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Original Article(S)

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The relationship between the student stressor factors and academic burnout among the students in Kurdistan University of Medical Sciences, Iran, in year 2016

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3 Vice Chancellor for Research and Technology, Kurdistan University of Medical Sciences, Sanandaj, Iran

Original Article

Abstract

BACKGROUND: Burnout is a state of mental and emotional fatigue; and is a result of chronic stress syndrome, high pressure, time constraints, and lack of necessary resources to perform the assigned duties and tasks. The present study aimed to determine the relationship between student stressor factors and academic burnout among the students in Kurdistan University of Medical Sciences, Iran, in year 2016.

METHODS: In this cross-sectional study, the study population was the students in Kurdistan University of Medical Sciences. Among them, 500 persons were selected using stratified sampling method with proportional allocation. The research tools were student stressor factors and academic burnout questionnaires. The collected data were analyzed using SPSS software.

RESULTS: There was a positive and statistically significant relationship between academic burnout with three domains of stressors for students including academic stressors ($r = 0.32$, $P < 0.01$), learning environment stressors ($r = 0.34$, $P < 0.01$), and graduation stressors ($r = 0.36$, $P < 0.01$), as well as the overall stressors ($r = 0.42$, $P < 0.01$).

CONCLUSION: The results of this study indicated the important role of stressors in academic burnout; so, it is expected that educators have always reflect the practices reduce stress, and create a suitable environment for education.

KEYWORDS: Stress, Burnout, Medical students

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Introduction

In the recent years, attention has been paid by higher education professionals to academic performance, and the factors influencing it.[1,2] This is especially important for medical students who play a key role in the health of the community; because any shortcomings in this field can lead to irreparable damage for medical graduated, the patients, and consequently to the whole community. These issues have caused in the fields of medicine and medical sciences universities, dangerous and problematic factors in students' academic achievement to be considered more sensitive. Therefore, providing the efficient and effective ways to eliminate these factors is one of the most important duties for authorities, trainers, and academic teachers of medical sciences universities.[3]

Burnout is a form of mental and emotional exhaustion that results from chronic stress syndrome, and caused by high pressure, time

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limitation, and lack of necessary resources to perform duties and assignments.[4,5] Academic burnout among the students means feeling tired of doing homework and studying, pessimistic attitudes toward education, and textbooks academic failure.[6] In fact, burnout is a negative reaction to acute and severe stresses that are often created due to the high and unwanted demands of individuals, and creates emotional and physical exertion in people.[7]

Educational burnout has three dimensions including emotional tiredness (feeling of pressure, especially chronic fatigue due to excessive work in the training activities), pessimistic (pessimistic attitude and indifference to lessons, lack of interest in studying, and meaningless thinking about them), and lack of efficiency (feeling of low sufficient, low progress, and lack of sense of success in academic assignments).[8] Academic burnout can have many negative consequences, and lead to lack of participation and reduction of energy needed for activities.[9] Students with academic burnout do not have the motivation to engage in classroom activities, and show behavioral characteristics such as absenteeism, late class attendance, and early class abandonment. In addition, they do not listen to textbooks, and do not participate in classroom activities. They often do not respect to class and their teachers, to make excuses for their poor performance. So, they do not have sense of responsibility and responsiveness to their poor performance.[10]

Stress is a complex multi-dimensional phenomenon that focuses on dynamic relationship between person and environment.[11] Stress is defined by the person's perceptions and his/her interpretation of a situation beyond his/her abilities that can disrupt his/her health.[12] Evidences have shown that often human achievements are created in stressful situations; but high stress levels have many consequences including physical and mental illnesses, anxiety, depression, sleep disorders, restlessness, irritability, forgetfulness, abnormal fatigue, reduced resistance and frequent infections, headache, decreased focus, memory impairment, and reduced ability in problems solving.[12,13]

Researches have shown that medical students experience a lot of stress throughout their academic years. These factors are generally classified into three categories, the factors related to university education, and clinical, and personal-social factors.[14-16] Research by Jones and Johnston has shown that university stresses are included in job dissatisfaction, lack of coordination of theoretical and clinical education, exams, inappropriate study methods, high volume of assignments, lack of time, and fear of falling in the courses.[17] A study in China has shown that women suffer from stress more than men.[13] A study conducted among medical students in the University of Malaysia showed that 41.9% of them had specific psychological stresses and suspected mental disorders.[18] A study conducted in Kerman University of Medical Sciences, Iran, showed that 28% of the studied students had mental disorders, which was higher in women than men.[19] Some studies revealed that there was a relationship between educational stressful factors and academic burnout, and the most stressful factor in their view was uncertain future job.[20-23] In a study, it has been argued that various factors such as depression can play an important role in the health status of students.[24] Abbasi et al. conducted that increasing of each student stressful factor including educational environment, academic conditions, graduation and dwelling environment, as well as them totally, increased the degree of procrastination, academic burnout, and its dimensions including emotional exhaustion, disinterestedness, and ineffectiveness of the course.[3]

Given that the causes of stress will affect academic achievement among the students,

and considering that students' views about their own problems and the factors affecting their academic achievement have been studied in several studies,[25-32] and considering the lack of a study on stressor factors in the educational environment of universities in Sanandaj City, Iran, this study seemed necessary. In this study, we sought to prove the hypothesis that stressors would exacerbate students' academic burnout. So, this research was carried out to determine the relationship between student stressors factors and academic burnout among the students in Kurdistan University of Medical Sciences in year 2016.

Materials and Methods

In this cross-sectional study, the study population consisted of the students in Kurdistan University of Medical Sciences. Using the standard deviation of a similar study,[33] among about 3000 students, 500 cases were selected via stratified sampling method with proportional allocation. Each faculty was considered as a class. The next step was determined by the number of students in each faculty. At the next step, using random sampling method, a sample of the selected students surveyed. Inclusion criteria were as being student of Kurdistan University of Medical Sciences, willing to participate in the study, and spent at least two semesters at the university. Not having any of the inclusion criteria was considered as exclusion criterion.

Two questionnaires were used in this research. The first questionnaire was about student stressors factors, contains 42 questions. This questionnaire had 3 domains including academic conditions stress (15 items), educational environment stress (15 items), and graduation stress (12 items). The reliability coefficient of these domains was calculated by using Cronbach's alpha, and reported as 0.84, 0.83, and 0.79, respectively.[3] This questionnaire was based on a 4-point Likert score from never (0) to most times (3). The lowest and highest scores for this questionnaire would be 0 and 126, respectively. Earn score 0 to 42 represented low stress, score 42 to 63 meant moderate stress, and score more than 63 represented high stress. The second questionnaire used in this study was burnout questionnaire, which had 15 questions. The lowest and highest scores for this questionnaire would be 0 and 90, respectively. Getting a score of 30 or less meant lack of academic burnout, and the score more than 30 meant that he/she had academic burnout.

To collect the data, three classrooms in each faculty were selected randomly, and the questionnaires were given to the students. At first, descriptions about the importance of the study, and how to fill the questionnaires, were presented for the students. Then, they were asked to fill the questionnaires, if they wished to cooperate in the study, and if they were not willing to cooperate, returned the questionnaires. The studied students did not need to write their names, and they were assured that all of their information will remain confidential.

The collected data were entered on the computer and analyzed using SPSS software (version 16 SPSS Inc., Chicago, IL, USA). To describe the data, frequency, mean and standard deviation were used, and for statistical analysis, t-test and ANOVA were used. Pearson statistical test was used to examine the relationship between academic burnout and stressors factors.

Results

Out of 500 distributed questionnaires, 468 (93.6%) were filled completely. The mean age of the samples was 22.27 ± 3.34 years. Their minimum and maximum age was 18 and 46 years, respectively. The mean ± standard deviation (SD) scores of stressors for academic conditions, educational environment, and graduation were 21.68 ± 10.02, 27.48 ± 9.31, and 15.35 ± 8.13, respectively. The total mean of

student stressors score was 64.51 ± 22.22.

Table 1 shows the mean and standard deviation of students' scores for the surveyed stressors.

Table 1. The mean and standard deviation of student stressors scores among the students in Kurdistan University of Medical Sciences, Iran, in year 2016

Examined areas	Mean ± SD
Academic conditions stress	1.44 ± 0.67
Educational environment stress	1.83 ± 0.62
Graduation stress	1.28 ± 0.68
Total	1.54 ± 0.53

SD: Standard deviation

Among the studied students, 68 (14.5%) had low stress, 146 (31.2%) had moderate stress, and 254 (54.3%) had high stress. Moreover, only 44 students (9.4%) had no academic burnout; while 424 (90.6%) had academic burnout. Students of epidemiology and nursing had the highest burnout, and operating room and medical emergencies students had the lowest burnout.

In tables 2 and 3, the frequency, percentage, mean and SD of students' academic burnout scores, and its relationship with different variables are shown.

As shown in table 2, academic burnout was significantly different between the native and non-native students. Those who were non-native had a higher score of burnout. Moreover, although the mean scores of men and single students were higher, but there was no significant difference between the academic burnout with sex and marital status.

Table 3 shows that academic burnout was significantly different according to parents' literacy (P = 0.01). The samples that had parents with academic literacy had higher burnout than the others. Moreover, although the mean scores of Bachelor students and residents in the student dormitory were higher, but there was no significant difference between academic burnout according to the grade and current location.

Based on Pearson correlation statistical analysis, there were positive and significant relationships between academic burnout and three areas of student stressors including educational stressors (r = 0.32, P < 0.01), educational environment stressors (r = 0.34, P < 0.01), graduation stressors (r = 0.36, P < 0.01), as well as overall stressors (r = 0.42, P < 0.01).

Discussion

This research, which studied the relationship between student stressor factors and academic burnout among the students in Kurdistan University of Medical Sciences in 2016, revealed that, stressor factors had a direct and positive effect on academic burnout among the studied students. This finding is consistent with the results of Abbasi et al., that all stressors including educational environment, academic conditions, and graduation have a positive and significant correlation with students' academic burnout.[3] This finding is also consistent with the results of Brown et al.[1] and Santen et al.[20]

Table 2. The frequency, percentage, and mean scores of academic burnout among the students in Kurdistan University of Medical Sciences, Iran, and their relationship with gender, marital status, and being native, in year 2016

Variable		n (%)	Mean ± SD	T	P
Gender	Men	228 (48.7)	2.89 ± 0.74	0.18	0.86
	Women	240 (51.3)	2.87 ± 0.65		
Marital status	Single	426 (91.0)	2.89 ± 0.69	0.62	0.53
	Married	42 (9.0)	2.82 ± 0.72		
Being native	Native	288 (61.5)	2.83 ± 0.63	-2.10	0.04
	Non-native	180 (38.5)	2.96 ± 0.78		

SD: Standard deviation

Table 3. The frequency, percentage, and mean scores of academic burnout among the students in Kurdistan University of Medical Sciences, Iran, and their relationship with different variables, in year 2016

Variable		n (%)	Mean ± SD	T	P
Grade	Assistant	34 (7.3)	2.80 ± 0.79	0.49	0.61
	Bachelor	316 (67.5)	2.90 ± 0.69		
	Masters and higher	118 (25.2)	2.85 ± 0.68		
Father's education	Illiterate	58 (12.4)	2.68 ± 0.62	1.13	0.01
	Elementary	84 (17.9)	2.87 ± 0.68		
	Guidance	48 (10.3)	2.69 ± 0.51		
	High school	118 (25.2)	2.97 ± 0.75		
	Academic	160 (34.2)	2.95 ± 0.71		
Mather's education	Illiterate	102 (21.8)	2.76 ± 0.63	3.20	0.01
	Elementary	142 (30.3)	2.84 ± 0.70		
	Guidance	48 (10.3)	2.79 ± 0.55		
	High school	90 (19.2)	3.09 ± 0.76		
	Academic	86 (18.4)	2.91 ± 0.71		
Current location	With family	128 (27.4)	2.82 ± 0.70	1.01	0.37
	Single house	8 (1.7)	2.70 ± 0.86		
	Student dormitory	332 (70.9)	2.91 ± 0.68		

SD: Standard deviation

The results of our study showed that students with stressors had higher academic burnout. This finding is consistent with the results of other studies.[34-38] In addition, other researchers have found that many factors, such as social support failures, family pressures, the atmosphere of the faculty, positive motivation received from professors, social relationships, and social environments, can play an important role in students' academic burnout.[39,40] Continuing stressful situations exacerbate emotional exhaustion among the students; it manifests as low self-esteem, low self-efficacy, and unwillingness. It can be said that burnout causes students to be at a lower level of emotion. This can be due to inadequate education; so, the students who evaluate their academic situation stressful, less believe in themselves in control of environment, and success in studying, and less use the strategies for reducing academic stress, and less feel educational self-efficacy. Therefore, perceived negative emotions such as self-efficacy stress are found.[41]

The presence of stressors and their severity increase the feeling of lack of control on environmental conditions, and helplessness. In this case, as in other cases, decreasing of self-esteem is the basis of many problems. Possibly, when a student feels incapacitated to overcome stressful academic situations, he/she postpones assignments and academic tasks, and it is expected that emotional exhaustion resulting from such situation leads to academic burnout.[42] This is also confirmed by Abolghasemi. He believes that stressors have negative effects on the sources of student's personal and social coping, and reduce his/her resistance. He emphasizes on positive role of religion in confronting stressors.[43] Zahiri Naw and Rajabi also report that stressors have reduced students' academic motivation. They emphasize that motivation plays a major role in seriously addressing academic tasks, and dealing with stress correctly.[44]

One of the strengths of our study is that for the first time, such a study was done among the students in Kurdistan University of Medical Sciences. In the present study, students of different field of the study were studied, and the role of stressors and individual factors were studied on academic burnout. These factors had not been mentioned in similar studies, and their role

had not been studied, before.

