Research Article

Relationship of Job Stress with Active and Passive Cigarette Smoking Among Nurses of Teaching Hospitals in Hormozgan University of Medical Sciences in 2018

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Abstract

Background: The prevalence of tobacco use, which is one of the important dimensions of the lifestyle of nurses, and the range of their job stress, have great effects on nurses' performance against patients.

Objectives: The purpose of this study was to determine the relationship between job stress and active and passive consumption of tobacco in nurses in teaching hospitals of Bandar Abbas in 2018.

Methods: This was a descriptive-analytic study conducted on nurses using stratified random sampling in the emergency, critical care, and general and specialized wards. The OSIPOW Job Stress Questionnaire and a researcher-made questionnaire were used to examine the patterns of smoking after confirmation of validity and reliability.

Results: Thirty-seven male and 183 female nurses participated in this study. The job stress rate was 179.15 ± 31.55 in men and 177.44 ± 24.39 in women. The frequency of active cigarette smoking in males and females were 10.8% and 9.3%, respectively. The relationship between job stress and active tobacco use in women was significant. In general and special wards, the relationship between job stress and passive cigarette use and active tobacco consumption were significant.

Conclusions: According to the results of this study, the consumption of active and passive tobacco use in many cases is related to job stress in nurses. It is needed to reduce the job stress and its subsequent psychological and behavioral effects, as well as reduce the effects of passive tobacco consumption in future plans with controlling actions.

Keywords: Cigarette Smoking Critical Care, Emergency Departments, Nurses, Job Stress, Tobacco

1. Background

Worldwide smoking has begun 500 years ago (1). According to the existing documentation and based on the World Health Organization, 1.3 billion people are consuming cigarettes in the world, and if the prevalence of smoking remains constant, it will reach 1.7 billion people by 2025 (2). The prevalence of smoking in men is four times more than women, and three-quarters of deaths caused by cigarette smoking occur in men (3). Smoking is the first preventable cause of death in the world and it is the cause of the premature death of millions of people at the most efficient age, and about half of these deaths occur between the ages of 25 and 69. In addition, many people also suffer from unwanted exposure to tobacco smoke and are at risk of illness (4).

Tobacco use usually begins in adolescence (5). According to a study by Hadi and Barazandeh (6) to assess the lifestyle of nurses in Shiraz, 3.7% of nurses were smokers, but 45.3% of the total population and 44.3% of non-smokers were exposed to cigarette smoke of other people. Although 89.6% of the population were females and this group was less likely to use tobacco for common reasons, the low rate of nurses who were smoking was expected.

The role of the health team in controlling tobacco use has been proven. According to statistics, the health team has been able to encourage many patients to stop smoking and 10% of patients have been successful to stop smoking (7). In this regard, nurses play an important role in educating patients. They are successful models in society and they have an important role in changing the habits of smoking by consulting patients to quit smoking. Interventions by

nurses have been successful by 50%. The reasons for failure are the obstacles that exist in this journey. The most important reasons include smoking behaviors by the nurses themselves. Unfortunately, some nurses tend to smoke because of three main reasons: job stress, the impact of colleagues and the community, and the socioeconomic status (8).

According to the studies, job stress is associated with smoking, and in hospitals with a higher prevalence of smoking in nurses, this relationship is stronger. Apparently, under stressful conditions, it is more likely that nurses will be allowed to use tobacco (9). It is mentioned in publications that one of the most important sources of stress is job (10) and nursing was a stressful profession, and among 130 occupations examined by the National Institutes of Health of America, nurses ranked 27th (11). Job stress can reduce the quality of care for patients by increasing work incidents, increasing latency and absence in the workplace, and reducing productivity and organizational commitment. According to the International Nursing Board, employees with a high-stress occupation were 30% more likely to have work-related incidents (10).

