Hardiness as a mediator between perceived stress and happiness in nurses

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Accessible summary

- The relevance of the study of happiness and stress in nurses has been emphasized. In this sense, the intelligent use of hardiness is enable nurses to cope better with stress and contribute to being happier.
- This study aimed to examine the relationship among hardiness, perceived stress, and happiness in nurses. Moreover, we examined the mediator role of hardiness on the relationship between perceived stress and happiness in nurses.
- Our study revealed that hardi-attitude nurses evaluate situations as less stressful which results in a higher happiness.
- This study showed hardiness as being a protective factor against perceived stress and a facilitating factor for happiness in nurses. The findings could be important in training future nurses so that hardiness can be imparted, thereby giving them the ability to control their stress.

Abstract

Nursing is a stressful occupation with high levels of stress within the health professions. Given that hardiness is an important construct to enable nurses to cope better with stress and contribute to being happier; therefore, it is necessary we advance our knowledge about the aetiology of happiness, especially the role of hardiness in decreasing stress levels and increasing happiness. The present study sought to investigate the role of hardiness as a mediator between perceived stress and happiness. The participants, comprising 252 nurses from six private hospitals in Tehran, completed the Personal Views Survey, the Perceived Stress Scale, and the Oxford Happiness Inventory. Structural Equation Modelling (SEM) was used to analyse the data and answer the research hypotheses. As expected, hardiness partially mediated between perceived stress and happiness among nurses, and nurses with low levels of perceived stress were more likely to report greater hardiness and happiness. In addition, nurses with high levels of hardiness were more likely to report happiness. This study showed hardiness as being a protective factor against perceived stress and a facilitating factor for happiness in nurses. The findings could be important in training future nurses so that hardiness can be imparted, thereby giving them the ability to control their stress.

Introduction

Nursing is considered as a stressful occupation within the health profession (Watson et al. 2008, Barriball et al. 2011). Stress in nursing is a problem that impacts the practice throughout the world. For example, an Iranian study reported that 72% of nurses had high levels of stress (Faraji et al. 2012). While stress in nursing is a serious physical health issue by itself, it is also associated with serious psychological disorders, such as depression,
anxiety, sleep disorders, and somatic disorders (Watson et al. 2008, Barriball et al. 2011). Previous research findings have revealed that perceived stress in nurses is associated with decreased productivity, efficiency, and, ultimately, leads to burnout (Spence Laschinger & Finegan 2008, Nahm et al. 2012). Stress in the workplace is harmful for both nurses and patients, because it contributes to poor occupational performance and employee burnout (Edwards et al. 2010, Lane et al. 2010). A number of major factors for stress in nursing have been suggested. McVicar (2003) proposed that the lack of social support, lack of clarity, supervision problems, death of patients, shortage of nurses, and increased workload (Faraji et al. 2012) are important factors that cause stress among nurses. According to Lazarus & Folkman (1984), perceived stress is caused by the perceptions of stressful conditions and appraising one’s own ability to cope with the stressors in which the effects on the individuals are more than that of the actual stressors. This theory proposes that there are differences in each individual’s reaction to the same potential stressors, and these differences affect both the level of appraisal and the ability to solve problem.

The effects of stress are related to several factors. McVicar (2003) stated that there are individual differences in the perception, response, and ability to cope with stressful conditions among nurses. In addition, he suggested that one of the protective factors against stress is ‘Hardiness’. The term hardness was introduced by Kobasa (1979) as a way of understanding a person’s relation with others, the goals and problems. Khosha & Maddi (2008) defined hardness as an ability incorporating three components – commitment, control, challenge – that prepare an individual to handle problematical life events (Pengilly & Dowd 2000, Klag & Bradley 2004). Commitment is defined as a person committed to activities, such as work, sport, academic, religion, or hobby. Each activity is meaningful and interesting for him/her. Control is defined as a person believing that they can control or influence their life experiences. She/he can make a decision in his/her life and control their own life and events. Challenge is defined as a person perceiving the world as an opportunity to develop, as well as being good learners (Khosha & Maddi 2008). Individuals with high levels of challenge attempt to extract strengths from previous experience and overcome to upcoming problems based on the gained experiences rather than withdrawing from stressful situations. According to Ouellette & DiPlacido (2001, p. 187), ‘hardiness is said to lessen the negative effects of stress’. According to Kobasa’s definition, two mechanisms have been proposed to explain the effect of hardiness: hardy individuals have a more optimistic perception towards the environment (Garrosa et al. 2008) and appraise stressful conditions as being more challenging and controllable and less threatening. In addition, hardy individuals attempt to gain experience from stressful conditions (Khosha & Maddi 2008, Delahaj et al. 2010). The hardness model has been applied extensively to the field of nursing (Garrosa et al. 2008, 2010). Garrosa et al. (2008) concluded that nurses with high levels of hardness applied effective managerial strategies to reduce stress and burnout. In another study, Rodney (2000) revealed that hardness had a positive influence on the secondary appraisal of stressful events.