The limitation of this study is that it was based on self-report questionnaires; and students might not have completed the questionnaires with sufficient accuracy.

Conclusion

Given that stressor factors can predict the rate of academic burnout among medical students, educational professionals should always think of the ways to reduce stressors, and create a calm and suitable environment for their study. It is hoped that teaching stress coping strategies, and increasing academic motivation, will be on the agenda of academic counseling centers, and improve the quality of the students' education. Familiarizing students with university facilities and deficiencies at the beginning of university entrance, organizing amusement camps between semesters, paying special attention to various artistic programs, and providing appropriate recreational and sports facilities in the university environment can prevent students' burnout.

Conflict of Interests

Authors have no conflict of interests.

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The frequency of four common cancers in Kermanshah City, Iran, during the years 2004-2011

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Original Article

Abstract

BACKGROUND: Cancer is one of the most prevalent diseases in today's civilized world, with an increasing number of sufferers with each passing day. The aim of this study was to determine the prevalence of common cancers in Kermanshah City, Iran, in a period of eight years between 2004 and 2011.

METHODS: This was a historic cohort study. Data were collected from Kermanshah Province Health Center (Cancer Registry). Data analysis was performed using SPSS software.

RESULTS: 6,146 people were diagnosed with cancer in Kermanshah during these eight years. The prevalence of skin, stomach, breast, and bladder cancers, without considering the patients' genders, was 35.24, 24.58, 23.73, and 16.45 percent, respectively. The highest frequency belonged to skin cancer with 309 persons in 2007.

CONCLUSION: Considering the fact that cancer has increased in the city of Kermanshah, it is necessary to change the lifestyle of all the people in order to prevent and reduce different types of cancer. Managers, officials, and health professionals are the most suitable individuals that can start changing the lifestyle, habits, and the improper way of living in this community.

KEYWORDS: Breast Cancer, Skin Cancer, Bladder Cancer, Stomach Cancer

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Introduction

Cancer is a generic name for a large number of diseases associated with abnormal growth of cells.[1] Cancer is one of the major causes of mortality in today's human societies, and accounts for about 10% of worldwide death counts in 2015.[2] Cancer refers to diseases that, due to molecular defects, cause changes in cellular activity, and can be mutated in common genes.[3,4] Despite the remarkable advances in medical sciences, cancer remains as one of the most important diseases of the present century, and is the second leading cause of death after cardiovascular diseases.[5,6]

The burden of cancer is rising due to various risk factors in the world, with most of these deaths occurring in economically developing countries, while based on the existing data, many of these cancer cases can be prevented with utilizing the existing knowledge and control programs.[7] Cancer has a special place in health care systems, due to its irreparable complications and heavy costs, and its diagnosis and treatment. More than half of the cancer cases and 60% of deaths from cancer in developing countries are changing on a daily basis as lifestyles change.[8,9] By 2015,

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about 54% of the world's total mortality was be due to illicit diseases, with cancer contributing to around 13% of total deaths.[10]

Skin cancer is a major public health problem. Recent studies in most countries indicate a high prevalence of skin cancer, and an increasing incidence of this disease. Despite the decrease in the incidence of cancer in recent years, skin cancer is increased by 3-5 percent each year, despite the existing potential for prevention and treatment.[11] Skin cancers is one of the most important diseases with regard to the human skin. This cancer is one of the most common cancers in the whole world, and is associated with high levels of disability and relatively low mortality;[12] the incidence of this cancer has increased in recent decades.[13]

Upper gastrointestinal cancers, including gastric cancer, are among the most common ones.[14] Gastric cancer is the fifth cancer after breast, skin, colorectal, and esophageal cancers in Kermanshah Province, Iran.[15]

Among all the cancers concerning women, breast cancer accounts for a high percentage of deaths and mortality, and is ranked first in the world. This particular type, accounts for 26% of all newly diagnosed cases of cancer.[16] The incidence of breast cancer in the world is 38%, which accounts for 15% of the deaths associated with women's cancers.[17] According to the statistics, breast cancer constitutes for 12.6% of all the cancers in Iran.[18]

Bladder cancer is one of the most important health issues, and the most common malignancy in the urinary tract;[19] it is also the second genital tumor that leads to mortality and morbidity in both men and women.[20] In addition, it has the most costly treatment compared to other types of cancer.[21] Bladder cancer is the third most common cancer in men in Iran.[22] According to 2008 statistics, 386,3000 new cases of bladder cancer are reported with 150,200 deaths worldwide.[23]

Cancer is one of the major healthcare issues in the developing countries and is growing rapidly.[24] 90-95 percent of cancers are caused because of environmental and lifestyle factors. The most important risk factors for cancer among the environmental factors are smoking, obesity, drinking alcohol, infectious agents, sunlight, mental stress, environmental contaminants, and foodstuff.[25] One of the main needs of health care decision-makers is monitoring and controlling diseases in terms of spatial dispersion, and number of affected people. By disease modeling, one can rank the important factors in development of a disease; on the other hand, if location is included in this model, it will have the potential to predict the spatial expansion of a disease as well. Out of three major elements that influence the disease, namely person, time, and place of analyzing, the element of place has always been difficult and time consuming.[26]

Given that cancer is the third leading cause of death in Iran and the world after cardiovascular diseases and accidents, diagnosis of cancer is crucial at all age groups and cities over time. The aim of this study was to compare the four most common cancers of Kermanshah City at all age groups, and over a span of eight years between 2004 and 2011.

Materials and Methods

The statistical population of this study included all individuals of different ages who were diagnosed with one of four cancers, skin, stomach, bladder, and breast, between the years 2004 and 2011 (eight years). This was a historical cohort study, and the statistical population consists of 6,146 patients diagnosed with cancer (if one person had more than one cancer, he/she was considered in all relevant cancer groups).

The obtained data were collected by referring to Kermanshah Province Health Center (Cancer Registry) archives. Breast cancer existed in both genders; however, since this cancer is more common in women, the

present study addresses this cancer exclusively with regard to women.

Data were analyzed using SPSS software (version 18, SPSS Inc., Chicago, IL, USA) (descriptive statistics) and Microsoft Excel software (Microsoft Corp., Redmond, WA, USA) (chart analysis).

Results

Among the patients with skin, stomach, breast, and bladder cancers, 1,277 (58.66%), 1,036 (68.56%), 0 (0%), and 829 (82%) subjects were men, and 889 (41.4%), 475 (31.44%), 1,458 (100%), and 182 (18%) patients were women, respectively. In addition, without gender segregation, among 6,146 individuals suffering from cancer as a whole, share of each of the skin, stomach, breast, and bladder cancers was 2,166 (35.24%), 1,511 (24.58%), 1,458 (23.73%), and 1011 (16.45%) individuals, respectively. The highest frequencies in skin, stomach, breast, and bladder cancers without gender segregation were 309 in 2006, 254 in 2010, 251 in 1990, and 181 in 2009, and the lowest incidence rates were 224 in 2007, 123 in 2004, 110 in 2005, and 84 in 2006, respectively (Table 1).

Figure 1 shows the trend of cancer cases without gender segregation (except breast cancer, which was only measured in women.

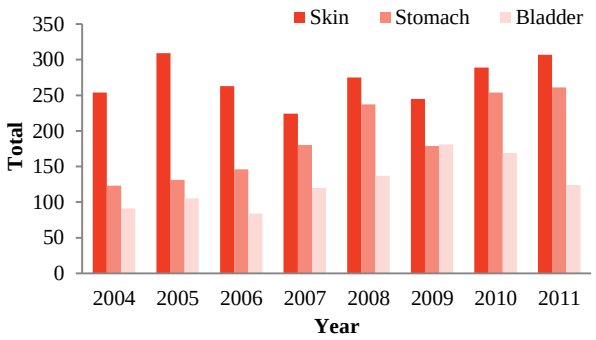

Figure 1. The frequency of three prevalent cancers without gender segregation in Kermanshah City, Iran, during the years 2004-2011

Table 1. The frequency of four prevalent cancers in Kermanshah City, Iran, during the years 2004-2011, in terms of sex

	Sex	Skin	Stomach	Breast	Bladder	Total
2004	Men	147	85	-	79	311
	Women	107	38	114	12	271
	Total	254	123	114	91	582
2005	Men	182	94	-	89	365
	Women	127	37	110	16	290
	Total	309	131	110	105	655
2006	Men	143	97	-	70	310
	Women	120	49	125	14	308
	Total	263	146	125	84	618
2007	Men	134	128	-	102	364
	Women	90	52	205	18	365
	Total	224	180	205	120	729
2008	Men	167	163	-	107	437
	Women	108	74	213	30	425
	Total	275	237	213	137	862
2009	Men	145	122	-	148	415
	Women	100	57	210	33	400
	Total	245	178	210	181	815
2010	Men	172	164	-	138	474
	Women	117	90	230	31	468
	Total	289	254	230	169	942
2011	Men	187	183	-	96	466
	Women	120	78	251	28	477
	Total	307	261	251	124	943
Overall		2166	1511	1458	1011	6146

Among the three common malignancies in the men population, skin cancer had the highest amount in the studied eight years, followed by gastric and bladder cancers (Figure 2).

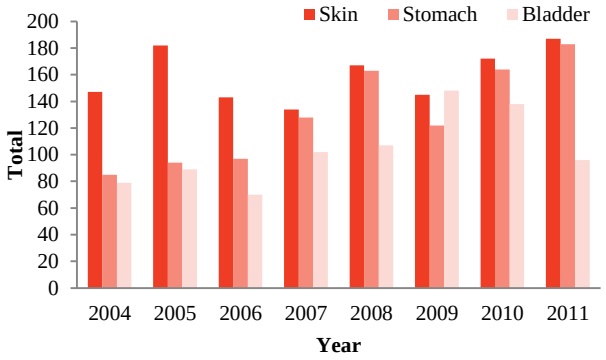

Figure 2. The frequency of three prevalent cancers among the men in Kermanshah City, Iran, during the years 2004-2011

Four commonly occurring cancers in women were breast, skin, stomach, and bladder cancers, respectively, shown from highest to lowest in order in the studied eight years (Figure 3).

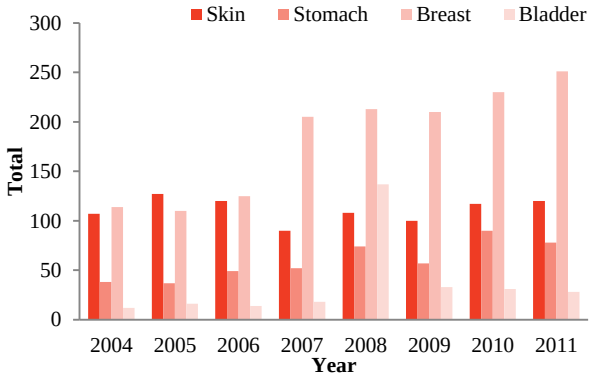

Figure 3. The frequency of four prevalent cancers among the women in Kermanshah City, Iran, during the years 2004-2011

Discussion

The present study evaluated the prevalence of four common cancers in Kermanshah City, in a span of eight years; since no similar study had been conducted in this region. In order to compare these cancers, each of them will be discussed separately.