Characteristics of the nursing profession such as high workload, communication with patients, high emotional involvement, and responsibility for life and mortality of the patients are highly stressful in this profession and affect the quality of life and health of nurses. On the other hand, this work stress has imposed costs on the health team, and according to the World Health Organization, the costs of this stress are estimated at $150 billion a year (12). Job stress of nurses has been studied in Iran and around the world. Hazavehei et al. (10) in Hamedan found that 51.5% and 5.9% of nurses had moderate and severe job stress, respectively. The highest and the least rates of stress were observed in psychiatric nurses and the dialysis unit, respectively (10). The study of Bahrami et al. in the city of Kashan also indicated that 4.2% of the nurses had moderate stress and 0.5% had severe stress (11). Aoki et al. (13) in Thailand found that 26.2% of nurses experience a high job stress.

In fact, the presence of stress factors in the nursing profession is inevitable, and it is necessary to control and prevent psychological and behavioral effects of stress (14). The personal habits and interests of the nurses and their living conditions are effective in their approach toward the patients. The lifestyle of nurses has less been studied in different societies (6). In this study, the active use of tobacco means the direct consumption of tobacco by individuals and the passive tobacco usage means to be exposed to tobacco while other people use it directly, which would have the complications and consequences such as respiratory problems and psychological problems for a person. The study of the prevalence of tobacco use, which is one of the important dimensions of the lifestyle of nurses involved in this issue and its relationship with their job stress will be of great importance in future planning.

2. Objectives

Therefore, this study was designed to determine the relationship between job stress and active and passive smoking in nurses of Bandar Abbas medical and teaching centers in 2018. It should be noted that as most of the nurses are women and tobacco use among female nurses is less prevalent, the frequency of smoking in nurses is determined by their gender and is measured according to their relationships.

3. Methods

This study was a descriptive-analytic study. The statistical population consisted of all nurses working in teaching hospitals of Hormozgan University of Medical Sciences in 2018 and was approximately 488 people. The research environment was teaching hospitals affiliated to the Hormozgan University of Medical Sciences, including Shahid Mohammadi Hospital and Pediatric Hospital. In order to increase the accuracy of the estimation of job stress among nurses, the appropriate sampling method for this study was a random stratified sampling and proportional to the size of each category. After determining the different wards of the teaching hospitals, with regard to the similarity of function and field of activity, the wards were divided into three categories of the emergency department, specialized care units, general and specialized departments. In the next step, the number of nurses, bachelor and master's degrees, in each hospital and each ward was determined and considering the fact that the total number of nurses working in Bandar Abbas teaching hospitals was 488, each nurse was assigned to a number from 1 to 488. Then the sample size of each department was determined based on the ratio of employees in that department and the members of each department were selected using the random number table.

According to the information available on the stress level of nurses, at a significance level of 95%, $Z_{1-\alpha/2} = 2$, S = 46.7 and d = 5, the sample size was calculated as 384 using the sample size formula. Owing to the fact that the total number of nurses employed in university hospitals in Bandar Abbas was available, it was adjusted to 220 using the sample size formula. According to the number of nurses working in each of the departments (70 nurses in emergency department, 158 nurses in specialized cares and

260 nurses in general and specialized departments), using stratified random sampling, 32 nurses from the emergency department, 71 nurses from specialized care units and 117 nurses from general and specialized departments were selected. The inclusion criteria were having the consent and willingness to cooperate, lack of experience of mourning, divorce, unexpected and unpleasant events or acute illness in the last 6 months.

The data collection tools included demographic characteristics questionnaire, active and non-active smoking questionnaire and job stress questionnaire. Demographic characteristics of people were collected in 7 questions, including age, sex, marital status, work shift, degree, work area, and work experience. Active and passive tobacco use was also evaluated by a researcher-made questionnaire containing 25 questions about active and passive consumption of cigarettes, hookah, narcotics, and tobacco and psychotropic substances. In this questionnaire, the rate of consumption of each item mentioned by the individual and its consumption by the family members living in the home and their relationship to the individual, as well as the use of it by shift partners were examined. In this study, the purpose of active smoking is direct use with individuals and the purpose of passive smoking is to be exposed to smoke while other people use it directly in which case the complications and consequences such as respiratory and psychological problems were observed. The validity of this questionnaire was assessed by using face and content validity and after examination by ten faculty members, its reliability was assessed by test-re-test method. Job stress standard questionnaire (OSIPOW) was used to investigate the job stress. The questionnaire is scored on a 5-point Likert scale from 1 to 5 (never 1 point, sometimes 2, often 3, usually 4, and most often, 5 points).

