Guinsler, 2006; Lagoe & Atkin, 2015; Tanis, Hartmann, & Te Poel, 2016) and lower rates of satisfaction from doctor's medical examinations (Tanis, Hartmann, & Te Poel, 2016). Moreover, quality of life is defined as "a person's perception of his/her position in life within the context of the culture and value systems in which he/she lives and in relation to his/her goals, expectations, standards, and concerns (WHOQOL Group, 1994, p. 28). There are some studies which showed that health anxiety and quality of life were negatively correlated (Bleichhardt & Hiller, 2007); and high health anxiety predicted low quality of life (Janzen-Claude, Hadjistavropoulos, & Friesen, 2014).

On the other hand, there are some factors which affect health anxiety. Anxiety sensitivity, health related dysfunctional behaviors and alexithymia could be counted among those factors. Anxiety sensitivity is defined as "a personal variation variable which arises from a person's belief that experiencing anxiety and fear will cause illness, shame or more anxiety" (Reiss, Peterson, Gursky, & McNally, 1986, p. 1-2). Studies showed that anxiety

sensitivity and health anxiety were positively correlated, and anxiety sensitivity predicted health anxiety (Fergus, 2014; Stewart, Sherry, Watt, Grant, & Hadjistavropoulos, 2008). In addition to this, in other studies it was found that, anxiety sensitivity and quality of life were negatively correlated, and anxiety sensitivity predicted quality of life (Kang et al., 2015; Tsao, Meldrum, Kim, & Zeltzer, 2007). Because anxiety disorders are related to abnormal illness behaviors (Guo, Kuroki, & Koizum, 2001), anxiety sensitivity, which is a risk factor for anxiety disorders, is also expected to be related to abnormal illness behaviors.

According to the cognitive behavioral model of health anxiety, people who have health related dysfunctional beliefs are more prone to experience anxiety via perceiving bodily sensations or symptoms as signs of a health problem (Fergus, 2014). Salkovskis and Warwick (2001) stated that 1) likelihood of illness, 2) awfulness of illness, 3) inability to cope with illness, 4) medical services inadequacy are the core health related dysfunctional beliefs (as cited in Hadjistavropoulos et al., 2012). Studies showed that health related dysfunctional beliefs predicted health anxiety in different samples (e.g., Alberts & Hadjistavropoulos, 2014; Fergus, 2014; Hadjistavropoulos et al., 2012). Likewise, health related dysfunctional beliefs were found as positively correlated with abnormal illness behaviors and health anxiety mediated the relationship between likelihood of illness, awfulness of illness and abnormal illness behaviors (Pugh, 2010).

Another variable of the study, alexithymia, is a construct which is regarded as predisposition factor for psychosomatic illnesses (Kooiman, 1998). It is characterized with some deterioration on emotions' cognitive evaluation and arose as a separate personality character (Zackheim, 2007). Some studies showed that alexithymia and health anxiety were positively correlated; and alexithymia was one of the predictors of health anxiety

(Shahidi, Molaie, & Dehghani, 2012; Zhang, Zhao, Mao, Li, & Yuan, 2014). Likewise, alexithymia was found to be negatively correlated with quality of life and one of the predictors of low quality of life (Evren, Dalbudak, Durkaya, Çetin, & Evren, 2010; Vieira, Vieira, Gomes, & Gauer, 2013).

Within the scope of this study, hypotheses which were generated based on the cognitive behavioral model of health anxiety and related literature are as follow:

- 1) Anxiety sensitivity, health related dysfunctional beliefs and alexithymia would predict health anxiety among adults.
- 2) Health anxiety would predict abnormal illness behaviors and quality of life among adults.
- 3) Health anxiety would mediate the relationships between health-related dysfunctional beliefs and abnormal illness behaviors as well as anxiety sensitivity and abnormal illness behaviors among adults. Moreover, health anxiety would mediate the relationships between anxiety sensitivity and quality of life as well as alexithymia and quality of life among adults.