In this study, the frequency of skin cancer was of 58.60 and 41.40 percent among the men and women, respectively. Yazdanfar and Ghasemi showed that most of the people with skin cancer in Hamadan, Iran, were men (67.2%) durin the years 1991-2007;[12] which is consistent with the results of the present study that speaks of the higher prevalence of this malignancy in men. A study by Wallberg and Skog in Sweden also presents results that are consistent with the present study in terms of the prevalence of this cancer in men.[27] Afzali et al., which studied the data collected during a period between the years 2000 and 2012, showed that the rates of skin cancer in Kermanshah were 15.84% in men and 13.69% in women;[28] which is consistent with the results of our study. This high prevalence in the men seems to be due to routine activities in open and sunny environments, or because of being more exposed to cancerous substances.[29]

According to the results of the present study, 56.68% of the patients with gastric cancer were men; which indicates the high rate of this malignancy among this gender. The results of Veisani et al. research showed that 178 men (74.5%) and 61 women (25.5%) had gastric cancer in Sanandaj City, Iran, during a period between 2006 and 2010;[30] this high incidence of cancer in the male gender is consistent with the results of the present study. Keyhanian et al. showed that 71.53% of cases with gastric cancer in Ramsar City, Iran, during the years 2002-2009, were men,[31] which is consistent with the present work. Our findings also showed that the trend of gastric cancer was significantly increasing during the years 2004 up to 2009. The study conducted by Enayatrad and Salehiniya showed that the incidence of gastric cancer in Iran was increasing during 2003-2009, and it was significantly decreased from 2009 to 2010.[32] The incidence of this disease has declined in

some advanced societies, due to appropriate interventions such as health education in nutrition, and control of predisposing behaviors.[33]

The results of our study indicate that breast cancer has risen from 114 to 251 cases during the years 2004-2011. A study by Fazeli et al. in Markazi Province, Iran, showed that there was no significant difference in the incidence of breast cancer iduringn the years 2007-2012,[16] which is not consistent with the results of this study. Many variables such as education level, history of menopause, history of abortion, breastfeeding, body mass index (BMI), etc. can affect the prevalence of breast cancer.[34]

In the current study, the trend of the prevalence of bladder cancer over the course of studied eight years was both increasing and decreasing, while having an incremental trend most of the time, which peaked in 2009. In addition, the same trend repeated in terms of gender, both in women and men. The incidence of bladder cancer in western countries is decreasing,[35,36] which is incompatible with the results of this study. The occurrence of this cancer in different regions is subject to changes in the customs and cultures.[37] Given the differences in the incidence of bladder cancer in different areas, it can be concluded that the risk of this cancer is partly determined by race and environmental differences.[38]

Conclusion

The results of the current study showed that 82% of the population suffering from cancer, were the men, and the men to women ratio was high in this disease.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

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Investigating the factors affecting job stress, and its relationship with employees' job satisfaction in Kurdistan University of Medical Sciences, Iran, in year 2016

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Original Article

Abstract

BACKGROUND: The phenomenon of stress encounters all humans during their life time. Stress or psychological stress may be benign or malignant; the stress that make someone achieve goals is benign. If the stress exceeds its capacity, it becomes malignant stress, and causes psychosomatic complications. Research findings have shown that job stress can cause job dissatisfaction among employees. The purpose of this study was to investigate the job stress factors, and its relationship with job satisfaction among the staff members in Kurdistan University of Medical Sciences, Iran.

METHODS: In order to implement the plan, a list of all employees in Kurdistan University at Medical Sciences was obtained from the campus staff. Subsequently, a questionnaire containing three main sections (demographic information, job stress, and job satisfaction survey) was filed up for each staff member. So that the employee referred to the workplace, and after justification, received a questionnaire. The completed questionnaires were collected, and after an initial review (in terms of completeness), the data were analyzed using SPSS software.

RESULTS: There was no significant relationship between age and work experience with satisfaction and stress. However, there was a significant relationship between job satisfaction and gender. The level of job satisfaction among the participants with associate degree was less than three other levels. Levels of stress differed in associate and undergraduate degrees, with doctoral and postgraduate degrees. There was no significant relationship between satisfaction and stress with marital status.

CONCLUSION: Based on the findings, it is possible to use appropriate methods and strategies to reduce stressful occupational factors among staff, especially staff with associate degree, and to pick up the level of job satisfaction at the individual and eventually organizational level.

KEYWORDS: Job Stress, Job Satisfaction, Personnel, Iran

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Introduction

The old word, distress, has been transformed into the word stress due to the removal and everyday use of the word stress.[1] In Persian, the word mental pressure has been used to equalize the stress that is not consistent with the exact meaning of stress. The concept of stress during the process of transformation the more intense it is, the less accurate it is. Nowadays, people are affected by stress when facing any kind of tiredness or anger.[2] Everyone experience much mental pressure

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throughout their lives. From a simple farmer to a manager at high levels of human management throughout history, they have experienced mental pressure and stress.[3] According to the definition given by the National Institute of Occupational Safety and Health, emotional and mental pressure-related reactions appear, when the job requirements are not in line with the capacities, needs, or resources of the existing employee or worker.[4] Job-related stress can be a combination of stressors, and those related to the job situation, which most people agree on is stressful.[5]

Employees are one of the groups that have job stress. Moore believes that the stressor conditions deriving from the organization's structure, such as role conflict, role ambiguity, and labor pressure, will lead to negative work-related conditions in the absence of positive conditions in the workplace.[6] Occupation is one of the main causes of stress in peoples' lives. In jobs where more human communication is concerned, stress is also higher. Job stress is one of the mental pressures that endanger peoples' health by causing behavioral, psychological, and physical symptoms. On the other hand, these pressures and stresses can affect organizational goals by reducing individual performance.[7]

Job satisfaction is one of the most important components of health promotion and life satisfaction. Job satisfaction in the field of medical services has always been of interest to researchers, since the workforce in this area ensures the health of the community. The quality and quantity of work in this area differ with its factory concept, which is a desirable quality and high quantity with minimal cost, and in the shortest time. Damage to the physical and mental health of the expert manpower with the goal of cost savings, is by no means justifiable.

The phenomenon of stress or nerve pressure is one of the most acute issues in today's organizations, which endangers the physical and mental health of the workforce, and has put a heavy cost on organizations; a group of experts in organizational behavior, called occupational (job) stress, as a common disease of the century. Perhaps, indeed, our era is the age of stress in which human is more exposed to stressors than ever before, and he/she has surrounded him/herself with many problems. Employees spend a lot of hours at work. Job dissatisfaction and the consequent stress within a few years makes them sick persons. Therefore, experts recommend managers to pay attention to stress in the workplace. They can also remove stressors from the workplace using the preventive methods.[5]

Materials and Methods

To implement the plan, a list of all the staff working in the campus complex of the Kurdistan University of Medical Sciences, Sanandaj, Iran, was taken from the campus staff department, and then a questionnaire containing three main sections (demographic information, job stress assessment, and job satisfaction survey) was filed for each staff member individually, and was completed individually. As such, the person referred to the workplace and, after justification, received a questionnaire. The completed questionnaires were collected, and after an initial review (in terms of completeness), the data were analyzed using SPSS software (version 16, SPSS Inc., Chicago, IL, USA).

To assess the job satisfaction, a standard sky doc questionnaire was used, each of which was used in five indexes: 1. Occupational safety, 2. Use of skills, 3. Salaries and benefits, 4. Work environment relationships, and 5. Purposefulness and understanding of the employees of their goals.

Moreover, the Gray-Taft and Anderson Nurses Stress Scale was used that designed in 7 sections, including: 1. Role ambiguity, 2. Role conflict, 3. Heavy role playing, 4. Light role playing, 5. Work rate, 6. Repetitive work, and 7. Job stress.

Table 1. Abundance distribution table of main variables

	Completely agree	Agree	No comments	Disagree	Completely disagree
Working hours	21 (7.9)	118 (44.2)	45 (16.9)	53 (19.8)	30 (11.2)
Hourly leave rules	22 (8.4)	131 (50.0)	40 (15.3)	44 (16.8)	25 (9.5)
Ventilation	28 (10.7)	123 (46.9)	38 (14.5)	38 (14.5)	35 (13.4)
Water closets (WCs)	32 (12.3)	95 (36.6)	39 (15.0)	51 (19.6)	43 (16.5)
Division of labor among the employees	17 (6.5)	89 (34.2)	54 (20.8)	47 (18.1)	53 (20.4)
Rules of organizational posts	22 (8.4)	66 (25.1)	62 (23.6)	65 (24.7)	48 (18.2)

The amounts are as number (percent).

In addition, interviews were conducted among several groups of university campus staffers who, as a result of this interview, added 6 new variables to variables including 1. Working time, 2. Hourly leave rules, 3. Ventilation, 4. Water closets (WCs), 5. Division of labor between employees, and 6. The rules of the organizational posts, which were mentioned at the end of the questionnaire.

Results

300 staff of Kurdistan University of Medical Sciences were enrolled the study, from which 162 (54%) were women and 138 (46%) were men. Among the sample, 65 (21.7%) were single, 214 (71.3%) were married, and 21 (7%) did not express their status.

The mean age of participants was 38.92 years with a standard deviation of 8.8 years, the minimum age is 20 and the maximum age is 58 years. The average work experience of them was 13.75 years with a standard deviation of 9.00 years. The maximum working experience was 30 years, and the minimum was 1 year.

The level of education was classified into four groups. There were 37 participants (12.3%) with associate degree, 138 (46%) with undergraduate degree, 105 (35%) with postgraduate degree, and 15 (5%) with doctoral degree; 5 people did not express their education level.

Among the participants, 139 people (52.1%) agreed with the working hours and 83 (31.0%) disagreed. 153 people (58.4%) agreed with the hourly leave rules, and 69 people (26.3%) disagreed. Moreover, 151 (57.6%) were in favor of their own ventilation system, and 73 people (27.9%) expressed dissatisfaction. 127 people (48.9%) expressed satisfaction with the status of their WCs, and 94 (36.1%) expressed dissatisfaction. 106 people (40.7%) agreed to division of labor among the employees, and 100 (38.5%) disagreed. 88 people (33.5%) agreed with the rules of organizational posts, and 113 (42.9%) disagreed (Table 1).

The results of t-test for two independent samples showed a significant relationship between job satisfaction and gender; but there was no significant relationship between job stress and gender (Table 2).

Table 2. The relationship between job satisfaction and job stress levels based on gender among the studied population using independent samples t-test

Variable	Gender	Mean + SD	Magnitude of statistic	P
Job satisfaction	Women	87.98 ± 11.16	-2.022	0.043
	Men	90.52 ± 10.39		
Job stress	Women	92.55 ± 13.69	-0.220	0.089
	Men	92.97 ± 16.20		

SD: Standard deviation

Table 3. The comparison of the job satisfaction and stress levels based on marital status among the studied population using independent samples t-test

Variable		Average ± SD	Magnitude of statistic	P
Job satisfaction	Single	91.00 ± 12.50	1.283	0.201
	Married	89.00 ± 10.11		
Job stress	Single	95.98 ± 17.98	1.812	0.071
	Married	92.19 ± 13.41		

SD: Standard deviation

ANOVA test showed a significant relationship between job satisfaction and job stress with education level. Tukey's follow-up test showed that job stress in people with an undergraduate degree was different from that of two postgraduate and doctoral degrees (Magnitude of statistic = 8.075; P < 0.001), and had no difference with associate degree. There was no difference between postgraduate and doctoral degrees in terms of job stress. Job Satisfaction among those with associate degree significantly was less than three other levels (Magnitude of statistic = 6.692; P < 0.001).

The results of test for two independent samples showed no significant relationship between job satisfaction and stress with marital status (Table 3).

There was no significant relationship between the age and work experience with satisfaction and stress (Table 4).

There was a significant relationship between job satisfaction and stress (P < 0.001). This relationship was moderate and in the positive direction (Pearson coefficient = 0.404), that was, by changing the degree of satisfaction, the level of stress also changes in the same direction.

Among the sample, people with low and moderate job satisfaction (unhappy) were 95 (57.2%) women and 71 (42.8%) men; and among those who had job satisfaction, 67 persons (50.4%) were women and 66 (49.6%) were men.

Discussion

The purpose of this study was to investigate the factors affecting job stress and its relationship with job satisfaction among the staff in Kurdistan University of Medical Sciences. The results of the study showed that there was a significant relationship between job satisfaction and gender. Among those with a moderate and low job satisfaction, 95 people (57.2%) were women and 71 (42.8%) were men, which indicated that among the women, job satisfaction was lower than men. Hashemzadeh et al. findings showed that overall job stress was higher in women; and this could be the result of a conflict between job responsibilities and family responsibilities. Moreover, biological conditions, and social and cultural status could be effective in this case.[8]

Table 4. The relationship between job stress and job satisfaction with age and work experience

Variable		Job stress	Job satisfaction	Work experience	Age
Age	Coefficient	0.073	-0.030	0.835	
	Correlation				1
	Amount	0.212	0.604	0.000	
Work	Coefficient	0.029	-0.043		0.835
experience	Correlation			1	
	Amount	0.634	0.478		0.000
Job satisfaction	Coefficient	0.404		-0.043	-0.030
	Correlation		1		
	Amount	0.000		0.478	0.604
Job stress	Coefficient		0.404	0.029	0.073
	Correlation	1			
	Amount		0.000	0.634	0.212

Out of the 7 components of job stress (working hours, hourly leave regulations, ventilation, WCs status, division of labor between employees, and rules on organizational posts), the highest satisfaction was related to the rules of the time-out leave, and the subsequent ventilation. The lowest satisfaction was with organizational divisions (25%), indicating that the type of division of organizational posts was one of the factors affecting job stress, ultimately affecting job satisfaction. Moreover, the division of labor between employees was another factor affecting occupational stress. Bartram et al. in their research found a significant relationship between stress and job satisfaction among the nurses. They found that some aspects of job stress such as inadequacy, role incompatibility, and role ambiguity had negative relationship with job satisfaction; so that increasing the severity of these variables reduced job satisfaction.[9]

There was no significant relationship between age and work experience with satisfaction and stress. These findings are not consistent with the findings of Ebadi et al.[10] who surveyed job satisfaction among general practitioners that had office in Tehran City, Iran. The difference may be due to the fact that older general practitioners are more satisfied with their job, due to having a better job position, and relative higher welfare. In addition, it should be noted that our research targeted different occupational groups with different educational levels, while Ebadi et al.[10] focused on general practitioners. Therefore, it seems that the two factors of job differences and the level of education have led to mismatches of finding of the two researches.