The questionnaire was structured in six aspects of job stress and each dimension included 10 questions. The first aspect was the role overload (lack of the needed support for heavier work tasks) related to how one responds to the demand of the workplace. The second aspect was the role insufficiency (the disparity between skills and what the individual expects from the job) which is related to the proportion of the skill, education, and personal and experiential, characteristics of an individual with the needs of the workplace. The third aspect was the role ambiguity (the ambiguity in the tasks expected of the individual to do and how it is evaluated) related to the individual's awareness of the priorities and expectations of the workplace and evaluation criteria. The fourth aspect was the role boundary (the sense of doubt in expressing demands and the lack of clarity of the limits of authority) related to the individual's contradictions in terms of work conscience and the role that is expected from him/her. The fifth aspect was the re-

sponsibility (the feeling of pressure from work with problematic colleagues) related to the sense of responsibility of the individual in terms of the efficiency and welfare of others in the workplace. The sixth aspect was the physical environment (noise, humidity, dust, heat and cold, and so on) related to the unfavorable conditions of the physical environment that the individual is exposed to.

The scores of the men and women were specified according to the OSIPOW questionnaire and determined in each domain. The overall stress level was defined for four levels of lower than normal, natural stress, moderate stress, and severe stress (Table 1) (11).

Table 1. Scale of Scoring Stress Levels in Males and Females

Categories of Total Stress	Males	Females
Lower than normal stress	60 - 133	60 - 107
Natural stress	134 - 216	108 - 203
Moderate stress	217 - 258	204 - 251
Severe stress	259 - 300	252 - 300

In this study, a person with moderate and severe stress levels is considered a person with stress. Standard questionnaire of job stress OSIPOW first was used by OSIPOW et al. (1987) and named as a tool for measuring the job stress (11) and has been frequently used by several researchers in the country. The validity and reliability of the test were verified and satisfactory (15). In this study, Cronbach's alpha coefficient was used to determine the reliability of the job stress questionnaire, and the reliability of the questionnaire was calculated using the information of 20 nurses as 0.88. After coordination with the security and hospital officials in different morning and evening shifts and after the presentation about the project and obtaining informed consent from the subjects in different departments, questionnaires were delivered to the nurses by researchers and were received after completion. The information was anonymous and the results were interpreted generally. Also, if someone did not want to respond to the questions, it was possible to re-package the questionnaire and deliver it to the researcher. The integrity and trust throughout all stages of the work were of ethical considerations that have been observed. SPSS software version 19 was applied to analyze the information and then, descriptive and inferential statistical tests such as correlation coefficient, Mann-Whitney and chi-square were used to investigate the normality of data. The P value of less than 0.05 was considered statistically significant.

4. Results

In this study, 220 nurses participated, including 183 (83.2%) females and the rest were males. Also, 123 (55.9%) subjects (67.6% males and 53.6% females) were single. The mean age of the participants was 29.13 ± 4.22 and the mean working experience was 4.61 ± 4.15 years. The mean age of males was 30.32 ± 4.96 and the mean age of females was 28.88 ± 4.77 years. The mean job stress score was 177.73 ± 25.66, which was 179.16 ± 31.55 and 177.44 ± 24.39 for males and females, respectively. The average job stress scores in different aspects of males and females in terms of the working department are mentioned in Table 2. Different levels of job stress in males and females are presented in Table 3. In the males, the frequency of active smoking was (10.8%), passive smoking (62.2%), active consumption of hookah (18.9%), passive consumption of hookah (16.2%), and active tobacco usage (8.1%). In the females, the frequency of active smoking was (9.3%), passive smoking (38.3%), active consumption of hookah (5.5%), passive consumption of hookah (3.8%), active tobacco usage (10.4%), and passive tobacco usage (1.6%). A total of 9.5 percent of the nurses were smokers, 7.7 percent were consumers of hookahs, and 10 percent were tobacco consumers. The mean daily consumption of cigarettes was 2.95 ± 1.33, which was 3.75 ± 3.97 among males and 2.76 ± 0.77 among females.