Studies have reported that individuals who are high in hardness are more likely to report happiness, occupational satisfaction, life satisfaction, and mental and physical health (Cunningham & De La Rosa 2008, Delahaj et al. 2010, Schreurs et al. 2010), while other studies have reported that individuals who are low in hardness are more likely to report mental disorders, such as depression, anxiety, and stress (Eschleman et al. 2010). A considerable amount of literature has been allocated to establish whether measures of the hardness act as a predictor of happiness. Several studies have shown that a positive association exists between hardness and happiness (Walker 2006, Erbes et al. 2011, Nayyeri & Aubi 2011, Zhang 2011). Happiness has been emphasized as one of the major features of positive psychology (Hills & Argyle 2001, Najemy 2001). In positive psychology, happiness is recognized as an emotion; it is mental evaluation of events with positive emotion and is associated with three components: rare frequencies of negative effect, repeated happenings of positive effect, and a high level of life satisfaction (Diener et al. 2009). Therefore, happiness includes the emotional and cognitive aspects. It is one of the cognitive-motivational constructs, and, as a positive inner experience and motivator, plays an important role in health of nurses by preventing and protecting them from mental and physical disorders (Veenhoven 2008). The research findings showed that happiness in nurses positively impact on patient care, life satisfaction, job satisfaction, productivity, and efficiency (Tzeng 2002, Buchand et al. 2006).

According to numerous evidence of the inverse association between stress and happiness, there is a gap in the literature. The reasons why individuals with high levels of stress experience low levels of happiness is ambiguous because the results of the studies in this area have only addressed the inverse association between stress and happiness, without considering other variables influencing the association. Therefore, this study may be useful in clarifying the inverse association between stress and happiness and the variables influencing the association. The current study sought to examine a number of hypotheses. Firstly, there is a negative relationship between perceived stress and happiness. Secondly, there is a positive relationship...
between hardiness and happiness. Lastly, hardiness is able to mediate between perceived stress and happiness in nurses.

Method

Ethical considerations

The Tehran University of Psychology ethics committee (Tehran, Iran) approved the study. The participants were informed about research purposes, and they were also informed that the participation in this study was voluntary and anonymous, and they could withdraw from the study at any time. Written informed consent was also obtained for all the nurses.

Translation of the questionnaire

The questionnaires were translated from English version to Persian version. In order to ensure that Persian translation properly reflected the meaning of the English version, back-translation was used with the help of three experts in English language, and necessary modifications were made by them.

Pilot study

A pilot study was conducted on 30 nurses. A pilot study was conducted to determine the reliability of the tools. After reading a survey letter of consent and completing the questionnaires, the respondents were asked to indicate any difficulties or ambiguities in the questionnaires. The questionnaires for the pilot study were organized into four sections, namely, (1) Section A: Demographic questionnaire; (2) Section B: Personal Views Survey, Third Edition Revised; (3) Section C: Perceived Stress Scale; and (4) Section D: The Oxford Happiness Inventory. In general, the respondents of the pilot study indicated a positive feedback towards the general structure and presentation of the questionnaire. To improve the face validity of the scales, the survey questionnaire was further refined based on some comments collected from the pilot study. For example, these changes were related to demographic questionnaire. One question (do you like your work?) was removed from the demographic questionnaire because it was found to be similar with another question in Personal Views Survey, Third Edition Revised (QA8: I like a lot of variety in my work.). In addition, a new instruction (i.e. Please tick one option for each question.) was added at the first of each questionnaire. Those nurses who participated in the pilot study were excluded from the main study sample.

