# The effect of general health and locus of control on happiness among nursing students: The mediating role of psychological well-being

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## Abstract

**Introduction:** Happiness is one of the basic components of people's lives, especially in the educational environment, and it is important to study the factors affecting it. Therefore, the present study aimed to measure the mediating role of psychological well-being in the relationship between locus of control and general health with happiness among nursing students.
**Material and methods:** This descriptive and cross-sectional study was carried out on 219 nursing students of Fars University of Medical Sciences in southern Iran from October to December 2018 through the convenience sampling method. The Oxford Happiness Questionnaire, Locus of Control Questionnaire, General Health Questionnaire, and Psychological Well-Being Questionnaire were the tools used to collect the data. Structural equation modeling was applied using AMOD and SPSS software version 25 for data analysis.
**Results:** The results showed that the psychological well-being partially mediated the relationship between the locus of control ($\beta = 0.08$, $p < 0.05$) and general health ($\beta = -0.24$, $p < 0.001$) with happiness.
**Conclusions:** The results of this research can be used to develop programs aiming at improving students' happiness. Also, designing programs based on the present study model, while strengthening the general health and locus of control of the students, can lead to their psychological improvement and happiness for them.

**Key words:** locus of control, happiness, general health, psychological well-being, modeling.

## Introduction

University students are entering an important phase of life characterized by their individual character, separation from the family and establishment of new social relationships, as well as increased independence and responsibility (Duffy *et al*. 2019). Students of medical sciences, especially nursing ones, face various challenges such as the psychological pressure of the hospital environment and confrontation with patients' problems (Baluwa *et al*. 2021). The results of a study indicated that medical science students were less excited compared to those in other disciplines (Salmannezhad *et al*. 2017). Caring, empathy, self-confidence, flexibility, and physical endurance are the key skills required in providing quality patient care. The development of these skills is highly dependent on how happy they are (Ryff 1989). In mental health, happiness increases positive emotions and decreases negative emotions; it leads to increased satisfaction and, as a result, higher productivity (Alexander *et al*. 2021). Therefore, solutions which can prevent people from stagnation by giving them the ability to live happily and be happy in society and life are needed if we are to create healthy societies and dynamic and lively organizations (McDermott *et al*. 2021). In recent years, with the expansion of positive psychology, the study of happiness has been the main focus of research in this field (McDermott *et al*. 2021).

Happiness is a multidimensional structure that consists of emotional and cognitive elements (Kumar *et al*. 2022). One of these dimensions is the locus of control (LOC). People with an

external LOC believe that their success and failure are governed by external factors such as fate, luck, powerful people, and uncontrollable environmental forces, whereas people with an internal LOC believe that their actions and abilities determine their successes and failures (Gujjar and Aijaz 2014). LOC, as a predictive personality trait, can be an effective factor in academic and educational situations (Zaidi and Mohsin 2013). Research showed that people with an internal LOC felt more satisfied with their lives than those with an external LOC. Also, in another study, the source of internal control was the most important predictor of happiness in students (Shubina 2017).

General health is another construct in positive psychology that has been studied extensively. A person is in general health who is far from anxiety and disability symptoms can establish a constructive relationship with others and is able to cope with the pressures of life (Galderisi *et al*. 2015). Also, the results of other studies show that there is a significant relationship between general health and happiness (Amirian and Fazilat-Pour 2016; Maleki *et al*. 2014).

Today, in positive psychology, the concept of psychological well-being (PWB) has also received much attention (Amirian and Fazilat-Pour 2016). PWB has two cognitive and emotional components. Its cognitive component is called life satisfaction. The emotional component includes positive emotions, enthusiasm, peace, and hope for life (Sanjuán 2011). Riff's model is considered one of the most important areas of PWB (Ryff 1989). People with high PWB experience more positive emotions, have a positive evaluation of events, have a higher sense of restraint and control, and experience more success and life satisfaction (Garcia and Siddiqui 2009). It seems that PWB can influence the effects of LOC and general health on happiness. In several studies, psychological well-being has played a role as a mediating variable (Lubans *et al*. 2016; Tran *et al*. 2022).

