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SERUM LIPIDS STUDY IN ISCHEMIC AND HEMORRHAGIC STROKE PATIENTS

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Abstract

Background: Stroke is based on a disturbance in the blood flow, either ischemic or hemorrhagic type. Although serum lipids were known as a risk factor for atherosclerosis, but the relation between serum lipid level and type of stroke is not well known. Previous studies had different results on the role of dyslipidemia in various types of strokes and remain controversial. The aim of this study was to compare the serum lipid profile in patients with ischemic and hemorrhagic strokes.

Methods: In this study 201 patients with ischemic and hemorrhagic stroke in neurology ward of Ali Ibn-Abitaleb hospital who have not used lipid-reducing drugs, were evaluated in the first day of admission. A checklist of all required data was collected. Lipids, including triglyceride (TG), total cholesterol (TC), low density lipoprotein cholesterol (LDL-c), high density lipoprotein cholesterol (HDL-c), measured in the fasting period.

The results: The patients were 48/8% male and 51.2% of them were female. A significant relation between sex and serum level of TC, LDL-c and HDL-c was found. All three lipid levels were higher in women than men. TG level was respectively higher in subarachnoid hemorrhage patients and after that ischemic stroke cases in comparison with patients with intracranial hemorrhage. There was a significant statistical relationship between the type of strokes and serum level of HDL-c.

Conclusion: All lipid profile levels were higher in women than men. There was a statistically significant relationship between serum level of TG and stroke type. HDL-c levels were higher in intracranial hemorrhage patients compared with ischemic strokes.

Keywords: Ischemic stroke, Hemorrhagic stroke, Serum lipids

INTRODUCTION

Cholesterol plays a role in many vital functions of the body, including the maintenance and integrity of cells and participating in the synthesis of steroid hormones and bile acids. In addition, cholesterol is the main source of stored energy and food for survival. However, the abnormal increase in the level of blood cholesterol causes several problems such as narrowing and blockage of the arteries in different parts of the body and in particular coronary arteries as one of the leading causes of morbidity and mortality in human societies. The results of the study by *Framingham and his colleagues showed* that by determining the level of cholesterol in young and adult people, it is possible to predict mortality rates caused by cardiovascular disease in the next 30 years [1]. Also, there are common risk factors for

cardiovascular disease and thrombotic stroke, the presence of one of these diseases in a patient can increase the possibility of the other disease occurrence [2]. An increased serum cholesterol level is directly related to the risk of coronary disease, whereas the relationship between cholesterol levels and the risk of stroke is unclear. In some studies, an inverse relationship between the level of total cholesterol (TC) and hemorrhagic stroke and a direct link between TC and ischemic stroke (IS) has been indicated, but there is a distinct relationship between different types of IS [3].

It has been shown that cholesterol level under 160 mg/dL is associated with intracerebral hemorrhage or subarachnoid hemorrhage (SAH) while there is no association between cholesterol level and lacunar infarction [4]. But in some studies, it has been suggested that High density lipoprotein- cholesterol (HDL-c) is a risk factor for cerebral microbleeds in patients with IS and bringing HDL-c to a normal level can help prevent recurrent brain stroke [5]. Some researchers have reported that low levels of serum lipids, including cholesterol increase the risk of intracerebral hemorrhage (ICH), while some others support the preventive role of high levels of cholesterol in the incidence of ICH. In contrast, there are many studies that do not confirm that the reduced level of lipids is the cause of ICH [6].

