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# Health-Related Procrastination in Nurses: Prevalence and Related Factors

Mahdi Basiri Moghadam[1], Forough Rafii[2*], Abbas Ebadi[3]

**Abstract**

**Objectives:** Procrastination is associated with many negative consequences which can have an effect on both physical and mental health while little attention is paid to health-related procrastination (HRP). Therefore, the present study aimed to determine the prevalence of HRP and its related factors among nurses.

**Materials and Methods:** This cross-sectional study was conducted on 400 nurses working in educational hospitals affiliated with Iran and Gonabad University of Medical Sciences. These nurses were selected employing multi-stage sampling method in 2018. The data were collected by a highly reliable researcher-made HRP questionnaire. Finally, the data were analyzed using SPSS software, version 14.5.

**Results:** Based on the results, 14.86% and 15.36% of the nurses were high and low health-related procrastinators, respectively. In addition, the health status of the nurses decreased by increasing the HRP levels ($P<0.001$). There was a statistically significant relationship between HRP and the place of habitation ($P=0.009$), employment status ($P=0.013$), and one's satisfaction with his/her economic status ($P=0.013$). However, no significant relationship was found between variables such as age ($P=0.18$), gender ($P=0.9$), marital status ($P=0.73$), level of education ($P=0.69$), work shift ($P=0.47$), position ($P=0.51$), type of working ward (P=0.61), underlying disease ($P=0.90$), work experience ($P=0.25$), and number of children ($P=0.22$).

**Conclusions:** In general, the results revealed that HRP is less common among nurses compare to other individuals in society. Therefore, improving the health status of the nurses necessitates planning and performing several actions in order to reduce HRP.

**Keywords:** Health, Procrastination, Nurses

## Introduction

Lack of a native nurse is one of the global problems in the health system (1). In addition, nurses' self-care is essential for their personal health, constant care of the others, and their professional progress (2). Most of the nurses suffer from various physical problems due to their work pressure (3). The results of a study demonstrated that 84.4% of nurses experience musculoskeletal disorders and only 30.3% of them follow their treatment and procrastinate treatment seeking until the symptoms get acute (4).

The health-related procrastination (HRP) is an unnecessary delay in performing the duties, despite the initial intention for beginning or terminating those duties, which is frequently associated with negative emotions and individual dissatisfaction. HRP should have a stronger and more absolute relationship with health outcomes such as health status, compared to general procrastination (5). Although procrastination is not constantly considered a problem, it frequently leads to undesirable and irrecoverable consequences (6). Procrastination is related to health, wealth, and well-being (7). Although HRP is regarded as a special area which is valuable for those who are working to promote health behaviors, it has received less attention (8). As a result, the current study was implemented since the delay is less considered in adulthood, especially in the nursing population who can differently experience such a phenomenon compared to the others individuals in the health area which is of particularly important. Nevertheless, few HRP studies individually measured health problems, treatment seeking, health behaviors, and general or academic procrastination using separate instruments, they failed to measure HRP by a single instrument. In addition, the checklists, which measure the incidence of health problems and health-related actions, were used to assess the health problems and behaviors (9,10) while they should not be confused with HRP. In fact, health-related duties cannot be delayed without any rational reason despite being aware of its negative consequences (5) Therefore, neglecting or delaying health behaviors may not be considered as HRP since delaying health behaviors may occur with acceptable reasons or due to the lack of awareness regarding its consequences. Accordingly, the present study sought to investigate the prevalence of HRP and its related factors, especially the health status of nurses.