Participants

A total of 252 nurses from six private hospitals in Tehran City participated in this study (male = 71, 28.2%, and female = 181, 71.8%, aged from 18 to 45 years, Mean = 29.23, SD = 7.58). For structural equation modeling (SEM) studies, Kline (2005) suggested equal or more than 200 participants would be adequate. The majority of the participants were not married (63.5%, n = 160), had no children (72%, n = 181), and worked as a nurse for an average of 7 years at the current hospital. Approximately 95% of the participants worked full time. The educational levels of the nurses consisted of 38%, n = 96 diploma, 45%, n = 113, associate degree, 10%, n = 25, bachelor of nursing, and 7%, n = 17, master of nursing. The hospital units in which the nurses worked are shown in Table 1.

Procedure

The head of nursing from each hospital agreed to collect the data and informed the nurses that if they volunteered to participate in the study they would receive a set of questionnaires to complete. These sets were handed over to the head of nursing to distribute among the nurses. Each set contained an introductory letter and four questionnaires (one of them was a demographic questionnaire). A total of 310 questionnaires were distributed among the nurses, and 252 (81%) usable questionnaires were returned. The completed questionnaires with stamped addressed envelopes were delivered to the nursing head. As a token of appreciation, each participant was given a book.

Measures

Hardiness (Personal Views Survey, third edition revised; Maddi et al. 2006)

There are 18 items that measure the three components of hardiness: commitment, control and challenge. The sum of these three components is hardiness. The scores range from...
0 to 54. A 4-point Likert scale was used for all questions ranging from 0 (not at all true), 1 (somewhat true), 2 (true), and 3 (very true). Studies have shown an acceptable internal consistency $\alpha$: 0.70–0.75 for commitment, 0.61–0.84 for control, 0.60–0.71 for challenge, and 0.80–0.88 for total hardiness (Maddi et al. 2006). In addition, the construct validity of PVS III-R reported $\alpha$: 0.70 to 0.84 (Okun et al. 1988). The construct validity of the challenge was $\alpha$: 0.62, commitment $\alpha$: 0.59, and control was $\alpha$: 0.46 (Judkins et al. 2005). In the present study, the convergent validity (average variance extracted) was $\alpha$: 0.60, and the construct reliability (CR) was $\alpha$: 0.75. In this study, the sum of three scores was utilized (Maddi 2006).

**Perceived Stress Scale (PSS; Cohen et al. 1983)**

This scale comprises 10 items that measure the degree of stressful conditions and assess the beliefs of nurses about how situations are unpredictable, uncontrollable, and excessive. It does not assess an individual in a specific stressful situation during the last month. Nurses respond to general questions, for instance, ‘In the last month, how often have you been upset because of something that happened unexpectedly?’. All the questions are based on a 4-point Likert scale from 0 (never) to 4 (very often). Cohen (1996) reported that the Perceived Stress Scale-10 was a reliable psychological questionnaire for assessing the perception of stress and reported that it had a good reliability with $\alpha$: 0.84. Koopman et al. (2000) examined the validity of the Perceived Stress Scale-10 with other stress measurements, such as self-reported health behaviour. They reported a good validity with $\alpha$: 0.76 to 0.85. In the current study, the convergent validity (average variance extracted) was $\alpha$: 0.69, and the construct reliability (CR) was $\alpha$: 0.81.

**The Oxford Happiness Inventory (OHI; Hills & Argyle 2002)**

The Oxford Happiness Inventory comprises 29 items that assess happiness in nurses. Each item is a single statement that can be endorsed using a uniform 6-point Likert scale from ‘1 = strongly disagree’ to ‘6 = strongly agree’. The scores range from 29 to 174. For example the questionnaire asked: ‘I feel optimistic about the future, I feel that the situation is predictable and 3 (very true). Studies have shown an acceptable inter-

**Analysis**

We employed SEM mainly because it provides a balance of type I error rates and statistical power when testing mediation (MacKinnon et al. 2002). Also, SEM makes it possible for researchers to estimate relations among constructs that are corrected for bias attributable to random error and construct-irrelevant variance by providing separate estimates of relations among latent constructs and their manifest indicators (Tomarken & Waller 2005). Furthermore, the multigroup (SEM) was used to compare between male and female samples (Kline 2005).