Some studies have noted that there is an inverse relationship between HDL-c levels with transient ischemic attack (TIA) and minor stroke. It has also been reported that the progression process of carotid artery atherosclerosis has a direct relationship with cholesterol and Low density lipoprotein cholesterol (LDL-c) and has an inverse relationship with HDL-c level [5]. Statins consumption has been shown to be effective in reducing cardiovascular diseases, cerebral stroke and heart attack. However, it remains to be determined whether the cause of this decrease is related to the lipid-lowering effect or anti-inflammatory effect of statins [7]. Zhang (2012) by assessing 3914 patients with stroke (3085 with IS, 497 patients with ICH and 332 patients with SAH) concluded that low levels of HDL-c and high TC to HDL-c ratio is associated with increased risk of ischemic stroke (in both female and male). Also, it was reported that there is a positive correlation between TC and the risk of IS in men and by contrast, an inverse relationship between TC and ICH in women and that there is a positive correlation between the TC to HDL-c ratio with increased risk of IS [8]. Togha M. et al (2010) with follow-up of 123 patients (58 women and 65 men) with acute ischemic cerebrovascular disease concluded that the increased level of triglyceride (TG) in plasma after acute cerebral infarction is associated with a better prognosis. In addition, older age alongside a history of heart disease is associated with a poorer prognosis [9].

Hesami et al (2014) in a study on 116 patients in the years 2005 to 2010 concluded that the total levels of TC, Low density lipoprotein cholesterol (LDL-c), HDL-c in patients with ICH was higher than the control group, but the difference in levels of TC between the two groups was not statistically significant. Besides, TG levels in patients with ICH was significantly lower than the control group (reduced TG levels is associated with increased risk of ICH) [6].

In another study, Bonaventure et al (2010) studied 8393 men and women over five years and stated that TG levels versa associated with increased risk of ischemic events and vice decreases in TG levels is associated with increased risk of hemorrhagic stroke (HS). Moreover, a low serum TG level is associated with a doubling of risk of HS and there is a relation between HS in men by increasing blood pressure and reduced cholesterol levels [10]. However, different studies have produced controversial results, and the role of dyslipidemia in stroke is still the subject of much debate [11].

Due to contradictory results of various studies in this area and the lack of sufficient information regarding the association of lipids with a variety of strokes we decided to perform this study in Rafsanjan. The aim of this study was to evaluate serum levels of lipids in patients with IS and HS, admitted to the neurology ward at Ali Ibn Abi Talib hospital.

MATERIALS AND METHODS

In this descriptive study, which was carried out from Jun 2014 to July 2015, 245 patients with IS and HS were assessed on the first day of admission in the neurology ward of Ali Ibn Abi Talib (AS) Hospital in Rafsanjan. In order to select the subjects, history of patients was obtained and a physical examination was conducted. For the unification, patients who used lipid lowering drugs during the past six months were excluded from the study. Then a checklist was provided for each patient and all required data was collected. Diagnosis of the type of stroke was confirmed by CT scan and MRI of the brain in the

emergency department within 24 hours after onset of clinical signs. Serum lipids, including triglycerides, cholesterol and two low density and high density lipoprotein were measured in the fasting state. Informed consent of the patients or their family was obtained according to the approval of Ethics Committee.

STATISTICAL ANALYSIS:

Statistical analyses were performed by Excel 2013 (Microsoft Corporation, Seattle, WA) and SPSS 21 software (SPSS Inc, Chicago, IL), using descriptive statistics and complementary statistical methods. Differences between groups were determined using independent samples T-test and One way ANOVA followed by the Tukey post hoc test. A p value less than 0.05 was considered statistically significant.

RESULTS

In this study, a total of 201 patients admitted to hospital with stroke who were not under treatment with lipid-lowering drugs recently were selected in order to study. Baseline characteristics of the patients were shown in Table 1. The patients included 98 males (48.8 %) and 103 women (51.2 %). Out of 201 patients, 153 patients were diagnosed with IS (76.1%), 40 patients with ICH (19.9%) and 8 patients with SAH (4 %).Based on the location of stroke, 97 (48.3 %) had Lobar stroke, 17 patients (8.5%) cerebellar stroke, 13 patients (6.4 %) involvement of brainstem and Pons, 22 patients (10.9 %) thalamus involvement, 42 patients the basal ganglia and internal capsule involvement (20.9 %), 7 patients thalamus involvement along with the basal ganglia or internal capsule involvement (3.5%) and finally 3 patients had lobar involvement along with the involvement of the thalamus (1.5 %).