## Materials and Methods

Participants of the current cross-sectional study included

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[1]Nursing Care Research Center, Iran University of Medical Sciences, Tehran, Iran. [2]Nursing Care Research Center, Iran University of Medical Sciences, Tehran, Iran. [3]Behavioral Sciences Research Center, Life Style Institute Faculty of Nursing, Baqiyatallah University of Medical Sciences, Tehran, Iran.
*Corresponding Author: Forough Rafii, Tel: +9821-88882886, Fax: +9821-88671613, Email: rafiee.f@iums.ac.ir

400 nurses out of whom 200 cases were working at Firoozgar and Rasoul-e-Akram educational hospitals in Tehran (affiliated to Iran University of Medical Sciences) and the other 200 nurses were working at Allame Bohlool Gonabadi and Madani educational hospitals in Gonabad (affiliated to Gonabad University of Medical Sciences). Inclusion criteria included demonstrating a willingness to participate in the study, having a bachelor's degree in nursing and above, having at least one year of working experience, and lacking a history of severe stress (e.g., the death of a close relative, divorce, and the like) in the last 6 months. Further, nurses were selected using a multi-stage sampling technique. First, half of the sample size was assigned to the hospitals of Iran University of Medical Sciences and the other half was allocated to hospitals related to Gonabad University of Medical Sciences which encompassed two educational hospitals both of which were included in the study. However, Firouzgar and Hazrat-e-Rasoul-e-Akram hospitals, among 18 hospitals related to Iran University of Medical Sciences, were selected using simple random sampling technique. Then, the nursing sample size from each hospital was calculated proportional to the number of nurses working in the related hospital. Finally, a list of nurses was prepared and a number of nurses in each hospital were selected based on simple random sampling using a random number table. Based on a similar study, the sample size was obtained as 400 individuals (11) using the $pqz^2/d^2$ formula and considering a confidence interval (CI) of 95% ($P=0.4$) and an accuracy of 0.12. Furthermore, a tailor-made HRP questionnaire was used as a means of data collection.

This instrument included two sections. The first part included data regarding the nurses' age, sex, marital status, education, satisfaction with the economic situation, employment status, type of working shift and ward, position, underlying disease, and work experience. The second part of the instrument contained 29 items concerning preventive tasks and health promotion (8 items), quitting unhealthy behaviors (3 items), following the treatment (4 items), mental health (3 items), social health (7 items), and spiritual health (4 items). Since procrastination was a delay with no good reason, despite awareness and hatred of its consequences (9), the phrase "without good reason, despite awareness and hatred about its consequences" was placed on the top of the questionnaire for all the items. This instrument was designed based on a 5-point Likert-type scale and the following values were assigned to responses provided for Likert Scale items: Never = 1, Rarely = 2, Sometimes = 3, Often = 4, and Always = 5. The minimum and maximum scores of this scale were 29 and 145, respectively, with a higher score indicating more HRP rate. This questionnaire was designed after conducting an interview with 17 nurses and an extensive review of studies related to procrastination and health-related tasks. Then, face and content validity were used to determine its validity. First, the face validity was evaluated by both qualitative (i.e., face to face interview with 10 nurses) and quantitative (i.e., item impact) methods. Based on the item impact method, if the impact score of each statement was equal to or greater than 1.5, it was considered appropriate and thus, it was maintained for the subsequent analyses. In addition, the statements were reviewed and corrected by two experts in the field of Persian literature in order to ensure their correctness and logical writing and phrasing. Further, qualitative content validity was determined using the opinions of ten experts. Furthermore, content validity ratio (CVR) and index (CVI) were identified using 10 experts' viewpoint in order to determine the quantitative content validity. The mean of CVR and CVI value of the questionnaire was equal to 0.91 and 0.95, respectively. Additionally, the reliability of the questionnaire was obtained 0.95 using the Cronbach α and the correlation coefficient was equal to 0.85 after running test re-test method on 50 nurses within a 2-week interval. The convergent validity of this instrument was obtained r = 0.57 employing Tuckman's general procrastination scale. The method of other studies was applied to identify the frequency of HRP, and those who had a procrastination score of one standard deviation above and below the mean were considered as high and low procrastinators, respectively (12). Then, the nurses' health status was assessed by the visual analogue scale. It is reported as one of the varieties of self-rated health scales which enjoys high reliability in all the sub-groups including age, gender, and education. The results of a study demonstrated that self-rated health can serve as a global measure of health status in the general population (13). In addition, a single self-rated health item represents a suitable construct validity for general health. The variance explaining the main dimensions of general health is reported within the satisfactory range between 0.18 and 0.41, as well as 0.18 and 0.44 for men and women, respectively (14). This scale includes a horizontal line which is scaled from 0 to 100 mm which indicates the lowest and highest health status, respectively. The point which a patient marks on the line is the scoring criterion of this scale measured by a ruler.