In this study, there was not a significant relationship between job satisfaction and job stress with demographic characteristics, including marital status and age; but there was a significant relationship between the level of education with job satisfaction and job stress. In the studies by Hasanzadeh et al.[11] and Daniali et al.,[12] the finding about marital status were consistent with the present study.

Job stress was different among the people with postgraduate education and doctoral degrees compared to those with undergraduate and associate degrees; but, it was not different between the two undergraduate and associate degrees. Moreover, job satisfaction among the people with associate degree was less than the other three levels. However, in relation to the level of education, the findings of Hasanzadeh et al.[11] and Daniali et al.,[12] are in inconsistency with our research; the reason would be the difference between occupation and workplaces in these studies.

Conclusion

As noted, people with undergraduate degrees are more likely to be job stressed than postgraduate and doctorate degrees, and job satisfaction is lower among this group. It is better to think about the ways to improve the workplace conditions, and to enjoy working, and reduce the stressors, especially for undergraduate and lower levels degrees, which make up a large percentage of employees in this sector.

Conflict of Interests

Authors have no conflict of interests.

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Comparison of the prevalence of darkroom disease and related factors between radiotechnologists and nurses in selected hospitals of Guilan University of Medical Sciences, Iran, in year 2016

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Original Article

Abstract

BACKGROUND: Radiotechnologists are always in contact with chemicals during the process of confirmation and appearance of radiographs. This study evaluated the prevalence of darkroom disease among the radiotechnologists and nurses working in radiology centers of Guilan University of Medical Sciences, Iran.

METHODS: This cross-sectional study was conducted between two groups of radiotechnologists and nurses from selected hospitals of Guilan University of Medical Sciences, in year 2016, including 323 radiotechnologists (n = 140 people) and nurses (n = 183 people) working in educational therapy centers. The participants were selected through convenience sampling method. Total information on darkroom disease was collected using the standard Damases questionnaire, and analyzed using SPSS software at the significance level of $P < 0.050$.

RESULTS: The mean age of radiotechnologists was 34.01 ± 7.9, and the mean age of nurses was 32.33 ± 7.90 years. Symptoms of nausea (P = 0.001), runny nose (P = 0.001), oral ulcer (P = 0.020), burning mouth (P = 0.001), skin rash (P = 0.001), blurred vision (P = 0.002) night sweats (P = 0.001), chemical taste (P = 0.001), and dysuria (P = 0.001) were significantly more common in the radiotechnologists group. Regarding gender and symptoms of darkroom disease in each occupational group, nausea (P = 0.024) and runny nose (P = 0.001) among the radiotechnologists and chemical taste (P = 0.001) among the nurses, had significant relationship with being woman.

CONCLUSION: The prevalence of darkroom disease was high among the radiotechnologists in Guilan Province, Iran. Therefore, it is recommended to improve the quality of services provided, as well as to promote the health and safety of radiology personnel through preparing and implementing modern digital equipment in radiology departments.

KEYWORDS: Radiography, X-Ray Film, Allergy, Chemically-Induced Disorders, Diagnostic Uses of Chemicals

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Introduction

Chemicals have become part of human life, especially in the prevention, treatment, and control of diseases. If used improperly, they put human health at risk, and have irreversible effects on the environment.[1,2]

Continuous exposure to chemicals has side

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effects such as asthma, skin inflammation, and allergies.[3] More than 200 known agents may cause asthma.[4,5] The most noteworthy cases of discomfort and complaint among radiotechnologists occur as the result of working with the processing device, the vapor caused by image processing and radiography film processing in the darkroom.[5] The widespread use of chemicals in the processing of radiology images has raised professional concerns about the darkroom disease.[6-9] Darkroom disease has various types of allergic reactions (headache, itchy skin, shortness of breath, mouth ulcers, arrhythmias, painful joints, runny nose/adenoid, and nausea),[10,11] which is similar to the symptoms reported by miners in exposure to SO_2.[1] According to the American Society of Radiologic Technologists, the most common symptom is headache (among 39.4% of radiotechnologists).[6,12]

The chemicals used in the processing and forming steps are formaldehyde, sulfur dioxide and glutaraldehyde, hydroquinone, sodium sulfite, ammonium chloride, and silver compounds.[13,14] According to studies, very little inhalation of the vapor from glutaraldehyde causes possible respiratory problems.[13] In addition, hydroquinone and toxic vapors of SO_2 from the processor device are harmful to the health of the workers.[15-17]

In order to replace the processing and forming drug, to examine their qualitative status, to place the film in the processor device, and also to clean the internal components of the processor, radiotechnologists are forced to have direct contact with image processing and forming substance. At the same time, inhalation of chemical vapors, direct contact with processing and forming drug, and visual observation can cause various allergic diseases. In this regard, principles and rules have been adopted in several countries (including Zimbabwe and the United States) for people exposed to chemical agents.[18]

The symptoms mentioned in the study of Spicer et al., due to the lack of a control group, cannot be specific to those involved in the radiology department. However, Nallon et al. used the physiotherapists as the control group, and examined the prevalence of darkroom disease.[10,19] In the study of Al Zabadi and Nazzal, the symptoms reported in radiotechnologists were significantly higher than nurses (control group).[20] The study of Jalalvandi et al. in Kermanshah, Iran, showed a significant relationship between the darkroom disease and radiotechnologists.[11]

Radiology, as the first choice in diagnostic procedures, plays a very important role in patients' health. In addition, the workers' health will increase productivity and efficiency. The study of Al Zabadi and Nazzal in another country's cultural context,[20] as well as the study of Jalalvandi et al. in Iran,[11] using a researcher-made tool, investigated this important disease. However, its examination with standard and trusted instruments can identify all aspects of darkroom disease in radiotechnologists, and improve the safety and security of the radiology department staff.

Considering the small number of studies conducted in this regard in Iran, and the lack of documented information in Guilan province, the prevalence of this disease and its related factors, the present study was conducted to determine the prevalence of darkroom disease among the radiotechnologists working in hospitals affiliated to Guilan University of Medical Sciences.

Materials and Methods

In this cross-sectional study, 323 participants (140 radiotechnologists and 183 nurses) in educational hospitals of Guilan University of Medical Sciences in 2016, were enrolled using convenience sampling method. In a preliminary study on 30 people of target groups, the proportion of the symptoms of darkroom disease was 50% and 70% for nurses and radiotechnologists, respectively, and the

difference between them was 20%. With assumptions (α = 0.05, β-1 = 0.9, P1-P2 = 0.02, and 95% of confidence interval), the steps were loaded into the PASS sampling software (NCSS, LLC, East Kaysville, UT, USA) and were evaluated (Power = 0.9003, N1 = 110, N2 = 143). Considering 20% sample dropping, 140 people were calculated for radiotechnologists group and 183 people for the nursing group.

One of the criteria for selecting hospitals was an active darkroom in the radiology departments of the hospital. Nurses, who did not have a history of working with chemicals used for radiographic processing and forming, were selected. Hospitals were selected at two levels of provincial capital and cities, in order to measure the performance of the devices and the amount of X-ray request (workload). Having at least an academic degree in radiology technology or nursing, and willingness to complete the questionnaire were the criteria for entering the study.

The used data gathering tool was Damases standard questionnaire,[21] whose validity and reliability is desirable, and has been used in various studies in Iran and other countries in regard with darkroom disease.[11,12,20-22] This questionnaire consists of 50 questions and includes 3 sections: 1. Demographic characteristics (age, height, level of education, place of residence, and work experience); 2. Information related to the history of allergy and respiratory diseases; and 3. Symptoms of diseases similar to darkroom disease (such as headache, allergies, asthma, skin inflammation, burning eyes, and throat irritation) during the shift work. The method of scoring in this questionnaire is based on the Likert and Gutman scaling. Considering the fact that this tool was designed to investigate the darkroom disease, after getting the permission to use it, the steps of the study were evaluated in a preliminary study with 30 people of the target group in order to assess the reliability of the questionnaire. The internal consistency of the items were calculated to determine the reliability of the history of allergic diseases with Cronbach's alpha of 0.84 and 0.86 for the area related to the symptoms of darkroom disease. The coefficient alpha of the tool was also evaluated, and was still at the optimal level of 0.84.

In order to maintain ethics in the research, the anonymity of the questionnaires, and the voluntary participation of the research units were among the cases considered as ethical principles; and the participants were assured that the data collected to conduct the scientific article was only available to researchers, and they could withdraw from the partnership at any time.

After data collection, data was entered into SPSS software (version 19, SPSS Inc., Chicago, IL, USA). In order to analyze the data, the Kolmogorov-Smirnov test was used to examine the normal distribution of variables. Descriptive and analytical statistics such as chi-square test in agreement tables, independent t, and Pearson tests were also used. The significance level in all tests was considered as lower than 0.05.

Results

The mean age of radiotechnologists and nurses was 34.01 ± 7.9 and 32.33 ± 7.90 years, respectively; which was statistically different between the groups (P = 0.104). 31.58% of the samples were single, and the rest were married. More than 82% of radiotechnologists and 92% nurses had bachelor's degree. More than 94% of the samples were resident of the city. 95% of radiotechnologists stated that they prepared more than 15 X-ray images in one work shift, and also spent over 90 minutes (47.9%) of their work shift in the darkroom and in the vicinity of the processor device (Table 1).

The prevalence of the symptoms of nausea (P = 0.001), runny nose (P = 0.001), oral ulcers (P = 0.020), oral burns (P = 0.001), skin rash (P = 0.001), blurry vision (P = 0.002), night

Table 1. Demographic information of the two studied groups of nurses and radiotechnologists

Demographic information		Radiotechnologists (n = 140)	Nurses (n = 183)	P
Gender	Men	47 (33.6)	11 (6.0)	< 0.001
	Women	93 (66.4)	171 (94.0)	
Marital status	Single	52 (37.1)	50 (28.4)	0.099
	Married	88 (62.9)	126 (71.6)	
Education	Associate Degree	20 (14.3)	4 (2.2)	< 0.001
	Bachelor's degree	116 (82.9)	165 (92.2)	
	Master's degree	4 (2.9)	10 (5.6)	
Smoking		7 (5.0)	1 (0.5)	< 0.001
Second job		14 (10.0)	17 (9.3)	0.280
Interested in changing the job		17 (12.3)	21 (11.7)	0.874
Living in the factory environment		0 (0)	11 (6.0)	0.668
Place of residence	City	131 (93.6)	171 (95.0)	0.584
	Village	9 (6.4)	9 (5.0)	
Time spent in darkroom per work shift	1-30 minutes	53 (37.9)	-	-
	31-60 minutes	12 (8.6)		
	61-90 minutes	8 (5.7)		
	> 90 minutes	67 (47.9)		

The amounts are as number (percent).

sweats (P = 0.001), chemical taste, (P = 0.001) and dysuria (P = 0.001) was statistically significant between the two groups of nurses and radiotechnologists, and these symptoms were observed more in radiotechnologists group. Unexplained fatigue (P = 0.001) was observed in nurses, while no case reported it in radiotechnologists (Table 2). In studying the gender and symptoms of darkroom disease in each occupational group, nausea (P = 0.024) and runny nose (P = 0.001) in radiotechnologists, and chemical taste (P = 0.001) in nurses had significant relationship.