Method

Participants

503 people (301 women, 202 men) aged between 18-58 years old ($M = 25.88$, $SD = 6.39$) and currently who do not have any physical illness diagnosis participated in this study. They were recruited from different cities of Turkey and some of them had various jobs while others were university students (undergraduate and graduate).

Measures

Sociodemographic Information Form, Anxiety Sensitivity Index-3, Health Cognitions Questionnaire, The Twenty-Item Toronto Alexithymia Scale, Health Anxiety Inventory-Short Version, Scale for the Assessment of Illness Behaviour and World Health Organization BREF Quality of Life Assessment were used for data collection.

Results

In order to examine the relationships between sociodemographics, independent and dependent variables, Pearson correlation coefficients were calculated. According to the results, health anxiety was positively correlated with anxiety sensitivity, health-related dysfunctional beliefs, alexithymia, and abnormal illness behaviors (items are rated as 0 = *I Agree Completely*, 1 = *Partially Agree*, 2 = *Partially Disagree*, 3 = *I Dis-*

agree Completely, and lower scores indicate abnormal illness behaviors); and negatively correlated with quality of life. Moreover, anxiety sensitivity and health-related dysfunctional beliefs were positively correlated with abnormal illness behaviors (items are rated as 0 = *I Agree Completely*, 1 = *Partially Agree*, 2 = *Partially Disagree*, 3 = *I Disagree Completely* and lower scores indicate abnormal illness behaviors). Likewise, anxiety sensitivity, health-related dysfunctional beliefs, and alexithymia were negatively correlated with quality of life.

To be able to test the hypotheses, path analysis was used. Firstly, a model was constructed and tested with independent and dependent variables. The model did not fit the data well [$\chi^2(23, N = 503) = 122,909$, $p < .001$, $\chi^2/sd = 5,344$, GFI = .960, AFGI = .886, CFI = .941, RMSEA = .093]. After controlling standardized regression weights, nonsignificant paths between health-related dysfunctional beliefs and abnormal illness behaviors were deleted one by one and the model fit was tested in every time. Finally, goodness of fit indices of the model were acceptable [$\chi^2(27, N = 503) = 124,482$, $p < .001$, $\chi^2/sd = 4,610$, GFI = .959, AFGI = .900, CFI = .942, RMSEA = .085]. According to the standardized regression weights between the variables, anxiety sensitivity predicted abnormal illness behaviors ($\beta = -.32$, $p < .001$) and physical ($\beta = -.24$, $p < .001$), psychological ($\beta = -.23$, $p < .001$), social ($\beta = -.13$, $p < .01$) and environment ($\beta = -.18$, $p < .001$) areas of quality of life. Moreover, alexithymia predicted physical ($\beta = -.29$, $p < .001$), psychological ($\beta = -.35$, $p < .001$), social ($\beta = -.33$, $p < .001$) and environmental ($\beta = -.30$, $p < .001$) areas of quality of life.

Afterwards, health anxiety was added to the model (in order) to examine its mediator role. The goodness of fit indices of the model was found to be good in general [$\chi^2(27, N = 503) = 87,585$, $p < .001$, $\chi^2/sd = 3,244$, GFI = .973, AFGI = .921, CFI = .971, RMSEA = .067]. According to the standardized regression weights of the variables anxiety sensitivity ($\beta = .44$, $p < .001$), inability to cope with illness ($\beta = .27$, $p < .001$), awfulness of illness ($\beta = .10$, $p < .01$), likelihood of illness ($\beta = .18$, $p < .001$) predicted health anxiety. However, medical services inadequacy ($\beta = .05$, $p > .05$) and alexithymia ($\beta = .02$, $p > .05$) did not significantly predict health anxiety. According to this, the first hypothesis was supported partially. Moreover, health anxiety predicted abnormal illness behaviors ($\beta = -.25$, $p < .001$), physical ($\beta = -.36$, $p < .001$), psychological ($\beta = -.32$, $p < .001$), social ($\beta = -.25$, $p < .001$) and environment ($\beta = -.26$, $p < .001$) areas of quality of life. Based on this result, the second hypothesis was fully supported. After health anxiety was added to the model, there was a decrease in the standardized regression weight between anxiety sensitivity and abnormal illness behaviors ($\beta = -.17$, $p < .01$). Sobel test was done