### Data Analysis

Three questionnaires were excluded from the analysis process due to excessive missing rate (nearly 90% of the HRP items remained unanswered). Furthermore, other participants did not respond to a maximum of 3 HRP items which were replaced by the average. Qualitative and quantitative data were described using absolute and relatively frequent, as well as mean and standard deviation, respectively. Additionally, the Kolmogorov-Smirnov test was used to determine the normality of the data. In addition, independent *t*-test was utilized to compare the mean HRP scores in nurses who were living in Tehran and Gonabad. Further, one-way ANOVA was employed to compare the mean HRP score at different levels of satisfaction with the economic situation (5-point

Likert-type scale ranging from Completely unsatisfied to Completely satisfied), different levels of age (Less than 30, 30-40, and above 40), and work experience (Less than 10, 10-20, and above 20), and the type of working ward (e.g., medical, surgical, intensive, pediatrics, emergency ward, and nursing office). Furthermore, the Spearman correlation coefficient test was applied to estimate the relationship between HRP score (normal distribution) and health status score (with abnormal distribution). Finally, multiple linear regression analysis was used to evaluate the simultaneous relationship between the studied variables with HRP. The obtained data were analyzed using the SPSS software, version 14.5. The $P<0.05$ was considered the level of significance.

## Results

Most of the nurses were females none of whom reported that they were completely satisfied with their economic status. About 16.04% of the nurses were nurse managers (i.e., head nurse, supervisor, matron, or internal medicine manager). Finally, the majority of nurses had moderate HRP (Table 1).

The results of the independent sample *t*-test indicated that the mean HRP score was significantly lower in nurses of Tehran compared to those of Gonabad ($P=0.002$), as well as permanent compared to non-permanent nurses ($P=0.001$). Additionally, there was no significant difference between male or female nurses ($P=0.91$), married or single ($P=0.12$), nurses with bachelor or master degrees ($P=0.69$), fixed or rotating shifts nurses ($P=0.47$), nurse managers or non-nurse manager ($P=0.51$), and nurses with or without fundamental disease ($P=0.09$) in terms of mean HRP score. In addition, based on the results of one-way ANOVA, a significant difference was observed in the mean HRP score of nurses with different levels of satisfaction regarding their economic situation ($P=0.002$), indicating that a higher level of satisfaction with their economic situation led to further reduction in the mean HRP score. Further, the mean HRP score was significantly different at different levels of age ($P=0.008$) and work experience ($P=0.016$), suggesting that the mean HRP score increased, along with age. The results of the Scheffe post-hoc test represented that the mean HRP score in nurses with less than ten years of work experience was significantly lower compared to nurses with 20-30 years of work experience. However, the difference in the mean HRP score of nurses in different wards was negligible ($P=0.61$). Eventually, the Spearman correlation coefficient demonstrated a significant negative correlation between HRP and health status ($r=0.30$, $P<0.001$). The related data are provided in Table 2.

Furthermore, the present study attempted to evaluate the relationship between HRP and the studied variables using linear regression. First, all of these variables were entered into the univariate model and each of them ($P<0.2$) were included in the multivariate model in which a significant relationship was found between HRP and the place of residence ($P=0.009$), high economic satisfaction ($P=0.013$), the type of employment ($P=0.013$), and health status ($P=0.001$). Table 3 represents the relationship between the HRP and the studied variables.