Table 2. An overview of information related to darkroom disease among the two groups of nurses and radiotechnologists

Symptom	Radiotechnologists (n = 140)		Nurses (n = 183)		P (between the groups)
	n (%)	P (with gender)	n (%)	P (with gender)	
Headache	71 (50.71)	0.261	108 (59.1)	0.111	0.137
Nausea	34 (24.28)	0.024	17 (9.29)	0.275	0.001
Runny nose	54 (38.57)	0.001	23 (12.57)	0.571	0.001
Pharyngitis	40 (28.57)	0.071	36 (19.67)	0.522	0.062
Unexplained fatigue	0 (0)	0.440	2 (1.10)	0.865	0.001
Tinnitus	28 (20.00)	0.790	23 (12.57)	0.571	0.070
Mouth ulcers	19 (13.57)	0.748	6 (1.10)	0.530	0.001
Abnormal heart rate	52 (37.14)	0.593	62 (33.88)	0.994	0.842
Unusual anesthesia	43 (30.71)	0.828	44 (24.04)	0.806	0.181
Skin rash	18 (12.85)	0.299	4 (2.20)	0.109	0.001
Stomachache	23 (16.43)	0.274	23 (12.57)	0.571	0.325
Blurry vision	26 (18.57)	0.212	13 (7.10)	0.345	0.002
Dizziness	46 (32.85)	0.586	47 (25.68)	0.193	0.158
Sneeze	33 (23.57)	0.221	30 (16.4)	0.876	0.107
Night sweats	24 (17.14)	0.979	8 (4.37)	0.466	0.001
Chemical taste	19 (13.57)	0.475	4 (2.20)	0.001	0.001
Dysuria	17 (12.14)	0.353	5 (2.73)	0.567	0.001

Discussion

Occupational diseases and providing prevention protocols has been among the important issues of increasing productivity and improving the quality of services in recent decades. The aim of this study was to investigate the prevalence of darkroom disease among radiotechnologists (target group) and nurses (control group) working in Guilan health centers. Symptoms of nausea, runny nose, mouth ulcers, tongue ulcers, skin rash, blurry vision, night sweats, chemical taste, and dysuria were more common in radiotechnologists than nurses, and a significant difference was reported between the two groups. In contrast, unexplained fatigue was observed more in nurses and a meaningful difference was observed. The results of this study could be due to the proximity and exposure to high concentrations of chemicals in the darkroom.[11] 47.9% of radiotechnologists spend more than 90 minutes per shift in darkroom. This statistic is important; because it will be repeated in subsequent shifts on the same day. Excessive radiography in each work shift for each person is due to the lack of adequate staff allocation to the radiology departments, and the administration of unnecessary radiographies.

The study showed that regarding the prevalence of darkroom diseases in radiotechnologists, headache, abnormal heart rate, runny nose, unusual anesthesia, pharyngitis, and dizziness were more than other symptoms. In the study of Jalalvandi et al.,[11] headache, joint pain, unexplained fatigue, and burning eyes were the most frequent symptoms; whereas no case of unexplained fatigue was reported in the present study. In Majonga et al. study,[23] chemical taste was the most frequent, which did not match with the results of the present study.

In this study, there was no significant relationship between the work history of the research units and the darkroom complications, indicating that it was not effective. In addition, Jazayeri Gharebagh and Abaszadeh Ghanavati reported that shallow breathing in men (P = 0.045) and the whole group (P = 0.013), and nausea (P = 0.049) in the radiology group was significantly different from the control group. There was also the possibility of the relationship between the presence of skin inflammation and the history of this disease.[22] Murty and Rao stated that symptoms such as headache and skin irritation were observed in radiotechnologists when working with the processor device.[24]

In a comparative study between the radiotechnologists and physiotherapists in India, Tarlo et al. reported the darkroom disease symptoms in 7.8% (1483) of radiotechnologists and 1.8% (1545) of physiotherapists. In their research, in both occupations, the relationship between the psychosocial responses and the darkroom disease was observed. In addition, that darkroom disease had a significant relationship with the duration of proximity to chemical agents in the processor devise (P = 0.001).[25]

Moreover, in a cross-sectional study in Palestine using purposeful and non-random sampling on 330 men radiotechnologists (study group) and 242 men nurses (control group), Al Zabadi and Nazzal stated that the symptoms were more prevalent in radiotechnologists compared to nurses (P < 0.001). Furthermore, based on the reported linear regression, staying more than thirty minutes in the darkroom in each shift had a significant effect on mean reported symptoms (P < 0.001). Moreover, the presence of ventilation in darkroom had a strong negative correlation with mean reported symptoms (P < 0.001).[20]

Previous studies indicate that there is a relationship between unexplained fatigue and darkroom disease,[11,20,23] which was not found in this study. In addition, the lack of significance of gender differences in the nurse

group was due to the low number of men in the nurse group.

One of the important findings in this study was abnormal heartbeat, which was more than 33% in both groups. Nevertheless, nurses and radiotechnologists often have to be employed in two or more hospitals, or even have other jobs due to the low salaries and benefits that are actually implemented in the health system, and the lack of labor rights and standards. Therefore, they do not observe the maximum working hours, and use drugs such as caffeine, ephedrine, or other performance-enhancing drugs, and are exposed to stress and severe occupational anxiety, all of which are the causes and factors that increase the risk of abnormal heartbeat.[17,26,27] Moreover, the effect of X-ray on the thyroid gland and unbalance in the basic conditions of the thyroid mechanism can be a major risk factor for this complication.[28-30]

Sulfur dioxide, a secondary product of the film-forming process, can lead to unpleasant metallic taste [a type of taste deficiency (dysgeusia)], and bad breath that requires special monitoring.[11,16] In nurses, this may be due to low quality food in healthcare facilities due to longer shifts, insomnia, and vitamin D deficiency due to working in closed environments and environmental chemicals (including benzene, hydrazine, gasoline, lacquers, chromate, and cobalt) that should be inhaled for a long period.[31-34]

According to the results of a study by Jazayeri Gharebagh and Abaszadeh Ghanavati, the prevalence of darkroom disease was reported to be more in morning shift.[22] This may be due to the replacement of medications in the morning before the department opens in the morning or at night. The factors that increase the prevalence darkroom disease in morning shift include more severe vapors of the new drug, more damaging smell of the drug in the morning, the accumulation of chemical vapors around the device due to the shutting down of the darkroom ventilation system at night, and not opening the door of the darkroom during the night.

In most countries of the world, as well as in the densely populated centers of Iran, the use of digital devices, such as cassette reader and printers has replaced the old darkroom system, and the introduction of computed and digital radiography devices have somehow controlled the syndrome of darkroom disease; but these effects are still observed in many radiotechnologists in Guilan province and in different countries.

Darkroom disease, along with occupational musculoskeletal disorders,[35] and the effects of ionizing on the body and next generations,[36] are occupational hazards among the radiotechnologists. Issues such as unhealthy competition in the work environment, higher wages for more work, and the inappropriate nature of certain occupational standards and environmental conditions may increase the chance of darkroom disease. In this case, reducing job inconvenience, modifying the environment, and supplying modern equipment can increase the quality of services and the status of personnel health. Obviously, lack of timely modifications would be harmful for people health in due time.[37-39]

Conclusion

Darkroom disease is of occupational hazards among the radiotechnologists. In order to provide a safe working environment, provide quality service to patients, and update imaging and film-forming processes in accordance with new standards and achievements in the world, more appropriate policies should be adopted by the health organization of Iran.

Conflict of Interests

Authors have no conflict of interests.

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Reasons of cigarette smoking among the girl students in Kurdistan University of Medical Sciences, Iran

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Original Article

Abstract

BACKGROUND: Smoking has been a public health problem in the world. In fact, it has been mentioned as a preventable factor of death and diseases. So, the goal of doing this research was to determine the frequency of smoking tendency and its correlate factors among the girl students in Kurdistan University of Medical Sciences, Iran.

METHODS: This was a descriptive cross-sectional study using simple random sampling method. Data collection instruments were confirmed questionnaires. The statistical population included all the girl students in Kurdistan University of Medical Sciences. The data were analyzed using SPSS software.

RESULTS: The prevalence of smoking cigarette among the girl students in Kurdistan University of Medical Sciences was 1.8%, as well as 2.2% for hookah consumption. Considering the relationship between smoking and residence situation, 22.1% of native students and 24.8% of alien students had experienced smoking.

CONCLUSION: Results of this study showed a low prevalence of smoking (1.8%) among the girl students in Kurdistan University of Medical Sciences.

KEYWORDS: Girl, Cigarette, Smoking, University

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Introduction

Today, in spite of massive advertising for its abnormalities, the world has been accepted the use of cigarette as a compulsory reality, and profits are high and many taxes are derived from it.[1,2] Smoking is a worldwide public health problem, and is considered as a prevalent cause of death and illness, which is important for many reasons. According to the World Health Organization (WHO), one billion people worldwide smoke, and smoke 60 trillion cigarettes annually.[3] Smoking is one of the most important causes of cardiovascular, respiratory, cancer, and other diseases, the cause of 20% of deaths from cardiovascular diseases, and 30% of deaths from cancer. This amount is 85% for lung cancer. Smoking cigarette causes 20% of prevalent deaths in developed countries.[4]

A lot of studies have been done about the tendency of young people to cigarette in different societies. Students have reported a friendly relationship, time and life expectancy, life problems, social acceptability, low level of parental education, desire for personality, smoking during depression, lack of emotional needs, academic failure, unemployment, environmental factors, and

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peripheral stress as the main causes of cigarette tendency.[3,5,6] Rahmanian et al. study indicates that, friend's most likely offer smoke for the first time.[7] In the study of Gorji et al., it is noted that unemployment variables influence smoking rates. Divorce alone is not a factor in cigarette smoking, but according to them, it is likely to use it in the families of divorced households; which makes it necessary to pay attention to the strength of the family, and the education of the divorced children, and further studies in this category.[2]

In the study of Shoja et al., the most important reasons for smoking tendency were smoker friends (33%), being interested in smoking (27%), having recreation (24%), being unemployed (12%), and being away from the family (4%).[1] In Tavakolizadeh et al. study, the high risk of smoking among the girls with lower self-esteem was higher than that of boys. The incidence of smoking in these girls was 2.8 times higher than that of girls who had higher self-esteem.[8]

Providing healthy and exciting facilities and amenities such as ease of access to computer and internet services, well-equipped libraries, and useful tours can be a step forward in providing appropriate and practical measures for interventions to prevent the use of tobacco in young people.[9] It seems that smoking cigarette has increased among different groups of the population, including students, and threatens the health of young people as a cultural and social harm.

So far, many studies have been done to investigate the causes and factors in students, but so far, such study has not been carried out in Sanandaj City, Iran. Today, researchers are seeking to understand the motivation and causes of smoking among young people, so that they can take steps to provide appropriate and scientific solutions on the necessary interventions for prevention, treatment, and quitting smoking. The present study aimed to determine the prevalence of smoking among girl students in Kurdistan University of Medical Sciences, Iran, in year 2015.

Materials and Methods

This study was a descriptive cross-sectional study. The population was girl students in Kurdistan University of Medical Sciences. The sample size was 278 and the data were collected using a questionnaire.

Data collection instrument was a questionnaire made and confirmed by the researchers. The voluntary girls completed it during their free times. The questionnaire was designed using the previous researches on smoking and hookah among the students,[3] and also using the opinions and ideas of experts and professors. The validity and reliability of the questionnaire was performed before the implementation of the project. For this purpose, the questionnaire was first performed by 20 relevant faculty members, and the researchers reviewed and reviewed it to finalize it. Then, the questionnaire was completed before and after the completion by 60 students.[3] The final questionnaire comprised three parts related to demographic variables, general topics, and the type of substance used (cigarette or hookah). In the demographic section, factors such as sex, age, year of entering university, marital status, residence status, and religious beliefs were considered. In general thread, history of opiate use in the family, cause of opiate use, and the reason for not to use of opiate were mentioned. In the third part, the data on consumption, and substance use were reported.

After obtaining the student's satisfaction and completing the questionnaire by themselves, they were asked to not mention their name and personal details.

Data analysis was performed using frequently distribution and regression analysis via SPSS software (version 16, SPSS Inc., Chicago, IL, USA).

Results

In this study, 278 girl students in Kurdistan University of Medical Sciences with the age

range of 18 to 34 years were considered. 63 participants (22.7%) were 20 years old, and they had the highest number among the samples.

The prevalence of factors effecting smoking among the studied students are listed in table 1.

Table 1. The prevalence of the factors affecting smoking among the girl students in Kurdistan University of Medical Sciences, Iran

Factor	Do not have	Have
Health concern	183 (65.8)	95 (34.2)
Fear of rejection	269 (96.8)	9 (3.2)
Parent force	268 (96.4)	10 (6.3)
Financial restriction	272 (97.8)	6 (2.2)
Sickness	176 (63.3)	100 (36.7)
Concern and worry	276 (99.3)	2 (0.7)
Concern and force	276 (99.3)	2 (0.7)
Concern and sickness	277 (97.8)	6 (2.2)
Concern and never think about it	277 (99.6)	1 (0.4)
Concern and do not think about it	277 (99.6)	1 (0.4)
Concern and fear and do not think about it	277 (99.6)	1 (0.4)
Concern and force and sickness	277 (99.6)	1 (0.4)

The amounts are as number (percent).