Among patients with stroke, 79 males (80.6 %) and 74 women (71.8 %) had IS. 15 men (15.3 %%) and 25 women (24.3 %) had intracranial bleeding. 4.1% of men and 9.3% of women had SAH. Furthermore, 49 men (50%) and 48 women (46.6%) had lobar stroke, 7.1 % of men and 9.7% of women had involvement of the cerebellum, 10.2% of men and 9.2 % of the women had brainstem involvement, 10.2% of men and 11.7 % of women thalamus involvement, 17.3% of men and 24.3% of women involvement of basal ganglia and internal capsule, 3.1% of men and 3.9% of women involvement of the thalamus alongside basal ganglia or internal capsule, and finally 2% of men and 1% of the women had lobar alongside thalamus involvement.

In the evaluation of lipid variables in terms of gender, there was a significant relation between gender with serum levels of TC (P=0.009), LDL-c (P=0.024) and HDL–c (P=0.009), so that the serum level of these factors was higher in women than men. Besides, TG levels and age of onset in women was higher than men, but the difference was not statistically significant (TG: P=0.453 and age: P=0.133) (Table 2). The distribution of quantitative variables in patients with stroke type showed in Table 3. The age of patients ranged from 23 to 95 years, which showed no statistically significant difference (Table 3). On the other hand, table 3 shows that TC and HDL-c levels were significantly different between patients based on stroke type ($p<0.05$). TG level was significantly higher in SAH group comparable to IS and ICH groups while HDL-c level was significantly higher in the ICH group than other two groups.

DISCUSSION

In our study, 201 patients with stroke who were not under treatment with lipid-lowering drugs were enrolled in the study after examination by a neurologist and confirmation of their disease using CT scan and MRI. A significant relation between sex and serum levels was found. All three lipid levels were higher in women than men. TG level was respectively higher in subarachnoid hemorrhage patients and after that ischemic stroke cases in comparison to patients with intracranial hemorrhage. There was a significant statistical relationship between the type of strokes and serum levels of HDL-c.

According to our study, 52% of the patients with stroke were women and 48 % were men, which this result is in line with the results of study by Iranmanesh et al (55% women and 45% men) [11]. Based on the type of stroke, 76.1% of the cases had IS, 19.9% ICH and 4% of the cases were SAH. However, the number of cerebral hemorrhage and SAH is less than the total number of patients admitted with these two forms of stroke because some patients were sent to other centers and some were hospitalized in the neurosurgery ward. Therefore, the actual number of brain hemorrhage cases in our city is higher than this number and this

situation is less seen in ischemic lesions because only in cases who need craniotomy, the patients have neurosurgery counseling.

In the classification of stroke subtypes in neurology references at least two-thirds of strokes are ischemic and one third is hemorrhagic, which is somewhat consistent with our results [12]. Another finding in this study was the age of stroke onset with the mean age of 71.06 years. The mean age of stroke in the Netherlands reported 73.4 years and in Sweden for men and women were 73.1 and 79.7 years respectively, which is consistent with our results [5]. In the study by Iranmanesh et al (2014) the average age of stroke was reported 70.32 ± 5.6 and 64.25± 5.7 in women and men respectively [13]. The results of study by Ahmadi-Ahangar et al., which was carried out in Babul, showed that the incidence of stroke after the age of 55 years almost doubles per decade [14]. Therefore, it is observed that there is an age-dependent increase in the number of stroke cases. Age is the strongest risk factor for stroke which is uncontrollable [15].Considering the type of stroke in terms of gender, 80.6% of the men and 71.8% of the women in this study were diagnosed with IS while15. 3 % of the men and 24.3 of the women had ICH.