**Table 1.** The Frequency Distribution of the Studied Variables

| Variable | No. | % |
|---|---|---|
| Age (y) | | |
| <30 | 193 | 49.3 |
| 30-40 | 136 | 34.8 |
| >40 | 62 | 15.9 |
| Sex | | |
| Male | 126 | 31.9 |
| Female | 269 | 68.1 |
| Marital status | | |
| Single | 109 | 27.5 |
| Married | 288 | 72.5 |
| Education | | |
| Bachelor | 266 | 67.2 |
| Master | 130 | 32.8 |
| Satisfaction with the economic situation | | |
| Completely unsatisfied | 39 | 9.9 |
| Unsatisfied | 67 | 17.0 |
| Somewhat satisfied | 173 | 43.8 |
| Satisfied | 116 | 29.3 |
| Employment status | | |
| Permanent | 143 | 36.3 |
| Non-permanent | 251 | 63.7 |
| Type of working shift | | |
| In circulation | 287 | 73.6 |
| Fixed | 103 | 26.4 |
| Position | | |
| Non-managerial | 332 | 83.8 |
| Managerial | 64 | 16.2 |
| Type of working ward | | |
| Medical | 99 | 25.1 |
| Surgery | 101 | 25.6 |
| Intensive | 110 | 27.8 |
| Pediatrics | 18 | 4.6 |
| Emergency | 45 | 11.3 |
| Nursing office | 22 | 5.6 |
| Underlying disease | | |
| Yes | 40 | 10.1 |
| No | 355 | 89.9 |
| Work experience (y) | | |
| <10 | 213 | 54.8 |
| 10-20 | 145 | 37.2 |
| >20 | 31 | 8.0 |
| Health-Related Procrastination | | |
| Low | 61 | 15.4 |
| Moderate | 277 | 69.7 |
| High | 59 | 14.9 |

## Discussion

The results of the current study revealed that the prevalence of HRP was high among 14.9% of the nurses. Additionally, based on the results of a study conducted on procrastination in different life-domains of educated

**Table 2.** Relationship between mean HRP scores in nurses and the studied variables

| Variable | | N | Mean ±SD | Result |
|---|---|---|---|---|
| Place of residence | Tehran | 199 | 81.66±17.38 | T=-3.13, *P*=0.002* |
| | Gonabad | 198 | 75.82±19.69 | |
| Age (y) | < 30 | 193 | 75.89±18.00 | F=4.92, *P*=0.008** |
| | 30-40 | 136 | 81.35±18.67 | |
| | > 40 | 62 | 82.48±19.60 | |
| Gender | Male | 126 | 78.67±20.01 | T=0.12, *P*=0.91* |
| | Female | 269 | 78.92±18.20 | |
| Marital status | Single | 109 | 76.36±20.30 | T=1.56, *P*=0.12* |
| | Married | 288 | 79.65±18.12 | |
| Education | Bachelor | 266 | 79.06±18.53 | T=-0.39, *P*=0.69* |
| | Master | 130 | 78.26±19.32 | |
| Satisfaction with the economic situation | Completely unsatisfied | 39 | 84.05±19.43 | F=4.90, *P*=0.002** |
| | Unsatisfied | 67 | 81.03±17.41 | |
| | Somewhat satisfied | 173 | 80.28±18.93 | |
| | Satisfied | 116 | 73.53±17.99 | |
| Employment status | Permanent | 143 | 73.82±19.86 | T=3.95, *P*<0.001* |
| | Non-permanent | 251 | 81.47±17.65 | |
| Type of working Shift | In circulation | 287 | 78.71±18.62 | T=-0.71, *P*=0.47* |
| | Fixed | 103 | 80.23±18.49 | |
| Position | Non-managerial | 332 | 78.59±18.58 | T=-0.66, *P*=0.51* |
| | Managerial | 64 | 80.27±19.18 | |
| Type of working ward | Medical | 99 | 78.98±19.70 | F=0.72, *P*=0.61** |
| | Surgery | 101 | 78.60±19.53 | |
| | Intensive | 110 | 80.48±17.72 | |
| | Pediatrics | 18 | 72.83±14.23 | |
| | Emergency | 45 | 76.44±17.79 | |
| | Nursing office | 22 | 80.41±20.85 | |
| Underlying disease | Yes | 40 | 83.50±17.96 | T=-1.68, *P*=0.09* |
| | No | 355 | 78.27±18.76 | |
| Work experience (y) | < 10 | 213 | 76.27±18.47 | F=4.18, *P*=0.016** |
| | 10-20 | 145 | 82.00±19.00 | |
| | > 20 | 31 | 79.87±16.67 | |