However, the underlying empirical distinctions between the constructs are less clear, making combinatorial analysis more challenging. For example, to what extent do happiness, LOC, and general health interact and have different sets of correlates? A few studies that have examined such overlaps clearly show that many positive psychology constructs are highly interrelated. To the best of our knowledge, no study in Iran has examined these concepts in the form of a model. On the other hand, given the emphasis of positive psychology on increasing happiness

and identifying the factors affecting it and the importance and positive consequences of happiness in improving individual life, especially in the educational environment, it is necessary to investigate these factors. Therefore, based on previous studies, the objective of the present study was to firstly examine the associations between LOC, general health, and happiness and secondly the mediation of PWB between them.

## Material and methods

### Participants

This study was conducted on 219 nursing students from Fars University of Medical Sciences, Southern Iran, from October to December 2018, who were selected using the convenience sampling method. The inclusion criteria were undergraduate nursing students who were 18 years of age or older, were willing to participate in the study, and had passed at least one semester of academic education. If the questionnaire was incomplete, the samples were excluded from the study.

### Measures

#### Oxford Happiness Questionnaire (OHQ)

The Oxford Happiness Questionnaire was designed by Argyle, Martin and Crossland (1989). This questionnaire has 29 items scored using a four-point Likert scale: from 0 (*strongly disagree*) to 4 (*strongly agree*). The scores range from 0 to 87. Higher scores indicate greater happiness. Internal reliability (using Cronbach's α coefficient) and reliability (by test-retest during 7 weeks) in the original version were 0.9 and 0.7, respectively (Argyle *et al*. 1989). In the Persian version, its internal reliability (using Cronbach's α coefficient) and reliability (by test-retest during 7 weeks) were 0.93 and 0.79, respectively (Alipour and Noorbala 1999). In this study, Cronbach's α coefficient for this questionnaire was 0.75.

#### General Health Questionnaire (GHQ)

This questionnaire was created by Goldberg and Hiller in 1972 and has 28 items and four subscales including physical symptoms, anxiety and insomnia, social dysfunction, and depression. Each subscale has 7 items. Answers are scored based on a four-point Likert scale (0 – *not at all* to 3 – *too much*). Therefore, the scores range from 0 to 84, and a higher score indicates poorer mental health status. According to Goldberg *et al*. (1972), its internal reliability (using Cronbach's α coefficient) was 0.79 (Goldberg 1972). In the

Persian version, its internal reliability (using Cronbach's α coefficient) was 0.72 (Taghavi 2002). In this study, Cronbach's α coefficient for this questionnaire was 0.89.

### Locus of control (LOC)

This questionnaire was designed by Rotter in 1966. It has 29 items, and each item has two options (A and B). In each item, one of the options measures the internal LOC and the other one measures the external LOC. The scores range from 0 to 29, and higher scores indicate that the person has greater characteristics. According to Rotter (1966), its reliability using split-half and Kuder-Richardson methods was 0.70 and 0.73, respectively (Rotter 1966). In the Persian version, its internal reliability (using Cronbach's α coefficient) was 0.91 (Khanzadeh *et al*. 2019). In this study, split-half reliability was 0.84.

### Psychological Well-Being Questionnaire

This scale was designed by Ryff (1989) and has 18 items and six subscales autonomy, personal growth, positive relationships with others, purpose in life, self-acceptance and environmental mastery. Each item was assessed using a six-point Likert scale: from 1 (*strongly disagree*) to 6 (*strongly agree*). A higher score indicates a higher PWB. The internal consistency using Cronbach's α coefficient for the scales was as follows: self-acceptance 0.93, positive relations with others 0.91, autonomy 0.86, environmental mastery 0.90, purpose in life 0.90, and personal growth 0.87 (Ryff 1989). In Iran, its internal reliability (using Cronbach's α coefficient) was reported to be 0.78 (Khanjani *et al*. 2014). In this study, Cronbach's α coefficient for this questionnaire was 0.81.