The evaluation of quantitative variables (age, TG, TC, LDL-c, HDL-c) in terms of gender revealed that there is a significant relationship between gender and serum levels of TC, LDL-c and HDL-c in stroke patients so that serum levels of all three factors were higher in women than men. The serum level of TG and the average age of incidence were also higher in women than men, but the difference was not statistically significant. Study by Tohidi et al., also indicated that there is a gender-dependent relationship between serum lipids and the incidence of ischemic stroke, so that the levels of TC, LDL-c and non HDL-c in women with ischemic stroke had a direct relationship with IS [16].

Another goal of the present research was an investigation of the common stroke locations and its relationship with gender. The results showed that Lobar stroke was the most common site of stroke (48.3 %), followed by the basal ganglia and internal capsule (20.9%) and the least common site of involvement was lobar along with the thalamus involvement. In terms of gender, 50% of men and 46.6% of the women has lobar stroke, 17.3% of the men and 24.3% of the women had basal ganglia and internal capsule involvement, which shows that lobar stroke in men and stroke in basal ganglia and internal capsule in women are more common. Based on the literature review, no statistics were found regarding the site of stroke and its association with gender.

The study of quantitative variables in terms of the type of stroke indicated that there is a significant association between serum levels of TG and the type of stroke so that the TG level in the IS was higher than ICH. This finding was in line with the results of study by Saadatnia et al [17]. In another study by Bonaventure et al., it was reported that the increased TG level was associated with increased risk of ischemic events, and in contrast, reduced TG levels was associated with an increased risk of HS, that the results are consistent with our study findings [10]. Besides, the study by Freiberg revealed that there is a direct relationship between serum levels of TG and IS [1]. However, it was stated by Willey that there is no association between serum TG, HDL-c and TC with IS [18].

According to the results of our study, we came into conclusion that there is a significant relation between serum levels of HDL-c with the type of stroke, so that HDL-c level in ICH was higher than IS. However, there was no statistically significant relationship between serum levels of LDL-c and TC with the type of stroke. In addition, the results of study by Saadatnia showed a higher level of serum HDL-c and LDL-c in patients with HS compared to the patients with IS, which only HDL-c level was consistent with our results [17]. Results of study by Mortazavi-Moghadam et al on HDL-c level in ischemic and hemorrhagic stroke was also in line with our findings but the association between TC levels in IS and HS was in contrast to our findings. There was no association between TC levels and the type of stroke in our study. This high level of HDL-c in hemorrhagic stroke and low TC level may indicate the protective role of atherosclerosis in the prevention of HS [19]. Uddin et al. noted that elevation of serum TC and LDL-c is an alarming risk factor for ischemic stroke while levels of serum TG have no effect on IS, which shows a noticeable difference with our study results (20). Also, study of Ralph which was carried out on 539 patients with IS and 905 people in the control group, indicated that increased levels of HDL-c is associated with reduced risk of IS, and this shows the protective effect of HDL-c on the atherosclerotic type of stroke compared to non-atherosclerotic type [21] that is consistent with our study results.

Our findings suggest that lower TG level correlates to more risk of hemorrhages while the highest level of TG is correlated with higher risk of ischemic stroke. Moreover, a direct relationship was observed between HDL-c with cerebral hemorrhage and an inverse relationship with ischemic strokes. There was no relationship between LDL-c and TC with the type

of stroke and together the role of cholesterol in women was more noticeable than men. The first two factors can be a sign of atherosclerosis protective role against brain hemorrhage, which we aimed to investigate it. Taken together, in order to further validate our findings, the higher number of cases and long-term evaluation is necessary to further determine the patients' underlying condition in strokes.

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FOOTNOTES

Conflict of Interest: No conflict Interest was provided for this paper.