All undergraduate courses students were covered in this study, as well as medical and dentistry students as the main contributors to the study. Table 2 shows the distribution of smoking by students in terms of field of study. This prevalence was not significantly difference based on the field of study (P = 0.210). Medical (14.7%), health professional (14%), and dentistry (8.6%) students including 39% had the highest proportions among the studied students, respectively.

In the present study, smoking rate was 1.8% and hookah was 2.2% among the total population of statistical society.

The sample consisted of 260 single students; and 18 (6.5%) were married (Table 3).

149 (53.6%) students were native students and 129 (46.4%) of them were non-native (Table 4).

Table 2. The distribution of smoking by students in terms of field of study among the girl students in Kurdistan University of Medical Sciences, Iran

Field	Smoke	Do not smoke	Total
Nursing	4 (20.0)	16 (80.0)	20 (7.2)
Medical science	5 (12.2)	36 (78.8)	41 (14.7)
Dentistry	6 (25.0)	18 (75.0)	24 (8.6)
Radiology	9 (45.0)	11 (55.0)	20 (7.2)
Radiotherapy	7 (35.0)	13 (65.0)	20 (7.2)
Anesthetics	2 (10.0)	18 (90.0)	20 (7.2)
Midwifery	5 (25.0)	15 (75.0)	20 (7.2)
Laboratory sciences	4 (20.0)	16 (80.0)	20 (7.2)
Environmental health	8 (34.8)	15 (65.2)	23 (8.3)
General hygiene	5 (25.0)	15 (75.0)	20 (7.2)
Health professional	7 (17.9)	32 (82.1)	39 (14.0)
MSc	3 (27.3)	8 (72.7)	11 (4.0)
Total	65 (23.4)	213 (76.6)	278 (100.0)

The amounts are as number (percent).
χ^2 = 14.3; P = 0.210

In terms of residence location, 152 (54.7%) lived in dormitories, 9 (3.2%) in private homes, and 117 (42.1%) in family homes (Table 5).

Table 3. The distribution of smoking by students in terms of marriage status among the girl students in Kurdistan University of Medical Sciences, Iran

Married status	Smoke	Do not smoke	Total
Single	59 (22.7)	201 (77.3)	260 (93.5)
Married	6 (33.3)	12 (66.7)	18 (6.5)
Total	65 (23.4)	213 (100)	278 (100)

The amounts are as number (percent).
χ^2 = 1.06; P = 0.302

From self-confidence point of view of, 108 students (38.8%) reported their confidence as strong, 154 (55.4%) as moderate and, 16 students (5.8%) believed that their self-esteem was weak.

Table 4. The distribution of smoking by students in terms of nativity among the girl students in Kurdistan University of Medical Sciences, Iran

Nativity	Smoke	Do not smoke	Total
Native	33 (22.1)	116 (77.9)	149 (53.6)
Non-native	32 (24.8)	97 (75.2)	129 (46.4)
Total	65 (23.4)	213 (76.6)	378 (100)

The amounts are as number (percent).
χ^2 =0.273; P = 0.601

Table 5. The distribution of smoking by students in terms of residence location among the girl students in Kurdistan University of Medical Sciences, Iran

Residence location	Smoke	Do not smoke	Total
Dormitory	30 (19.7)	122 (80.3)	152 (54.7)
Student Home	4 (44.4)	5 (55.6)	9 (3.2)
Family Home	31 (26.5)	86 (73.5)	117 (42.1)
Total	65 (23.4)	213 (76.6)	278 (100)

The amounts are as number (percent).
$\chi^2 = 3.98$; P = 0.136

25.2% of students who had a good self-confidence and 6.6% of students with low self-esteem smoked.

121 (43.5%) of the students believed that their religious beliefs was good, 139 (50.0%) were moderate, and 18 (6.5%) had poor religious beliefs.

In terms of family income, 69 students expressed their income was nearly 1 million Iranian Rials (IRR), 55 (19.8%) 1.5 million IRR, and other students reported that their income was in the range of 1.5 to 3 million IRR.

In terms of satisfaction with the field of study, 25.0% of the studied girl students had a good degree of satisfaction with their field of study, and only 6.7% were announced.

From the point of view of the job market hopes, 107 students (38.5%) were well expressed the job market, and only in 8.2%, the job market had weakened their expectations (Table 6).

Table 6. The distribution of smoking by students in terms of market job hopes among the girl students in Kurdistan University of Medical Sciences, Iran

Job market hopes	Smoke	Do not smoke	Total
Weak	6 (25.0)	18 (75.0)	24 (8.6)
Average	18 (24.7)	55 (75.3)	73 (26.4)
Good	26 (24.3)	81 (75.7)	107 (38.6)
Excellent	14 (19.2)	59 (80.8)	73 (26.4)
Total	64 (23.1)	213 (76.6)	277 (100)

The amounts are as number (percent).
$\chi^2 = 0.86$; P = 0.830

95.7%5 of students had a negative attitude toward cigarette smoking. Two-thirds of the students expressed concern about the lack of cigarette smoking (Table 7).

Table 7. The distribution of smoking by students in terms of attitudes toward stroke among the girl students in Kurdistan University of Medical Sciences, Iran

Attitude towards smoking	Smoke	Do not smoke	Total
Positive	4 (44.4)	5 (55.6)	9 (3.3)
Negative	59 (22.2)	207 (77.8)	266 (96.7)
Total	63 (22.9)	212 (77.1)	275 (100)

The amounts are as number (percent).
$\chi^2 = 2.44$; P = 0.118

Among the studied students, 15.5% had a history of cigarette smoking, and 5.8% had a history of hookah smoking. 57.9% had not experienced any of them, and 20.09% had experienced both.

Discussion

The present study suggests that the rate of smoking cigarette among of Kurdistan University of Medical Sciences girl students was 1.8% and hookah was 2.2%. In the study of Khani mogaddam et al., among students in the Tehran University of Medical Sciences, Iran, the frequency of hookah and cigarette smoking was 22.0% and 23.3%, respectively.[3] In the present study, however, satisfaction of curiosity was the most important factor for smoking.

In our study, the factors influencing smoking, were social and psychological factors such as smoker friends and peer pressure. In Ansari et al. research, the most important causes of cigarette smoking were the feeling of pleasure in pulling it, as well as reducing the anxiety by cigarette.[5]

In the present study, 77.1% of students had a negative attitude toward smoking. In study by Sayyed Fazelpour et al., 86.9% of students had a proper attitude (anti-smoking), believed in their complications and symptoms.[10]

In Taraghijah et al. study, the rate of cigarette

and hookah smoking was 30.8% and 40.3%, respectively;[11] while the current study estimated the rate of cigarette smoking as 1.8%, and of hookah smoking as 2.2%. Moreover, they found that a positive attitude toward smoking increased the chance of smoking.[11]

Conclusion

Findings of this study suggest that smoking cigarette and hookah are at a low prevalence in Kurdistan University of Medical Sciences. As satisfying curiosity is an important factor in smoking among the people who have had a history of smoking, by increasing their skills and insight, and promoting their knowledge about the disadvantages of smoking cigarette and hookah, we can minimize the prevalence of smoking.

Conflict of Interests

Authors have no conflict of interests.

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The relationship between the manners of parenting by parents and the extent of anxiety among the students

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Original Article

Abstract

BACKGROUND: Mental health among the children and adolescents is an essential part of public welfare and health. The transfer of values and culture, and children health are made via training. According to conducted studies, training style of parents is an important factor to predict the health problems among the children. Baumrind has conducted extensive researches on the manner of parenting. He recognized three manners of parenting, authoritative, authoritarian, and permissive. These are different from each other in terms of control, and being hot. The aim of this research was to study the relationship of parenting manners of parent and the extent of anxiety among the students.

METHODS: This was a correlation type research in which the relationship between the variables was obtained. Statistical population included boy students of the junior high schools in Ilam City, Iran. The sample was selected based on Morgan table, and included 100 students. They were randomly selected in a multistep process. We selected two schools among junior high schools in Ilam City using random sampling. Then, we selected second-grade class in every school.

RESULTS: There was a positive and significant relationship between parenting manners (authoritative, authoritarian, and permissive manners) with anxious thoughts among the students ($P < 0.010$). In addition, there was a positive and significant relationship between permissive parenting manner and anxious thoughts among the students ($P < 0.050$). Independent variable explained 20% of changes in the dependent variable of anxious thoughts.

CONCLUSION: The parenting manner influenced students, anxious thoughts at a significant level.

KEYWORDS: Parenting, Mental Health, Anxiety, Students

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Introduction

The relationship between the parents and children is one of the important issues that has attracted the attention of education professionals for many years. The family is the first to provide a relationship between the child and the environment. In the family, the child learns the initial attitudes about the world, grows physically and mentally, learns ways to speak, learns the basic norms of behavior and finally its attitudes, morals, and spirits form, and become social. Child and adolescent mental health is an essential part of general health and prosperity. Children's health and values and culture transfer through education.[1] According to studies, parenting education is a significant predictor of children health. Some of the parents' factors that affect the development of children include warmth, ad acceptance, and behavioral control of

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children. A high level of warmth and acceptance are the characteristics of parents who are interested in the child, and are responsible. The high level of behavioral control is the characteristics of expectant parents, and the dictator ones.[2,3]

One of the approaches to how parents and children are influenced is parenting style. Parenting styles are of the parents' characteristics that affect parents' efforts to socialize children by modifying certain acts that parents do, and changing children's experience in the process of socialization.[4] The evolutionary theory of anxiety expresses that the adoption of children by parents, their type of control, and their behaviors are related to the symptoms of anxiety in children.[5] Baumrind has done extensive research in the field of parenting, and has shown that parents' parenting has two dimensions of warmth and control. Based on his research, Baumrind has identified three different types of parenting including authoritative, authoritarian, and permissive that are different in dimensions of warmth and control.[1-3,6] Permissive parents have a high level of warmth and low behavioral control. These parents allow children to behave according to their wishes, and with the least discipline. Authoritative parents have the lowest warmth and acceptance, and high levels of behavioral control. These parents are very strict, and stick to their own limits, instead of the rules. Authoritarian parents have high levels of warmth and behavioral control. Initial research in this area was undertaken by Baumrind and other researchers have expanded research in this field, and in their research pointed to a number of negative and positive outcomes of parents' parenting with children and adolescents.[7-9]

Authoritarian parenting style is in relation to a number of negative outcomes such as low flexibility, low self-esteem, decreased happiness, low achievement motivation, increased drug abuse, and lack of appropriate coping strategies and increased anxiety. In contrast, the permissive parenting style leads to positive outcomes compared to authoritarian parenting. However, in permissive parenting style low self-control, low responsibility, low flexibility, and low educational levels in children and adolescents has been reported.[1-3] Similar results were obtained in Boyes and Allen,[4] Farzigolfazani et al.,[8] Rapee,[10] Seyfi Gandomani et al.[11] and Wolfradt et al.[12] researches.

The aim of this research was to assess the relationship between parenting styles and students' anxiety, since the symptoms of anxiety thoughts in people have an important effect on life satisfaction and individual adaptations to the environment. On the other hand, different types of parenting practices and educational methods, and responding to the demands of adolescents play an essential role in achieving positive and negative outcomes for adolescents. In this research, the role of parenting styles in the development of symptoms, behaviors, and anxiety thoughts in students was investigated.

Materials and Methods

The present research was a correlational survey, according to which the relationship between research variables was obtained. The statistical population of the study was boy students in Ilam City, Iran. Based on Morgan's table, 100 students were randomly selected in a multi-stage sampling; and the satisfaction of all of them was gained. Two schools were selected in Ilam City using random sampling method, then from each school, the grade 2 was selected.

The parenting style questionnaire, designed by Baumrind in 1972, consists of 30 sentences, of which 10 are authentically, 10 are elaborate, and 10 are eloquently related. By adding the scores of phrases related to each method, a score of 0 to 40 is obtained for each parenting method.

Table 1. Kolmogorov-Smirnov test for the components of parenting and anxiety thoughts

Components	M	Standard deviation	Z	P
Permissive	30.230	5.624	1.934	0.001
Authoritarian	31.520	5.828	2.145	< 0.001
Authoritative	29.240	5.128	1.513	0.020
Parenting practices	90.990	16.040	1.718	0.005
Anxious thoughts	40.490	9.433	1.664	0.008

In other words, each parent has three separate scores in this questionnaire. The Welsh Anxiety Thinking Questionnaire is a multidimensional tool for evaluating worrying which measures social worries about health concerns and fears. It has 22 items, each with a quadratic "almost never", "sometimes", "often", and "almost always" answerable. The internal reliability of the subscales of the Persian form for the three subscales of social worries, health concerns, and phrases were 85.0, 83.0, and 77.0, respectively, and the test-retest reliability of the test was equal to 75.0, 81.0, and77.0 using non-existent, descriptive, and authoritative methods, respectively.