### Data analyses

First, descriptive statistics and correlation were performed using SPSS 25.0 to examine the main study variables and their relationships. Then, a structural equational model was employed using Analysis of Moment Structures (AMOS) with maximum likelihood estimations to examine the mediating effects of PWB on the relationship between general health and LOC with happiness. For model evaluation, multiple fit indices were applied, including the chi-square/degrees of freedom ratio ($\chi^2/df$), the root mean square error of approximation index (RMSEA), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), normed fit index (NFI), comparative fit index (CFI), and Tucker-

Lewis index (TLI). To establish whether the model is fit for use in this study, we used the following criteria: $\chi^2/df < 3.00$, RMSEA < 0.08, GFI > 0.90, AGFI > 0.90, NFI > 0.90, CFI > 0.90, and TLI > 0.90 (Wu 2009).

Finally, we used the bootstrapping method with 5000 repetitions and the bias-corrected bootstrap 95% confidence interval (CI) to examine the mediation effects; if the confidence intervals did not contain the value of zero, it showed statistical significance (Preacher and Hayes 2008).

### Ethical approval

This research was approved by the ethics committee of Shiraz University of Medical Sciences (Ethics Number: IR.SUMS.REC.1394.5920). All students signed an informed consent form. All participants were informed of the purpose and method of the study and assured of the anonymity and security of their data. Participants were informed that they were free to withdraw from the study at any time.

## Results

### Preliminary analyses

The participants' mean (SD) age was 19.46 (2.78) years (Table 1). The Pearson's correlation coefficient matrix, mean, and standard deviation of all variables are shown in Table 2. LOC was positively and significantly correlated with PWB and happiness ($r = 0.785$, $r = 0.675$, $p < 0.01$, respectively). GH was negatively and significantly correlated with PWB and happiness ($r = -0.627$, $r = -0.528$, $p < 0.01$, respectively) Also, PWB was positively and significantly correlated with happiness ($r = 0.714$, $p < 0.01$, respectively) (Table 2).

### Structural equation modeling

Structural equation model (SEM) was performed to examine the mediating effects of

Table 1. Means, standard deviations, skewness, and kurtosis of general health, locus of control, happiness, and psychological well-being ($n = 219$)

| Variable | Mean ±SD | Skewness | Kurtosis |
|---|---|---|---|
| GH | 54.77 ±24.71 | −0.455 | 0.809 |
| LOC | 13.11 ±2.14 | −0.481 | −0.031 |
| PWB | 72.56 ±21.23 | −0.379 | −0.888 |
| Happiness | 51.74 ±16.79 | 0.057 | 0.609 |

*GH – general health, LOC – locus of control, PWB – psychological well-being*

Saeed Hamidizadeh, Ali Mohammad Parviniannasab, Mehrnoosh Bagheryan

Table 2. Correlations of general health, locus of control, happiness, and psychological well-being (*n* = 219)

| Variable | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1. GH | 1.000 | | | |
| 2. LOC | −0.456** | 1.000 | | |
| 3. PWB | −0.627** | 0.785** | 1.000 | |
| 4. Happiness | −0.528** | 0.675** | 0.714** | 1.000 |

*GH – general health, LOC – locus of control, PWB – psychological well-being; **p < 0.01 (2-tailed)*

Table 3. Effects of general health and locus of control on happiness through psychological well-being

| Path | Direct effects | Indirect effects (95%CI) | Total effects |
|---|---|---|---|
| GH → Happiness | −0.34** | −0.24** (0.87-0.26) | −0.63** |
| LOC → Happiness | 0.12** | 0.08* (0.084-0.003) | 0.13* |
| GH → PWB | −0.32** | – | −0.42** |
| LOC → PWB | 0.14* | – | 0.16** |
| PWB → Happiness | 0.16** | – | 0.37** |