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Table1. The Distribution of gender, type and location of stroke in patients

Variables		Number (%)
Gender	Male	98 (48.8)
	Female	103 (51.2)
Type	Ischemic	153 (76.1)
	Intracranial hemorrhage	40 (19.9)
	Subarachnoid hemorrhage	8 (4)
Location	Lobar	97 (48.3)
	Cerebellum	17 (8.5)
	Brainstem or Pons	13 (5.5)
	Thalamus	22 (10.9)
	Basal ganglia and internal capsule	42 (20.9)
	Thalamus, with basal ganglia or internal capsule	7 (3.5)
	Lobar with thalamus	3 (1.5)

Table2. The Distribution of quantitative variables of gender

Variables	Male	Female	*p*
Age	69.5±14.62	72.5±12.93	0.133
Total triglyceride (TG)	122.07±55.77	128.06± 57.38	0.453
Total cholesterol (TC)	175.80±43.10	192.4±46.15	0.009
LDL-c	115.28±38.57	128.10±4121	0.24
HDL-c	36.03±10.17	39.90±10.64	0.009

Data were presented as mean ± SD. Data between groups were compared using independent t-test. * $p < 0.05$, significantly different between two groups.

Table 3. The distribution of quantitative variables in patients with stroke type

Variables	Ischemic	Intracranial hemorrhage	Subarachnoid hemorrhage	*p*
Age	71.41±13.91	71.55±12.54	54.75±21.23	0.123
Total triglyceride (TG)	130.62±59.25	101.32±35.63	156.75±81.44	0.019
Total cholesterol (TC)	183.58±46.02	184.47±36.63	234±82.84	0.123
LDL-c	121.01±40.25	122.80±33.74	161.50±90.30	0.2
HDL-c	36.86±10.22	42.55±11.47	41.25±6.84	0.015

Data were presented as mean ± SD. Data between groups were compared using one way ANOVA. * $p< 0.05$, significantly different between two groups.

EFFECTIVENESS OF AN EDUCATIONAL PROGRAM WITH FAMILY-CENTERED APPROACH ON SELF-MANAGEMENT BEHAVIORS OF PEOPLE WITH EPILEPSY

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Abstract:

Background: Physical and psychological complications of epileptic patients arising from an epilepsy and long treatment process require family involvement at home as caregivers of such patients. The aim of this study is the impact of the educational program of family-centered approach on self-management behaviors in patients with epilepsy.

Method: This quasi-experimental study was conducted on 92 patients with epilepsy referring to Iranian Epilepsy Association. The study used convenient sampling and samples were randomly divided into two groups: control (n = 46) and experimental group (n = 46).In addition to the patient, family members also participated in the test group. The experimental group participated in three educational sessions held by the researcher in Iran Epilepsy Society Center. All the patients completed a self-administered questionnaires before and six weeks after the intervention of epilepsy. The data were then analyzed using SPSS software version 22.

Results: Before implementing educational program with family-centered approach, the two groups showed no significant difference in total self-management score (P> 0.05). After implementing educational program with family-centered approach, the two groups have significant difference in total self-management score (P<0.01), which is indicative of the increased self-management of experimental group.

Conclusion: Implementing an educational program with family-centered approach leads to promoting self-management behaviors in patients with epilepsy. Implementation of several programs focused on the family is recommended.

Keywords: education**,** epilepsy, family centered care, self-management

INTRODUCTION:

Epilepsy is a common non-communicable chronic neurological disease that affects the nervous system and is commonly known as seizure disorders (1 Seizures are caused by abnormal discharges of neuronal brain and central nervous system disorders (2). Epilepsy currently affects on estimated 50