The data were considered to be normal because the skewness values were from (−0.98 to 0.62), and the kurtosis values were from (−1.65 to 0.13) for all variables. Byrne (2010) stated that if the skewness value is between −2 to +2, and the kurtosis value is between −7 to +7, data are considered to be normal. For model fit, the goodness of fit indices, such as the chi square/degree of freedom ratio (CMIN/DF), the comparative fit index (CFI), the goodness-of-fit index (GFI), and the Tucker–Lewis Index (TLI) were used. It is suitable if the indices are equal or greater than 0.90 (Kline 2010). Furthermore, when the root mean squared error of approximation (RMSEA) is between 0.03 and 0.08 (Kline 2010), the model has an acceptable goodness of fit. In addition, the group value SEM was used for comparison between the groups for men and women. The AMOS 20 (Selangor State, Malaysia) software was utilized for analysing the data.

**Results**

**Descriptive statistic**

As can be seen from Table 2, the intercorrelations among hardiness, perceived stress, and happiness are reported, and the standard deviations, actual range, and the means are reported.

**Goodness of fit**

The model included perceived stress, hardiness, and happiness as latent variables. The model showed good fit indices: CMIN/DF = 2.39, $P < 0.01$, CFI = .935, GFI = .943, TLI =

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Correlation between study variables, and the mean, and SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Hardiness</td>
<td>1</td>
<td>0.338**</td>
<td>−0.459**</td>
<td></td>
</tr>
<tr>
<td>(2) Happiness</td>
<td>1</td>
<td>−0.611**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Perceived stress</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>30.00</td>
<td>121.57</td>
<td>17.48</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>12.61</td>
<td>33.13</td>
<td>8.85</td>
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**P < 0.01 level.**
Structural model

The model included perceived stress as an exogenous variable; and hardiness and happiness as endogenous variables. The maximum likelihood bootstrapping within the SEM showed that an inverse association existed between perceived stress and happiness, and an inverse association existed between perceived stress and hardiness. Moreover, hardiness is positively associated with happiness (Fig. 1).

There are three steps to show that a mediator (hardiness) mediates the relationship between exogenous variable (perceived stress) and endogenous variable (happiness). First, one must demonstrate that exogenous variable (perceived stress) was significantly related to the mediator (hardiness). Second, the exogenous variable (perceived stress) must be significantly related to the endogenous (happiness). Third, the mediator (hardiness) must be significantly related to the endogenous variable (happiness). If the relationship between exogenous variable and endogenous variable was zero when the mediator was included, full mediation was established. However, if the relationship between exogenous variable (perceived stress) and endogenous variable (happiness) was reduced when the mediator was included, partial mediation was established.

Therefore, hardiness partially mediated between perceived stress and happiness, because, according to Kline (2010), the full mediation model CMIN (χ²: 2.21, P > 0.05, AIC: 819.23), and the Parsimony Normed Fit Index (PNFI) of the full mediation model was (0.746) bigger than the PNFI (0.741) of the indirect model.

Tests of group differences (gender)

Invariance test of measurement model

A comparison between ‘the unconstrained model’ and ‘the measurement residuals model’ showed that the unconstrained model with CMIN/DF (Δχ² (329.13), 166, P < 0.01, RMSEA = 0.060, CFI = 0.903, GFI = .891, NFI = 0.901), and the measurement residuals model with (Δχ² (368.82), df = 203, P < 0.01, RMSEA = 0.058, CFI = 0.891, GFI = .863, NFI = 0.785) were significant; however, the unconstrained model was better than the measurement residuals model, because the chi-square was smaller (Davis 2008, Hair et al. 2010). According to the measurement residuals model CMIN/DF (χ² = 54681, 37, and P < 0.05) in ‘assuming that the unconstrained model is correct’, the findings showed that the impact of likely differences across gender was significant.

Invariance test of structural model

Women showed higher levels of perceived stress and lower levels of hardiness, while men showed higher levels of hardiness, lower levels of perceived stress, and were happier than women (Fig. 2).

Discussion

The findings of this study propose that perceived stress and hardiness are valuable predictors of happiness. Perceived
stress and hardiness explained 46.0% of the variance in happiness. In particular, our findings demonstrated that greater hardiness and lower perceived stress significantly predicted happiness in nurses.