Results

According to table 1, the mean level of students' anxiety thoughts (40.490) indicate that studied students had a low level of anxiety thoughts. Therefore, the assumption H0 would be rejected, and the H1 assumption, which indicates that the data is not normal, would be verified. Thus, we can say that the data were abnormal.

The relationship between the parenting styles and students' anxiety thoughts was significant (P < 0.010). The relationship was positive and meaningful. Moreover, there was a positive and significant relationship between parenting style of permissive and anxiety thoughts among the students (P < 0.050) (Table 2).

Table 2. The relationship between parenting styles and students' anxiety thoughts

Variable	R	P
Permissive	199	0.047
Authoritarian	260	0.009
Authoritative	314	0.001
Parenting practices	266	0.007

Based on coefficient (Beta), it can be said that the variables of parenting practices had a significant effect on students' anxiety thoughts (P < 0.050) (Table 3).

Table 3. The effect of parenting styles on anxiety thoughts

Variable	B	Beta	T	P	F	R
Constant factor	76.363		10.977	< 0.001	4.454	208
Anxious Thoughts	353.000	0.208	2.110	0.037		

Discussion

Baumrind has identified three authoritative, authoritarian, permissive parenting styles that are different in terms of warmth and control.[1] Among parenting styles, the authoritative parenting style is associated with happiness, low neuroticism, high self-esteem, independence, high academic levels, dare and high ethical reasoning, and some other positive outcomes.[2,3,13,14]

In this study, there was a positive and significant relationship between the parenting styles and students' anxiety though, and between the permissive parenting style and the anxious thoughts among the students. These are similar to Seyfi Gandomani et al. study,[11] which reported low depression and anxiety in relation to having authoritarian parents.

Conclusion

Child and adolescent mental health is an essential part of health and well-being. Transfer of values and children's culture and health is done through education. According to studies, parent's education style is a significant predictor of children health.

Conflict of Interests

Authors have no conflict of interests.

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- Those who were unable to reach us ...
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- They are romantically burned to warm ourselves and enlighten our way ...

Our dads
Our mothers
Our professors.

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Fauna and the distribution of Phlebotominae sand flies (Diptera: Psychodidae) in Sanandaj County, Kurdistan Province, west of Iran, 2017

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Original Article

Abstract

BACKGROUND: Phlebotominae sand flies, belonging to Psychodidae family, are very important because some species of them are biological vector of cutaneous and visceral leishmaniasis in Iran. An investigation was carried out in Sanandaj County, west of Iran, to evaluate the fauna, sex ratio, and species combination.

METHODS: The samples collected using sticky traps from indoors and outdoors of 5 villages in year 2017. The traps were fixed before sunset, and collected at sunrise in the morning of the next day. The collected sand flies preserved in 70% ethanol and mounted, using Puri's medium, and identified using the keys of Iranian sand flies.

RESULTS: Totally, 907 sand flies comprising Phlebotomus genus (58%) and Sergentomyia genus (42%) were captured. The collected sand flies consisted of: Phlebotomus papatasi, Phlebotomus perfilliwei, Phlebotomus major, Phlebotomus kandellakii, Phlebotomus sergenti, Sergentomyia sintoni, Sergentomyia dentata, Sergentomyia antennata, and Sergentomyia theodori. Phlebotomus papatasi, Sergentomyia dentata and Sergentomyia sintoni were predominant species, respectively.

CONCLUSION: The high abundance of sand flies especially Phlebotomus papatasi can lead to incidence and prevalence of leishmaniasis disease in this region. So, the complementary studies especially, polymerase chain reaction (PCR) studies are suggested to evaluate the infection rate of Leishmania parasite in sand flies and rodents.

KEYWORDS: Animals, Sand Fly, Leishmaniasis, Population Density, Iran

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Introduction

Leishmaniasis is still one of the most important diseases that affect the poorest people in the world, especially in developing countries. The disease can be chronic. It is estimated that 350 million people are at risk and about 2 million new cases are affected every year; of which, about 1.5 million are cutaneous, and the rest are visceral.[1,2]

The disease is caused by protozoa of the genus Leishmaniasis, and is one of the 10 major diseases in the World Health Organization (WHO) context.[3] Leishmaniasis is transmitted to humans by some species of

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female sand flies, and are present in four continents except Australia. The disease is currently occurring in 98 countries, and is common in a region with a very different topography.[1,2,4]

Phlebotominae sand flies are belonging to Psychodidae family, and they contain six genera. In the old world, 3 genera including Phlebotomus (13 subgenera), Sergentomyia (10 subgenera), and Chinius (4 species) are found.[5] There are more than 900 species and subspecies of sand flies in the world; but less than 10% of them transmit leishmania parasite to humans in old and new world.[6-8] Sand flies are also vectors to some viruses such as sand fly fever virus.

Study about Iranian sand flies has begun since 1930 by a limited number of entomologists such as Adler et al. They have studied some parts of Iran such as Kermanshah and Hamadan in the west of Iran.[9] The basic studies on Iranian sand flies was done by Mesghali in 1943.[10] Based on IrSandflybase, 50 species of sand flies are distributed in Iran.[11] Studies by some researchers about Iranian sand flies indicate that some species of sand flies are distributed.[12-17] Many studies conducted that, faunistic studies of insects as the vectors of arthropod-borne diseases are necessary prior for ecological, epidemiological, and biological researches.[5,6,18] This research aimed to determine sand fly fauna and their distribution in Sanandaj County, west Iran, in 2017.

Materials and Methods

This was a cross-sectional study, carried out in 2017. The place of the study was 5 villages of Sanandaj County in Kurdistan Province. During June to October 2017, 5 villages including Naisar, Sarbghamish, Kani Moshkan, Dadaneh, and Doshan were surveyed monthly.

Sand flies were collected using sticky traps (castor oil-coated white papers 20 × 30 cm) from indoors (bedrooms, halls, toilets and stables), and outdoors (rodent burrows, mountains and rock rifts) of 5 replicates as 30 traps/village/time. The traps were set 1 hour before sunset, and were collected before sunrise in the next day.

The collected specimens were removed by needle, and put in acetone to wash the oil on their bodies; and then transferred and preserved in 70% ethanol. All specimens mounted as permanent microscopy slides, using Puri's medium.[19] Sex ratio of all species was calculated based on: (No. of males/No. of females) × 100.

Results

Totally, 907 sand flies collected and identified. 576 specimens (63.5%) were male, and the others were female. 526 of the total collected sand flies (58%) were Phlebotomus genus, and 42% of collected sand flies were Sergentomyia genus. Totally, 9 species (5 species of Phlebotomus and 4 species of Sergentomyia) were identified. The most common species was Phlebotomus papatasi (45.2%), followed by Sergentomyia dentata (16.9%), Sergentomyia sintoni (12.3%), and Sergentomyia antennata (10.2%). The lowest frequency of the collected sand flies was observed in Phlebotomus kandellaki (Table 1). The highest sex ratio showed in Phlebotomus papatasi (233.3), followed by Sergentomyia antennata (220.7).

465 sand flies (51.3%) were collected from indoors, and 442 (48.7%) from outdoors. The highest frequency of caught sand flies from indoors and outdoors, was due to Phlebotomus papatasi (69.5%) and Sergentomyia dentata (25.8%), respectively (Table 2).

Discussion

The results of the present study showed that 9 species of sand flies were distributed in this county; that 5 of them were Phlebotomus and 4 of them were Sergentomyia. Phlebotomus papatasi was the most predominant species in this study; that is similar to previous studies in Iran.[5,6,12-17,20,21]

Table 1. Species composition, abundance, and sex ratio of phlebotominae sand flies in Sanandaj County, west of Iran, in 2017

Species	Number			Relative frequency (%)			Sex ratio
	Male	Female	Total	Male	Female	Total	
Phlebotomine papatasi	287	123	410	49.8	37.2	45.2	233.3
Phlebotomine perfiliewi	10	6	16	1.7	1.8	1.8	166.7
Phlebotomine kandelakii	3	2	5	0.5	0.6	0.6	150.0
Phlebotomine major	18	22	40	3.1	6.6	4.4	81.8
Phlebotomine sergenti	34	21	55	5.9	6.3	6.1	161.9
Sergentomyia dentata	89	64	153	15.4	19.3	16.9	139.1
Sergentomyia antennata	64	29	93	11.1	8.8	10.2	220.7
Sergentomyia theodori	8	15	23	1.4	4.5	2.5	53.3
Sergentomyia sintoni	63	49	112	10.9	14.8	12.3	128.6
Total	576	331	907	100	100	100	-

The species were collected from all places both indoors and outdoors in all months from June to October. This is the second report of sand flies fauna in this part of Iran. The first study was conducted in 2005, 11 species including 6 species of Phlebotomus genus and 5 species of Sergentomyia genus were reported (Vahabi and Yaghoobi-Ershadi, unpublished data).

In a study in Jask County, Iran, eight species including 3 species of Phlebotomus and 5 species of Sergentomyia were identified as the fauna of the region.[22] In another study in Yazd and its outskirts, Iran, 10 species including 9 species of Phlebotomus, and only one specimen of Sergentomyia were collected and identified.[6] In that research, 69.2% of the collected sand flies were the Phlebotomus genus that is similar to the finding of the present study.

The five species of the collected Phlebotomus are the vectors of cutaneous and visceral leishmaniasis in Iran. The abundance of these species, especially Phlebotomus papatasi and Phlebotomus sergenti that identified as the main vectors of zoonotic and anthroponotic cutaneous leishmaniasis (ZCL and ACL) in Iran can be a danger to the spread of the disease in these areas. Phlebotomus papatasi was collected in all places of five villages from indoors and outdoors. This finding suggests that there is possibility for transmitting of ZCL in this county, provided that there are other effective factors in disease transmission. Leishmaniasis, if left untreated, can even be annoying, like brucellosis.[23]

Table 2. Phlebotomine sand flies collected from Indoor places and Outdoor places, Sanandaj County, west of Iran, in 2017

Species	Indoors			Outdoors		
	Male	Female	Total (%)	Male	Female	Total (%)
Phlebotomine papatasi	215	108	323 (69.5)	72	15	87 (19.7)
Phlebotomine perfiliewi	6	3	9 (1.9)	4	3	7 (1.6)
Phlebotomine kandelakii	1	2	3 (0.6)	2	0	2 (0.4)
Phlebotomine major	7	16	23 (4.9)	11	6	17 (3.8)
Phlebotomine sergenti	23	17	40 (8.6)	11	4	15 (3.4)
Sergentomyia dentata	25	14	39 (8.4)	64	50	114 (25.8)
Sergentomyia antennata	21	7	28 (6.1)	43	22	65 (14.7)
Sergentomyia theodori	0	0	0 (0)	8	15	23 (5.2)
Sergentomyia sintoni	0	0	0 (0)	63	49	112 (25.4)
Total	298	167	465 (100)	278	164	442 (100)

Conclusion

The high frequency of Phlebotomus papatasi can be a warning for the emergence of ZCL in this county. Further studies on the ecological, biological, and epidemiological status of sand flies and leishmaniasis are recommended.

Conflict of Interests

Authors have no conflict of interests.

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Out-of-pocket costs analysis of ifosfamide, epirubicin, and etoposide (IEV) and etoposide, solu-medrol-methylprednisolone, high-dose ara-C-cytarabine, and platinol-cisplatin (ESHAP) regimens in the patients with relapsed and refractory lymphoma in Iran

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Original Article

Abstract

BACKGROUND: This is an out-of-pocket costs analysis of ifosfamide, epirubicin, and etoposide (IEV) and etoposide, solu-medrol-methylprednisolone, high-dose ara-C-cytarabine, and platinol-cisplatin (ESHAP) drug regimens in treatment of lymphoma in Iran.

METHODS: This cross-sectional study was conducted in Shiraz City. Data were collected using a data-collection form. The social perspective was used to collect cost data. Three types of costs were measured, medical direct costs, non-medical direct costs, and indirect costs.

RESULTS: 65 patients were treated with these two methods; 27 patients were treated with IEV and 38 with ESHAP. Moreover, the mean direct cost in IEV and ESHAP regimens in 2014 were 1191.10 ± 610.74 and 1819.57 ± 789.73 United States dollars (USD), respectively. The difference was statistically significant ($P < 0.001$).

CONCLUSION: In this study, costs in the IEV regimen were significantly lower than the ESHAP regimen. This was particularly caused by an earlier discharge of patients under IEV regimen; since these patients experienced a trend toward less neutropenia and, hence, had a trend toward fewer hospitalization days, the related cost was 3451.76 USD with savings of 6479.61 USD compared with the ESHAP regimen. Overall, most of patient's income was spent on out-of-pocket costs for all expenditures incurred because of lymphoma.