The findings showed that job stress has an inverse relationship with age (P = 0.001) and marital status (mostly in singles) in males and females (P = 0.001), and has a significant relationship with workplace (more in emergency departments) in females (P = 0.032). Also, job stress had an association with tobacco usage in females (P = 0.045 and R^2a = 0.017), and in general and specialized departments, job stress had a significant association with passive smoking (P = 0.033 and R^2a = 0.031) and active tobacco usage (P = 0.001 and R^2a = 0.078) (Table 4). Thus in general and specialized wards, regression analysis determined that passive smoking and active tobacco usage are predictors of job stress.

5. Discussion

The aim of this study was to determine the relationship between job stress and active and passive smoking among nurses in different departments of Bandar Abbas teaching hospitals. The average of job stress score was 177.73 ± 25.66, which was considered to be normal in most males and females. The results of this study were consistent with other studies in this field. As the study of Bahrami et al. (11) in Kashan showed most nurses had normal stress. Aoki et al. (13) in Thailand concluded that 26.2% of nurses had severe job stress.

The results of six aspects of job stress indicated that the stress had the highest score in emergency departments, in men and women, in the areas of physical environment; in critical care departments, in men in role insufficiency and in women in role overload; and in general and specialized departments in the areas of role overload in men and women. In general, in both men and women, the role overload and then the physical environment had the highest stress score. In the study of Bahrami et al. (11), the highest stress score was mentioned in the field of role responsibility. However, this contradiction seems natural due to the research environment and the workplace of the subjects, and the amount of stress and the weight of each field are certainly affected by the role of the workplace.

In this study, there was a significant relationship between job stress in men and women with age, marital status, and workplace. In the study of Bahrami et al. (11), there was no significant relationship between age, gender, work experience, income, type of hospital, type of employment, educational level and marital status with general stress, while a significant positive correlation was observed between job stress, age, and nurses' income. In the case of marriage, married nurses are also likely to suffer from less job stress due to the division of psychological pressures from the work environment with their spouses.

In this study, active consumption of hookah in men (18.9%), active tobacco usage in women (10.4%) and passive consumption of smoking in men (62.2%) and women (38.3%) were the most frequent. A total of 9.5 percent of nurses were smokers, 7.7 percent were consumers of hookahs, and 10 percent were tobacco consumers. In the study of Hadi and Barazandeh (6), 3.7% of nurses actively used cigarettes and 44.3% of smokers were passive smokers. In the study of Cofta and Staszewski (16), 27 percent of nurses, in the study of Sarna et al. (17), 50.8 percent of nurses, and in the study of Ota et al. (18), 11.7 percent of nurses were cigarette smokers.

Job stress in nurses was related to tobacco use in women. In general and specialized departments, the relationship was significant between job stress and passive smoking and active tobacco use. Unfortunately, one of the reasons that why nurses are turning to tobacco use is job stress, which is more often seen in tobacco use cases. Also, according to the results, exposure to cigarette smoke is a factor in increasing the feel of job stress in nurses.

5.1. Conclusions

The results of this study showed that according to the level of knowledge and awareness of nurses about diseases, lifestyle and proper health behaviors, there is still a tendency toward smoking and a total of 9.5 percent of

Table 2. The Average of Job Stress Scores in Different Aspects in Males and Females in Terms of Working Department