The findings showed that hardiness partially mediated between perceived stress and happiness. The hardiness theory is supported by the findings of the study. According to the hardiness theory, hardiness increases the ability of individuals to pursue their activities under stressful conditions (Kobasa et al. 1982). As mentioned previously, hardiness consists of commitment, control, and challenge, and not only does the synthesis of them increase resistance in individuals under stressful conditions, it is also like a buffer against stressful conditions and contributes to happiness and optimistic viewpoints in nurses (Garrosa et al. 2010; Phillips, 2011). Several studies have shown that hardy individuals pursue their activities even under stressful conditions (Delahaij et al. 2010, Erbes et al. 2011). In addition, hardiness, as a mediator between stressful conditions and happiness, minimizes the threatening stressors and makes the stressful conditions more controllable rather than threatening (Zhang 2011). Previous studies have revealed that hardy individuals have a more optimistic outlook in respect of the environment and their own abilities (Kobasa et al. 1982, Nayyeri & Aubi 2011). Moreover, a number of studies have concluded that hardy individuals are happier than individuals who are low in hardiness (Erbes et al. 2011, Nayyeri & Aubi 2011). In addition, studies have shown that stress has a negative impact on depression, emotional and cognitive functions, happiness, and physical health, such as respiratory and heart diseases (Delahaij et al. 2010, Erbes et al. 2011).

The findings showed that women reported higher levels of perceived stress. This finding is consistent with the previous findings (Iacovides et al. 2003). High levels of stress might be related to the interface between duties of home and work as sources of stress experienced by female nurses. It is possible that due to the responsibilities of their dual roles, female nurses more often than male nurses described higher levels of stress. Furthermore, the findings showed that men were harder than women. This finding is consistent with Nezhad & Besharat (2010). This study was to make a direct comparison of hardiness across gender. However, Sansone et al. (1999) strongly asserted that the hardiness scale in use at that time was developed using a sample of exclusively male executives and not an adequate measure of hardiness in females. They advise that further hardiness research include gender as a factor is needed. Therefore, it is difficult to draw firm conclusions about such findings.

According to the studies, occupations with a low decision-making authority are associated with high levels of stress (Walker 2006). Nursing is one such occupation that is associated with high levels of stress (Walker 2006). In contrast, happiness increases job satisfaction, job performance, and mental health (Talebzadeh & Samkan 2011). Therefore, the process of interpreting stressful conditions plays an important role in making sense of happiness in nurses, and its effect on job performance, as well as mental and physical health. The research findings showed that

Figure 2
Standardized estimates of multi-group analysis with hardiness testing as mediation between perceived stress and happiness are presented. All pathways were significant with \( P < 0.01 \); Results for male are presented first. Results for female are \( P < 0.01 \).
nurses with high levels of hardiness reported low levels of stress, and nurses with low levels of hardiness reported high levels of stress.

**Implications for practice**

Hardiness training could increase happiness, decrease perceived stress, contribute to mental and physical health, and improve life and job satisfaction in nurses. Importantly, these skills prepare them to appraise stressful conditions as controllable and challenging, and, ultimately, create a healthy work environment that supports nurses both socially and professionally. Therefore, educational programmes and workshops to increase hardiness could be useful for nurses. Because hardiness training is intended to decrease the perceived stress, it may be more effective if they include enhancing nurses’ personality rather than reducing environmental stressors. Zhang (2011) also found that hardiness was a protective factor against stress in a sample of students, and present research expands this by finding hardiness as a protective factor against perceived stress and as a facilitating factor for happiness in Iranian nurses. Hardy individuals tend to believe that the outcomes are promising and positive, (Maddi et al. 2009) may provide a sense of happiness during difficult situations, and decreased symptoms of stress. Inasmuch as hardiness can be learned (Jameson 2014), having knowledge of the interaction between stress and levels of hardiness may provide valuable information for nurses to be better prepared to handle occupational stress in hospitals (Jameson 2014). Therefore, hardiness education is a tool for stress management (Maddi 2007), and it has been found to facilitate happiness (Nayyeri & Aubi 2011).

**Limitations and recommendations**

The most important limitation lies in the fact that the questionnaires may not have been completed accurately. The study would have been more useful if we had used performance-based measures of hardiness, perceived stress, and happiness. The nurses were not chosen randomly, hence we cannot generalize the results to the other groups. Another reason relates to the nature of the correlation method; respondents are likely to overstate their answers, which may be different from reality due to social desirability. We suggest using longitudinal methods for future studies because responses would be more reliable and closer to reality. Another interesting suggestion for future studies is a comparative study of the mental health, productivity, and other psychological factors of the happiest nurses and the unhappiest nurses. Future research will therefore study about the effect of hardiness training as a protective factor against stress among nurses.

In conclusion, our results suggest that hardiness for nurses is a protective factor against stress and a facilitating factor for happiness.

**References**