KEYWORDS: Lymphoma, Cost, IEV Protocol, ESHAP Protocol

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Introduction

The number of patients with cancer will increase to 24 million in the world by 2035.[1] In 2018, in the United States, there will be an estimated 1,050 deaths from Hodgkin lymphoma (HL), and 19,910 deaths from non-Hodgkin lymphoma (NHL). From 2006 to 2015, death rates decreased by about 3% per year for Hodgkin lymphoma, and 2% per year for non-Hodgkin lymphoma.[2]

The National Institutes of Health (NIH) estimates that the overall costs of cancer contains medical direct costs, non-medical direct costs, and indirect costs; in 2009, in the United States, the costs were totally 216,000,000,000 United States dollars (USD), 86,000,000,000 USD caused by direct costs, and 130,000,000,000 USD by indirect costs.[3] It determined that the associated

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direct costs of cancer care would increase by 27%, assuming stable incidence, survival, and costs; if cost of care increased each year by 2%, in the first year after diagnosis and in the last year of life, the predicted 2020 cost would increase up to 39% from 2010.[4]

After primary treatment for Hodgkin and non-Hodgkin lymphomas, 10 to 20 percent of the patients with early-stage disease, and 35 to 40 percent of patients with advanced stage at diagnosis will suffer a relapse.[5,6] Patients who are refractory to the first-line therapy or relapse at a later stages, need more care.[7] Roughly, 50 to 60 percent of patients who relapse may be successfully treated with high-dose chemotherapy and stem-cell transplantation.[7,8] Patients with lymphoma are usually treated with chemotherapy; radiation, alone or in composition with chemotherapy, is used less usually.[9] Typically, chemotherapy for lymphoma is a therapeutic protocol or pharmaceutical regimen that includes several drugs. Etoposide, solu-medrol-methylprednisolone, high-dose ara-C-cytarabine, and platinol-cisplatin (ESHAP) is a drug regimen,[7] which is effective in treating refractory or relapsed lymphoma.[10] In addition, ifosfamide, epirubicin, and etoposide (IEV) is a combination of ifosfamide, epirubicin, and etoposide.[11]

These drug regimens have different effects on costs. Because of the various medical costs in cancer treatment, and maybe the impact on total treatment costs, and also the limited information about the costs, we performed a study to analysis the costs of IEV versus ESHAP, which are commonly used treatments for treating these patients in Iran.

Materials and Methods

This cross-sectional study was conducted as a double-blind study on 65 patients suffering from relapsed/refractory lymphoma, in Amir Oncology Hospital in Shiraz City, Iran. Patients were selected from April 2013 to April 2014, using goal-oriented sampling. The geographic area of study was the urban and rural areas of Fars Province.

We used telephone interviews for measuring the costs for household members resulted from lymphoma. The data collection form was completed during the interview after 6 months of follow-up at the last (6th) session of chemotherapy for each patient. Information on type of treatment regimens and drug effects was obtained through review of medical records. All participants provided signed informed consent. All the ethics review committees of participating hospital approved the study.

All node-positive patients younger than 75 years were included. Patients with severe renal failures, hepatic impairments, Karnofsky Performance Scale Index of less than 70, and age older than 75 years, and all the cases of metastasis and node negative were excluded.

The social perspective was used to collect cost data for a period of 6 months. Moreover, the data collection form was used to collect demographic data and costs. We defined out-of-pocket costs as all costs amounts paid directly by the patients due to relapsed/refractory lymphoma cancer treatment. For patients, out-of-pocket costs included costs associated with medical direct cost (medication, hospitalization, sonography, radiology, magnetic resonance imaging (MRI), surgical costs, laboratory tests, computed tomography (CT) scan, and follow-up visits), non-medical direct costs (travel costs, lodging, phone, auxiliary equipment, and special diet during chemotherapy), and indirect costs (costs of lost production due to absence from work) calculated using the Human Capital Approach. Out-of-pocket costs were calculated by summing these items. We also questioned patients about their perceptions of the family's financial situation in the past 6 months, using questions administered at the 1-month interviews. These questions were adapted from published studies and questionnaires.[12]

Specifically, we asked about the patient's satisfaction with their family's financial situation, and their worry about and perception of their family's financial situation compared with that of others of the same age. For these analyses, patients not working at diagnosis were assigned 0 USD in terms of the indirect costs. The total of these items were treatment costs for each patient, calculated by the Iranian Rial (IRR) to USD exchange rate in year 2014.

In order to estimate transmission costs for those who travelled with their personal car, we used the dimension between the patient's domicile and the treatment hospital. We asked the cost of petrol from patients or patients accompany. The resulting amount was multiplied by two to account for the return trip, and then multiplied by the number of treatments received. We used the paid amount for those travelling by taxi, bus, rail, and air. None of the respondents reported having paid for parking. For those living away from home, we calculated lodging costs by using the cost for lodging reported by the respondent, and 0 USD for respondents who stayed in family or friends' home. The phone costs, auxiliary equipment, and special diet were estimated using the paid amount by the patients multiplied by the number of those. In addition, we estimated extra out-of-pocket costs incurred because of patients with relapsed/refractory lymphoma for indoor and outdoor household help, and child care.

We used descriptive statistical to analyze the data via SPSS software (version 16.0, SPSS Inc., Chicago, IL, USA). Moreover, the Mann-Whitney test was used to assess the significant differences in costs between the two regimens. Besides, 95% of confidence intervals (CIs) were computed using non-parametric bootstrapping method for costs.

Results

According to table 1, in IEV and ESHAP regimens, the highest and lowest mean costs were medical direct costs (1191.10 ± 610.74 USD in IEV and 1819.57 ± 789.73 USD in ESHAP) and non-medical direct costs (237.06 ± 207.42 USD in IEV and 208.39 ± 179.7 USD in ESHAP), respectively. Moreover, the mean medical direct costs was statistically lower in IEV regimen than ESHAP regimen ($P < 0.001$). But, for the mean of non-medical direct costs and indirect costs and total costs, the differences were not statistically significant.

As seen in table 2, the total cost of chemotherapy drugs in the IEV regimen was 13201.45 USD (488.94 ± 338.57 USD) that was highest medical direct costs. Moreover, in the ESHAP regimen, this item was 32943.08 USD (866.92 ± 354.91 USD). In both regimens, travel costs and indirect costs were highest type of treatment costs, in IEV regimen, 4037.14 (149.52 ± 142.95) and 16152.60 (562.2 ± 584.25) USD, and in ESHAP regimen, 3980.62 (104.75 ± 98.56) and 17,359.7 (351.65 ± 666.09) USD, respectively.

Table 1. The treatment costs of patients with lymphoma based on the type of costs

Mean costs	Type of treatment protocol		P
	IEV	ESHAP	
Medical direct costs	1191.10 ± 610.74	1819.57± 789.73	< 0.001
Non-medical direct costs	237.06 ± 207.42	208.39 ± 179.7	0.545
Indirect costs	598.24 ± 584.25	456.83 ± 666.09	0.249
Total	2026.42 ± 916.91	2484.79 ±1060.27	0.123

The amounts are in United States dollar (USD).
IEV: Ifosfamide, epirubicin, and etoposide; ESHAP: Etoposide, solu-medrol-methylprednisolone, high-dose ara-C-cytarabine, and platinol-cisplatin

Table 2. The cost components of Ifosfamide, epirubicin, and etoposide (IEV) and Etoposide, solu-medrol-methylprednisolone, high-dose ara-C-cytarabine, and platinol-cisplatin (ESHAP) regimens in lymphoma as included in the analysis

Strategy	Costs components	Costs (USD)	The proportion to total costs (%)
ESHAP	Medical direct costs	69,143.72	73.0
	Chemotherapy drugs	32,943.08	35.0
	Hospitalization	9,931.37	11.0
	Sonography	775.13	1.0
	Radiology	2,751.31	3.0
	MRI	621.72	1.0
	Surgical	4,299.56	5.0
	Laboratory tests	8,800.97	9.0
	CT scan	2,955.19	3.0
	Visits	998.79	1.0
	Other	5,066.61	5.0
	Non-medical direct costs	7,918.85	8.0
	Traveling	3,980.62	4.0
	Lodging	2,111.43	2.0
	Phone	890.19	1.0
	Auxiliary equipment	68.63	< 0.1
	Special diet	867.99	1.0
	Indirect costs	17,359.71	18.0
	Time spent by the patient	13,362.94	14.0
	Time spent by the patient's accompany	3,996.77	4.0
	Total	94,422.29	
IEV	Medical direct costs	32,159.87	59.0
	Chemotherapy drugs	13,201.45	24.0
	Hospitalization	3,451.76	6.0
	Sonography	557.13	1.0
	Radiology	1,441.26	3.0
	MRI	282.60	1.0
	Surgical	4,339.93	8.0
	Laboratory tests	3,863.54	7.0
	CT scan	1,929.75	4.0
	Visits	609.61	1.0
	Other	2,482.84	5.0
	Non-medical direct costs	6,400.89	11.0
	Traveling	4,037.14	7.0
	Lodging	1,320.15	2.0
	Phone	680.26	1.0
	Auxiliary equipment	129.19	0.2
	Special diet	234.15	0.4
	Indirect costs	16,152.60	30.0
	Time spent by the patient	15,179.65	28.0
	Time spent by the patient's accompany	972.95	2.0
	Total	54,713.36	

IEV: Ifosfamide, epirubicin, and etoposide; ESHAP: Etoposide, solu-medrol-methylprednisolone, high-dose ara-C-cytarabine, and platinol-cisplatin; USD: United States dollar; MRI: Magnetic resonance imaging; CT: Computed tomography

Discussion

This was the first cost-analysis in patients with lymphoma in Iran. Given that, cancer is one of the major causes of death in Iran,[13] and lymphoma is among the ten most common cancers,[14] also, IEV and ESHAP drugs regimens are common drugs in the treatment of

lymphoma, we believe that evaluating the costs of these drugs regimens is very necessary.

Our results in this study indicated that the mean direct cost in ESHAP regimen (1191.1 ± 610.74 USD) was significantly more than IEV regimen (1819.57 ± 789.73 USD). In addition, the total cost of chemotherapy in ESHAP regimen was 32943.08 (866.92 ± 354.91) USD; it was 47.7% of medical direct costs. While in IEV regimen, the total cost of chemotherapy was 13201.45 (488.94 ± 338.57) USD, which was 41.04% of medical direct costs. These results could be due to high costs of chemotherapy in the ESHAP. Besides, more hospitalization would be created more paraclinical costs. Regarding the cost analysis, absolute comparisons to earlier studies cannot be made due to the different methodologies and great difference in costs between countries. Beard et al.,[9] Gruschkus et al.,[15] Kuderer et al.,[16] Lee et al.,[17] Norum et al.,[18] Ray et al.[19] and Sweetenham et al.,[20] concluded that the main cost drivers were medical direct costs, particularly chemotherapy. Moreover, earlier discharge of patients with lymphoma would reduce the hospitalization and consequently the medical direct costs.

However, the difference in the mean of non-medical direct costs and indirect costs in two regimens was not significant. The occupation and the absence from work determine the amount of indirect costs. These items do not follow the specific trend in the two groups. So, we can say more length of stay reduced income further by the more absence from work. Some of patients experienced more costs, including patients with higher travel costs, because of several stages of treatment and long courses. Overall, most of patient's income was spent on out-of-pocket costs for all expenditures incurred because of lymphoma. In the meantime, the ESHAP regimen was more expensive compared to the IEV regimen. So, insurance coverage should be considered in these patients to reduce the out of pocket.

Some limitations of our study must be discussed in evaluating the results. The small number of participants and short follow-up period can restrict the generalization of the findings to other setting. Assessment of a longer follow-up period is unlikely to alter our main findings, since there is no evidence to indicate that follow-up costs after discharge would reverse the results. Although our sample size was relatively small, it is the largest sample of patients with Hodgkin and non-Hodgkin lymphoma considered up until now in an out-of-pocket costs analysis.

Due to the difference in costs, generalizability to other hospitals may be limited. Nevertheless, therapeutic methods is similar between this hospital and others. Although, we cannot generalize these findings to other countries due to socialized medicine, worker's wages and drugs costs are dissimilar.

Particularly, chemotherapy costs are the highest costs in both regimens; but these are not covered by insurance, and patients pay these costs directly.

Conclusion

Since patients with IEV regimen experienced a trend toward less neutropenia and, hence, had a trend toward fewer hospitalization days, the related cost was 3451.76 USD with savings of 6479.61 USD compared with the ESHAP regimen. Overall, most of patient's income was spent on out-of-pocket costs for all expenditures incurred because of lymphoma.

Conflict of Interests

Authors have no conflict of interests.

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