*GH – general health, LOC – locus of control, PWB – psychological well-being; **p < 0.01 (2-tailed), *p < 0.05 (2-tailed)*

psychological well-being. First, we tested the normality using skewness (−1, +1) and kurtosis (−1, +1), which was established (Table 1). Then, for path analysis, LOC and general health were applied as the predictor variables, happiness as the outcome variable, and PWB as the mediating variable. The fit indices are as follows: $\chi^2/df = 2.78$, RMSEA = 0.067, GFI = 0.92, AGFI = 0.90, NFI = 0.91, CFI = 0.93, and TLI = 0.91. The fitness statistics are within an acceptable range (Hu and Bentler 1999). As to the model path, LOC ($\beta = 0.12$, $p < 0.01$) and GH ($\beta = -0.34$, $p < 0.01$) directly predicted happiness. In the mediation test of PWB, in one path, LOC predicted PWB ($\beta = 0.14$, $p < 0.01$), and PWB predicted happiness ($\beta = 0.16$, $p < 0.01$), whereas in another path, GH predicted PWB ($\beta = -0.32$, $p < 0.01$). The results of bootstrap analysis are shown in Table 3 and Figure 1.
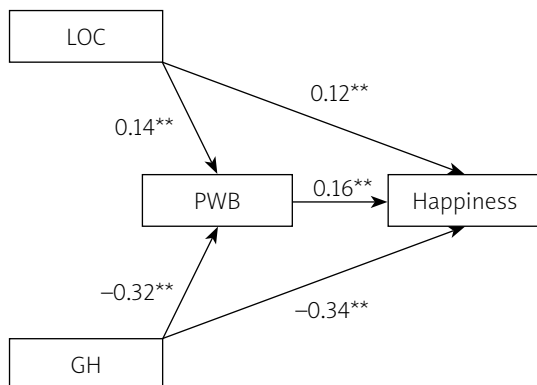


**Fig. 1.** Final model **p < 0.01 (2-tailed)

*GH – general health, LOC – locus of control, PWB – psychological well-being*

The indirect effect of LOC on happiness through PWB was significant ($\beta = 0.08$, 95% CI: 0.084, 0.003); also, the indirect effect of GH on happiness through PWB was significant ($\beta = -0.24$, 95% CI: 0.92, 0.36), so the mediating effect of PWB was partial. The values of total, direct, and indirect effects in the model are shown in Table 3.

## Discussion

The purpose of this study was to predict the happiness of nursing students based on the LOC and general health with the mediation of PWB. The obtained results showed that LOC and general health had a significant relationship with happiness. In several studies, the results showed that the LOC was positively and significantly related to happiness (Ramezani and Gholtash 2015; Shubina 2017). The results of another study showed that people with an internal LOC tended to suppress failures and successes due to the way they viewed their experiences (Khanzadeh *et al*. 2019). Living a more fulfilling and happy life seems to be directly related to the exact amount of our LOC. Through striving to do so, we gain strength and best maximize our happiness and well-being. People with an internal LOC believe that they are responsible for their behaviors and outcomes based on their own decisions and efforts.

The results also showed a negative and significant relationship between general health and happiness. The results of this research were consistent with those of other studies (Cloninger and Zohar 2011; Perneger *et al*. 2004). In fact, emotional happiness can be used to treat mental

illnesses, to try to improve the standard of living in healthy people, and to increase psychological resistance and academic performance; when dealing with patients, they should put themselves in a suitable state for a happier life in terms of mental health. In fact, increasing mental health not only increases happiness, but also provides a more favorable platform for the growth, prosperity, and ability of people in various fields, including effective and efficient interpersonal relationships, life satisfaction, and satisfaction with education (Pourjamshidi and Beheshtirad 2016).