HRP: Health-related procrastination.
* Independent *t* test; ** One-way ANOVA test.

adults, HRP with 40.7% was the most frequent compared to other life-domains, suggesting that nearly 40.7% of the participants demonstrated procrastination in maintaining health behaviors (11). In addition, Sirois et al reported a high tendency to delay treating the health problems; a delay in treatment was observed in three-quarters of the health problems (9). However, less HRP prevalence among the nurses of the present study can be justified since this study was conducted on nurses who were more likely to cope with HRP-related problems compared to the others and it is easier for nurses to access to some health behaviors such as treatment seeking. Further, the results of a study respecting general procrastination (i.e., procrastination of daily tasks) of adult males and females in 6 countries (e.g., Spain, Peru, Venezuela, England, Australia, and the United States) indicated that 14.6% of the men and women regarded themselves as procrastinators (15). Although this result is related to general procrastination, it is in agreement with that of the current study. Furthermore, Peltzer et al (16) investigated university students in India and found that the frequency of health behaviors was low; such behaviors included brushing their teeth at least twice a day (28.6%), adhering to the annual dental check-ups (25.8%), using the safety belts (23%), consuming fruits and vegetables less than the recommended amount (79%), continuing eating fat and cholesterol (68.5%), smoking at the moment (6.9%), as well as consuming alcohol regularly (1%) and illicit drugs (3.4%). However, failure to perform these health duties should not be confused with HRP. For example, non-attendance for dental checkups may be due to the student's inability to pay for dental check-ups, and it cannot be considered as HRP since procrastination should be practiced without any acceptable reason (17). Additionally, the individual should have a willingness to perform such a task (5) while the procrastinator may not intend to perform that task for any reason. In the current study, none of the nurses were completely satisfied with their economic situation. In other words, only 26.5% of nurses were satisfied with their economic situation while the rest of them were somewhat satisfied or dissatisfied. The noticeable difference in the annual income of the physicians and

**Table 3.** Relationship Between HRP and the Studied Variables Using Linear Regression

| Variable | Univariate | | | | Multivariate | | | |
|---|---|---|---|---|---|---|---|---|
| | B | t | 95% CI | *P* | B | t | 95% CI | *P* |
| Place of residence | | | | | | | | |
| Tehran | Reference | Reference | Reference | Reference | Reference | Reference | Reference | Reference |
| Gonabad | 5.84 | 3.13 | 2.18-9.50 | 0.002 | 4.92 | 2.61 | 1.21-8.63 | 0.009 |
| Age | 0.37 | 3.02 | 0.13-0.61 | 0.003 | 0.47 | 1.33 | -0.23-1.17 | 0.18 |
| Gender | | | | | | | | |
| Female | Reference | Reference | Reference | Reference | | | | |
| Male | -0.25 | -0.12 | -4.24-3.74 | 0.9 | | | | |
| Marital status | | | | | | | | |
| Married | Reference | Reference | Reference | Reference | Reference | Reference | Reference | Reference |
| Single | -3.29 | -1.56 | -7.43-0.85 | 0.12 | 0.79 | 0.35 | -3.66-5.23 | 0.73 |
| Last educational degree | | | | | | | | |
| Bachelor | Reference | Reference | Reference | Reference | | | | |
| MA | -0.79 | -0.39 | -4.75-3.16 | 0.69 | | | | |
| Economic Satisfaction | | | | | | | | |
| Completely dissatisfied | Reference | Reference | Reference | Reference | Reference | Reference | Reference | Reference |
| Dissatisfied | 2.75 | 1.09 | -2.20-7.69 | 0.27 | -4.73 | -1.27 | -12.07-2.6 | 0.21 |
| Somewhat satisfied | 2.71 | 1.43 | -1.02-6.45 | 0.15 | -3.32 | -1.03 | -9.65-3.00 | 0.30 |
| Satisfied | -7.37 | -3.61 | -11.39- -3.36 | <0.001 | -8.47 | -2.50 | -15.13- -1.80 | 0.013 |
| Employment status | | | | | | | | |
| Permanent | Reference | Reference | Reference | Reference | Reference | Reference | Reference | Reference |
| Non-permanent | -7.65 | -3.95 | -11.45- -3.84 | <0.001 | -6.23 | -2.49 | -1.32- -11.14 | 0.013 |
| Type of working shift | | | | | | | | |
| Rotating | Reference | Reference | Reference | Reference | | | | |
| Fixed | 1.53 | 0.71 | -2.67-5.72 | 0.47 | | | | |
| Position | | | | | | | | |
| Non-managerial | Reference | Reference | Reference | Reference | | | | |
| Managerial | 1.68 | 0.66 | -3.33-6.69 | 0.51 | | | | |
| Type of working ward | | | | | | | | |
| Intensive | Reference | Reference | Reference | Reference | | | | |
| Medical | 0.22 | 0.10 | -4.06-4.50 | 0.92 | | | | |
| Surgical | -0.28 | -0.13 | -4.53-3.97 | 0.90 | | | | |
| Pediatric | -6.26 | -1.39 | -15.14-2.61 | 0.17 | | | | |
| Emergency | -2.67 | -0.90 | -8.50-3.16 | 0.37 | | | | |
| Nursing office | 1.69 | 0.41 | -6.40-9.79 | 0.68 | | | | |
| Underlying Disease | | | | | | | | |
| No | Reference | Reference | Reference | Reference | Reference | Reference | Reference | Reference |
| Yes | 5.23 | 1.68 | -0.90-11.35 | 0.09 | -0.41 | -0.13 | -6.57-5.75 | 0.90 |
| Health Status | -0.29 | -5.59 | -0.39- -0.19 | <0.001 | -0.20 | -3.37 | -0.31- -0.08 | 0.001 |
| Work experience | 0.34 | 2.60 | 0.08-0.60 | 0.01 | -0.43 | -1.16 | -1.16-0.30 | 0.25 |
| Number of children | 1.25 | 1.24 | -0.74-3.24 | 0.22 | | | | |