to see whether this change was significant ($Z = 4.645$, $p < .001$). Because the decrease in the standardized regression weight was significant, partial mediation role of health anxiety on this relationship can be mentioned. Additionally, after health anxiety was added to the model, the paths between anxiety sensitivity and physical ($\beta = -.02$, $p > .05$), psychological ($\beta = -.03$, $p > .05$), social ($\beta = -.01$, $p > .05$), environment ($\beta = -.03$, $p > .05$) areas of quality of life had become nonsignificant. Therefore, health anxiety fully mediated the relationships between anxiety sensitivity and quality of life areas.

On the other hand, because health-related dysfunctional beliefs did not predict abnormal illness behaviors, mediator role of health anxiety could not be examined. Health-related dysfunctional beliefs may indirectly affect abnormal illness behaviors through affecting health anxiety. Moreover, alexithymia directly predicted the physical ($\beta = -.27$, $p < .001$), psychological ($\beta = -.33$, $p < .001$), social ($\beta = -.32$, $p < .001$), environment ($\beta = -.28$, $p < .001$) areas of quality of life. Because the path between alexithymia and health anxiety was not significant, mediator role of health anxiety between anxiety sensitivity and quality of life cannot be mentioned. In general, the third hypothesis was supported partially.

Discussion

Considering the cognitive behavioral model and related literature, the aim of this study was to examine the relationships between anxiety sensitivity, health-related dysfunctional beliefs, alexithymia, health anxiety, abnormal illness behaviors and quality of life in adults from a normal population. According to the results, hypotheses were supported substantially. Considering the results of the study, anxiety sensitivity and health-related dysfunctional beliefs (inability to coping with illness, the awfulness of illness, the likelihood of illness) can be counted as the risk factors for health anxiety. Likewise, health anxiety can be considered as a risk factor for abnormal illness behaviors and decrease in quality of life. Moreover, anxiety sensitivity predicted abnormal illness behaviors and quality of life and health anxiety mediated these relationships. Therefore, anxiety sensitivity can be considered as a risk factor for abnormal illness behaviors and decrease in quality of life. Even though alexithymia was not a significant predictor of health anxiety, it significantly predicted quality of life and can be a risk factor for decrease in quality of life.

The results of this study have some contributions to the literature. Considering the cognitive behavioral model of health anxiety and literature, a comprehensive model was formed and tested. Factors which affect health anxiety, factors which health anxiety influenc-

es and mediator role of health anxiety were examined. Moreover, using path analysis as a statistical method can be counted as a strength because of enabling to test the model. Furthermore, collecting data from a large sample which was composed of participants from different cities can be counted as another important point in terms of generalizability of the results.

On the other hand, there are some limitations in this study. Because it is a cross-sectional study, any inference about time related changes cannot be done. In addition, because an experimental design was not used, a cause-effect relationship between variables cannot be mentioned. In terms of sampling, participants did not distribute equally in terms of some sociodemographic characteristics such as education level, socioeconomic status, gender and age which all may have an impact on the representation of the target population. Additionally, since the data of the study was collected online, people who have good technological skills may participate mostly and it may be the reason of the sample that consists of young and highly educated participants. Finally, since the data was collected via self-report measures, possible biases and social desirability effect should be considered.

This study has also some clinical implications. Results of the study may help to evaluate health anxiety within the scope of the cognitive behavioral model. It was shown that the factors which affect health anxiety and the factors which health anxiety has an influence on should be considered together.