In this study, the results also showed that PWB mediated the relationship between LOC and happiness. This result is consistent with those of previous studies (Mirzaee Aliabadi 2016; Safdar *et al*. 2018). In explaining the obtained results, it should be said that according to Bandura's theory (Bandura 1997), the LOC refers to a person's beliefs or judgments about attributing his/her ability to internal and external sources. Among the most important factors in explaining human behavior, activities, and control, he considered the LOC to be effective. People with an internal LOC believe that they can effectively control their life events. In fact, these people have a more active life due to the feeling of being able to do things, which provides them with a happier and more enjoyable life. Based on Ryff's model (Ryff 1989), it can be said that people who have a higher source of internal LOC and PWB have more happiness. As a result, it can be expected that PWB plays a mediating role in the relationship between LOC and happiness.

Finally, the research results revealed that PWB partially mediated the relationship between general health and happiness. This result is consistent with those of another study (Caprara *et al*. 2006). In explaining this result, it can be stated that in a new approach called positive psychology, the concepts of happiness, PWB, health, LOC, and quality of life are emphasized; these concepts are similar to each other in many ways and their components overlap. Therefore, it can be expected that psychological well-being will play a mediating role in the relationship between general health and happiness.

## Limitations

The present study has several limitations. First, the use of a cross-sectional sample does not allow the generalization of these findings. Therefore, random sampling should be used to ensure a certain generalization. The second limitation was the descriptive-correlational nature of the study and the cause-effect relationship was not investigated, so a longitudinal study is suggested for future studies. Third, the self-report method of data collection could have affected the accuracy of the data collected by the participants. Finally, only nursing students participated in this study, so it is suggested that further research should be conducted on students of different disciplines.

## Conclusions

Students' happiness is influenced by various factors such as mental health and LOC. On the other hand, having psychological well-being can affect the effect of LOC and general health on happiness. Therefore, it is suggested that university managers should pay special attention to the vitality and happiness of students. Also, designing programs based on the present study model, while strengthening the general health and self-esteem of the students, can lead to their psychological improvement and happiness for them.

## Availability of data and material

The datasets generated and/or analyzed during the current study are not publicly available due to the necessity to ensure participant confidentiality policies and laws of the country but are available from the corresponding author on reasonable request.

## Funding statement

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## Disclosure

The authors declare no conflict of interest.

References

1. Alexander R, Aragón OR, Bookwala J, et al. The neuroscience of positive emotions and affect: Implications for cultivating happiness and wellbeing. Neurosci Biobehav Rev 2021; 121: 220-249.

2. Alipour A, Noorbala A. Introductory survey on validity and reliability of Oxford Happiness Inventory in Tehran universities. J Thought Behav 1999; 5: 55-63.

3. Amirian ME, Fazilat-Pour M. Simple and multivariate relationships between spiritual intelligence with general health and happiness. J Relig Health 2016; 55: 1275-1288.

4. Argyle M, Martin M, Crossland J. Happiness as a function of personality and social encounters. In: Forgas JP, Innes JM (Eds.). Recent Advances in Social Psychology: An international perspective. Elsevier, North-Holland 1989; 189-203.

5. Baluwa MA, Lazaro M, Mhango L, Msiska G. Stress and coping strategies among Malawian undergraduate nursing students. Adv Med Educ Pract 2021; 12: 547-556.

6. Bandura A. Self-efficacy: The exercise of control. 1997. Knowledge is necessary but insufficient to change behavior. [BoFe91].

7. Caprara GV, Steca P, Gerbino M, et al. Looking for adolescents' well-being: Self-efficacy beliefs as determinants of positive thinking and happiness. Epidemiol Psychiatr Sci 2006; 15: 30-43.

8. Cloninger CR, Zohar AH. Personality and the perception of health and happiness. J Affect Disord 2011; 128: 24-32.

9. Duffy A, Saunders KE, Malhi GS, et al. Mental health care for university students: a way forward? Lancet Psychiatry 2019; 6: 885-887.

10. Galderisi S, Heinz A, Kastrup M, et al. Toward a new definition of mental health. World Psychiatry 2015; 14: 231-233.

11. Garcia D, Siddiqui A. Adolescents' psychological well-being and memory for life events: influences on life satisfaction with respect to temperamental dispositions. J Happiness Stud 2009; 10: 407-419.