Dependent Variable: Health-related procrastination

nurses in the structure of the health system development plan was considered the cause of dissatisfaction among many nurses. Gilavand found that the lowest rate of satisfaction (2%) of nurses with implementing the health system development plan was related to salaries and benefits (18). There was a significant reverse correlation between HRP and health status in the present study in such a way that the health status significantly decreased with an increase in HRP. In addition, based on the results of another study on undergraduate students, a negative and significant relationship was reported between the general procrastination and mental health problems, suggesting that their general health problems increased with an increase in the procrastination of daily tasks (19). Although the above-mentioned study evaluated the relationship between general procrastination and mental health using the mental health inventory, general procrastination is associated with the health status through practicing wellness behaviors less frequently and the present study supports this hypothesis. Sirois in

a study investigating the adult populations concluded that general procrastination was related to less practicing of wellness behaviors, as well as medical and dental check-ups; further, procrastination was related to the disease through the intercession of health behaviors (e.g., dental check-up, medical checkup, and wellness behavior) and stress. In fact, health behaviors mediated the relationship between procrastination and disease when the role of stress failed to be taken into account (10).

The findings of the present study demonstrated no significant difference between the participants with and without fundamental disease in terms of mean HRP scores. Furthermore, Sirois et al found a significant correlation between acute health problems such as colds, headaches, and digestive problems with wellness behaviors and medical checkups. This disagreement is justifiable considering that the present study evaluated the relationship between HRP and chronic fundamental diseases such as diabetes, hypertension, heart disease, and the like while Sirois et al only evaluated the acute health problems experienced in the last 6 months. In the present study, the mean HRP score for nurses living in Tehran was significantly higher compared to nurses residing in Gonabad. However, HRP reduced with an increase in individuals' satisfaction with their economic situation. The results of a study in Germany demonstrated that the procrastination was practiced more frequently in individuals with a monthly income of less than $2000 compared to those who earned a monthly income of more than $2000; additionally, general procrastination was highly frequent in employed individuals compared to their non-employed counterparts (20). It is noteworthy that stress is associated with higher procrastination rate and increased delay in treatment while it decreases the rate of practicing wellness behaviors and increased delay in treatment (9,10,21). Nurses working in big cities have an enormous workload which is one of the most common causes of stress (22) leading to an increase in the rate of HRP. In addition, the mean HRP scores was significantly less in permanent nurses compared to their non-permanent colleagues. The high procrastination rate in non-permanent nurses s can be due to job insecurity which is considered one of the main causes of stress (23); therefore, such stress leads to more procrastination, less practice of wellness behaviors, and finally, an increase in delaying the treatment (9). Based on the results of one-way ANOVA, a significant correlation was observed between HRP with age and the work experience of nurses, suggesting an increase in mean HRP score by increasing the age. Further, HRP prevalence was significantly higher in nurses with 10-20 years of work experience compared to those with work experience of less than 10 years. However, the results of multiple linear regression analysis revealed no statistically significant relationship between HRP and the two above-mentioned variables. Conversely, Balkis and Duru reported a significant and inverse association between age and the academic procrastination (12), which is inconsistent with the results of the present study. Such a relationship was