Job Stress Area	Working Department									P Value
	Emergency Wards		Critical Care Wards		General and Special Wards		Sum			
	Males	Females	Males	Females	Males	Females	Males	Females	Sum	
Role overload	33.33 ± 5.56	31.95 ± 4.92	31.48 ± 7.78	33.67 ± 6.36	-	32.55 ± 8.71	32.08 ± 7.11	32.65 ± 7.70		0.588
Role insufficiency	30.33 ± 4.39	28.95 ± 4.12	31.64 ± 7.39	27.84 ± 6.63	-	28.11 ± 4.95	31.21 ± 6.53	28.13 ± 5.32	28.65 ± 5.65	0.640
Role ambiguity	32.08 ± 5.17	30.90 ± 4.94	29.24 ± 7.63	29.36 ± 7.14	-	27.55 ± 6.04	30.16 ± 6.99	28.37 ± 6.31	28.67 ± 6.44	0.014
Role boundary	29.83 ± 6.78	29.35 ± 3.75	27.92 ± 7.06	29.36 ± 6.87	-	27.44 ± 5.10	28.54 ± 6.93	28.13 ± 5.53	28.20 ± 5.77	0.123
Responsibility	29.08 ± 5.40	29.95 ± 6.81	26.56 ± 5.54	30.91 ± 7.30	-	29.11 ± 6.51	27.37 ± 5.55	29.65 ± 6.76	29.27 ± 6.61	0.866
Physical environment	33.50 ± 7.54	34.50 ± 7.88	28.00 ± 8.95	33.17 ± 7.40	-	28.55 ± 10.28	29.78 ± 8.81	30.36 ± 9.66	30.26 ± 9.51	0.000
Sum	188.16 ± 23.72	185.60 ± 20.50	174.84 ± 34.29	184.34 ± 34.37	-	173.33 ± 18.93	179.16 ± 31.55	177.44 ± 24.39	177.73 ± 25.66	0.032

Table 3. Different Levels of Job Stress in Males and Females

Job Stress Level	Sex, Frequency (%)	
	Males	Females
Lower than normal	2 (5.4)	-
Natural stress	31 (83.8)	152 (83.1)
Moderate stress	4 (10.8)	31 (16.9)
Severe stress	-	-

nurses were smokers. It is considered that one of the reasons for this tendency is job stress, which in nurses according to their workplace is seen at different levels. On the other hand, many factors contribute to job stress score in different aspects. But one of the possible reasons is being a passive consumer of tobacco that can exacerbate stress in people. These issues make the nurses not to have a desirable life and to be at the risk of a variety of non-communicable chronic illnesses. Therefore, it is necessary to improve the lifestyle of the nurses and to make effective health policies in this regard. On the other hand, the existence of the stress in the health team can lead to a drop in the quality of service provided. Therefore, identifying stress levels in nurses in different departments and examining their different dimensions in the work environment is necessary and stress-reducing and managing methods are needed to control and reduce the stress. Also, nurses' opinions about the working department and provide service can be helpful in reducing their job stress.

Regarding the findings of this study, it is recommended to periodically review the job stress levels of nurses in different departments and their lifestyle. By training the proper methods of stress management and improvement of the lifestyle can take an effective step in using the potential capabilities of the health care workers.

One of the limitations of this study was the small number of male nurses working in hospitals to overcome this limitation; the indicators were calculated based on gender for men and women. Cultural issues will also be effective in the response of an individual to tobacco use. Therefore, it was tried to increase the confidence of nurses and their honesty in responding by emphasizing the confidentiality of the responses and confidentiality and anonymity of the questionnaires.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Acknowledgments

Footnotes

Authors' Contribution: Zahra Khademi: contributed to writing the proposal, collecting data, and writing the paper. Elham Imani: contributed to writing the proposal, collecting data, data analysis, and writing the paper. Hadi Yousefi: contributed to writing the proposal, data analysis, and writing the paper. Narges Tayari: contributed to writing the proposal, collecting data, and writing the paper. Manigeh Sayadi Manghalati: contributed to collecting data, data analysis, and writing the paper.

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Ethical Approval: This study was approved by the Ethics Committee of Hormozgan University of Medical Sciences with code IR.HUMS.REC.1397.197.

Table 4. Linear Regression Model for Active and Passive Tobacco Smoking Predicting Job Stress in General and Specialized Wards in Nurses Participated in the Study

Variable	R^2	Adjusted R^2	B	Std Error	Beta	t	P Value
Active smoking	0.008	-0.001	-5.250	5.574	-0.088	-0.942	0.348
Passive smoking	0.039	0.031	-7.500	3.469	-0.198	-2.162	0.033
Active tobacco usage	0.293	0.086	-16.518	5.029	-0.293	-3.285	0.001

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