12. Goldberg P. The detection of psychiatric illness by questionnaire. Maudsley monograph, 1972.

13. Gujjar AA, Aijaz R. A study to investigate the relationship between locus of control and academic achievement of students. J Educ Psychol 2014; 8: 1-9.

14. Hu LT, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Struct Equ Modeling 1999; 6: 1-55.

15. Khanjani M, Shahidi S, Fathabadi J, et al. Factor structure and psychometric properties of the Ryff's scale of Psychological well-being, short form (18-item) among male and female students. Thoughts Behav Clin Psychol 2014; 9: 27-36.

16. Khanzadeh M, Aminimanesh S, Hadian SA, Aliasgari R. Role of locus of control on students happiness with the mediating of optimism and hope. Positive Psychol Res 2019; 5: 29-38.

17. Kumar TA, Khakha DC, Joshi P, et al. Happiness and its determinants among nursing students. Ind Psychiatry J 2022; 31: 293-298.

18. Lubans DR, Smith JJ, Morgan PJ, et al. Mediators of psychological well-being in adolescent boys. J Adolesc Health 2016; 58: 230-236.

19. Maleki Z, Ashkan S, Ashoori J, Yosefi N. Relationship between personality traits, religiousity and happiness with general health among nursing students. Iran J Nurs 2014; 26: 90-100.

20. McDermott RC, Fruh SM, Williams S, et al. Characteristics of negative and positive mental health among nursing students in the United States. J Am Psychiatr Nurses Assoc 2021; 27: 44-53.

21. Mirzaee Aliabadi F. The relationship between positive psychology components with happiness: the mediating role of mental well-being in students. MA thesis in educational psychology, University of Kashan, 2016 (in Persian).

22. Perneger TV, Hudelson PM, Bovier PA. Health and happiness in young Swiss adults. Qual Life Res 2004; 13: 171-178.

23. Pourjamshidi M, Beheshtirad R. The effect of moral intelligence and mental health on happiness of students. Positive Psychol Res 2016; 1: 55-66.

24. Preacher KJ, Hayes AF. Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. Behav Res Methods 2008; 40: 879-891.

25. Ramezani SG, Gholtash A. The relationship between happiness, self-control and locus of control. Int J Educ Psychol Res 2015; 1: 100.

26. Rotter JB. Generalized expectancies for internal versus external control of reinforcement. Psychol Monogr 1966; 80: 1-28.

27. Ryff CD. Happiness is everything, or is it? Explorations on the meaning of psychological well-being. J Pers Soc Psychol 1989; 57: 1069.

28. Safdar T, Ewaz L, Abdul Hakeem H. Investigation the mediating role of psychological well-being and subjective well-being in the relationship between work internal locus of control and employee performance in context to health sector of Quetta. Eur Online J Natural Soc Sci Proc 2018; 7: 210-220.

29. Salmannezhad H, Mojahedi M, Ebadi A, et al. An assessment of the correlation between happiness and Mizaj (temperament) of university students in Persian medicine. Iran Red Crescent Med J 2017; 19: e55627.

30. Sanjuán P. Affect balance as mediating variable between effective psychological functioning and satisfaction with life. J Happiness Stud 2011; 12: 373-384.

31. Shubina I. Locus of control, feeling of happiness and self-esteem: interrelation analysis. Int J Sci Res Manag 2017; 5: 7563-7575.

32. Taghavi S. Validity and reliability of the general health questionnaire (ghq-28) in college students of Shiraz University. J Psychol 2002; 5: 381-398.

33. Tran MAQ, Vo-Thanh T, Soliman M, et al. Self-compassion, mindfulness, stress, and self-esteem among Vietnamese university students: Psychological well-being and positive emotion as mediators. Mindfulness 2022; 13: 2574-2586.

34. Wu M. Structural equation model: operation and application of AMOS. Chongqing University Press, Chongqing 2009.

35. Zaidi IH, Mohsin MN. Locus of control in graduation students. Int J Psychol Res 2013; 6: 15-20.