due to the younger age of the sample (19 to 28 years) of their study. However, Beutel et al found that general procrastination was more widespread in younger individuals (14-29 years old) compared to other age groups (20). Although both general procrastination and academic procrastination instruments (as HRP instruments) were used in these two studies, more studies are needed in this area since there is a lack of enough number of individuals over 40 years in the present study. Furthermore, there was a slight difference between the mean HRP score of men and women. Consistent with the findings of the current study, the results of Ferrari et al demonstrated no significant difference between men and women in terms of general procrastination (15). Additionally, based on the findings of another study, no significant association was detected between gender and procrastination and the risk of procrastination was significantly higher in men aged 14-29 compared to women (20). In line with the results of Beutel et al (20), there was no significant difference between nurses of the current study with bachelor and master degrees in terms of their mean HRP score. However, based on the results of the present study, no significant difference was found between single and married individuals in terms of their mean HRP score, which contradicts the results obtained by Beutel et al and can be attributed to the type of procrastination (general procrastination vs. HRP). One of the limitations of the current study is that nurses worked in hospitals and further encountered HRP-associated complications compared to other individuals.

As a result, nurses' decisions about the treatment of health problems and the conduct of health behaviors or HRP can be different compared to the general public; therefore, the generalizability of the data to a population other than the nurses is one of the limitations of this research. In addition, there was a kind of resistance to negative issues such as procrastination (i.e., social desirability biases), which leads to a lower frequency of self-disclosure and reporting results. Accordingly, attempts were made to control such limitation to some extent with an emphasis on the confidentiality of information. Further, using self-rated health which assessed the health status of nurses was another limitation of the study. Although previous studies confirmed the relationship between self-rated health and objective health (13), it measures the perceived health of the nurses instead of evaluating their actual health.

## Conclusions

In general, the results of this study indicated that HRP was less common in the nursing community compared to other individuals in the community. Furthermore, the health status of nurses reduced with an increase in HRP; therefore, their health status can be improved by planning and performing interventions to reduce

HRP. Additionally, a significant relationship was found between procrastination with the place of residence, type of employment, and satisfaction with the economic situation. Thus, HRP can be decreased by reducing the nurses' concerns regarding their employment and economic status. However, there was no significant association between HRP with variables such as gender, marital status, education, work shift, position, wards, underlying disease, as well as the number of children, age, and work experience of the nurses. Overall, the results of this study contribute to identifying the factors causing HPR in nurses and thus, developing strategies in order to increase the health of nurses.

## Conflict of Interests

Authors have no conflict of interests.

## Ethical Issues

The Ethics Committee of Iran University of Medical Sciences (under the code of IR.IUMS.REC1395.95-03-29560) was granted permission to implement the research. Further, a written introduction letter was received from the Director of Research and Technology of Iran University of Medical Sciences while observing the ethical issues and then, it was distributed among the authorities of Firoozgar, Rasoul-e-Akram, Allame Bohlool Gonabadi, and Madani educational hospitals. The goal of the study and its procedure were explained to the participants and written informed consent was obtained while respecting their privacy and keeping the information confidential.

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