million people globally. Every year 16-134 *per 100,000 people* will be added to epileptic patients' population in the world. In Iran, people with epilepsy have been reported 1.2 to 4 per thousand in different parts of the country (3). Epilepsy can lead to financial problems, social, physical and mental health in people with epilepsy, their families and communities. It also creates some limitations in lifestyle, family life, marriage, employment, higher education and economic situation (4). Epilepsy is a long-term condition where a person is required to learn to manage his condition. Many people with epilepsy tend to receive education in order to better management of their condition (5). *Awareness* of *patients* plays *an important* role *in control of their disease* .High health literacy leads to participation in treatment, making the right decisions, working with physicians and accountability. According to evidence, low health literacy is associated with low education and higher rate of seizures (6). Concern to reduce costs and increase quality of life, leads to an increased focus on self-management approaches as a main component in managing long-term conditions with the aim to increase patients' awareness and skills and increase their confidence to manage their disease .*Self-management means* that *patients* take an *active role* in *their treatment* (5). Epilepsy self-management involves two processes of epilepsy management or necessary behaviors for seizure control and seizure disorder management (7). According to the results of research on chronic diseases, simply providing information is not enough. To provide information without the needed support for self-management, does not change the health status (8). One study has found that people report many obstacles to manage their illness, including depression, low self-efficacy, physical limitations, poor communication with health care providers, lack of support and financial burden. Social support is one of the ways to overcome obstacles and improve self-management (9). Among all social factors, social support is a key factor in chronic disease management and plays an important role in the management of epilepsy. The importance of social support for people with epilepsy has been increasingly recognized (10). People with epilepsy often receive support from a spouse, partner, parent, guardian or other relatives (11). Providing high-level specialized care will have no high efficacy without family participation (12). Also, many of the concepts of self-management of chronic disease are developed in a partnership between the person with epilepsy and their caregivers (7). Since the patient, as a member of the family, needs to be supported by the family, it seems necessary that other family members are also involved in the educational process. Family participation in the care and support of a member with epilepsy is primarily the responsibility of the family. Family's clients can learn how to help the person with epilepsy (13).The results of the study conducted by (14), showed that instead of focusing on patient-centered approaches, more attention should be given to the families of people with epilepsy in the care plan. Patient education and his family is one of the important activities of nursing and can cause changes in a patient's ability to cope with illness (15). Relying on a supporting, educational and participatory role of family, nurses can provide appropriate conditions to support the treatment regimen .Empowering patients and families education is considered the most important part of nursing care (16).Thus, the role of the family as an important collaborative source in advancing the treatment goals which has received less attention, we decided to measure the impact of educational program based on family self-management behavior of patients with epilepsy.

METHOD:

This is a quasi-experimental study. In this research, permission of the ethics committee of the Iran University of Medical Sciences and Iranian Epilepsy Society has been obtained and the written informed consent of the subjects was also provided. The study population comprised of all patients with epilepsy referring to Iranian association of epilepsy in 2017.These people were aged between 18 and 60 years whose epilepsy was diagnosed at least for one year, were taking anti-epileptic drugs, *had at least one seizure during* the *previous year* and were literate. Exclusion criteria included deteriorating conditions of people with epilepsy during the study, increased frequency of attacks, increased number of anti-epileptic drugs, increased duration of the attack and absence involving a single session in the educational course.A total of 92 patients with epilepsy who were eligible for inclusion were recruited by convenience sampling method. These patients were randomized into two control (n = 46) and experimental groups (n = 46) based on the lottery. This means that the first sample was placed in the experimental group with lottery then the next sample was placed in control group and the process continued until sample size completing. In addition to the patient, family members also took part in the experimental group. Active member had the greatest involvement in treatment and was also in contact with the person with epilepsy. After that, participants

were asked to attend the introductory meeting which will be held in Epilepsy Society. After introducing the researcher, the purpose of the study was explained to the participants in the Research units. To participate in the study, written informed consent was obtained from the qualified samples and confidentiality of information obtained and the right to withdraw from the study at any time were explained. Moreover, in order to participate in educational sessions, the time of educational sessions was notified through telephone calls to subjects reminding them of the sessions. Then the subjects with their active members were asked to participate in family-oriented educational sessions for 1.5 hours in three sessions on alternate days (three weeks) and held by the researcher in Epilepsy Society Center. It should be noted that the educational content included an explanation in connection with epilepsy, causes of epilepsy, convulsions and its variants epilepsy diagnosis (first session), self-medication, self-immunity (second session), lifestyle self-management, seizure self-management information (third session).There was also no interference between training sessions, except that a person with epilepsy received phone call in conjunction with the timely attendance at the next meeting and the materials were reviewed. The study used an explanatory technique and was implemented through a presentation using slide show and discussion. To resolve the ambiguity, the opportunity for questions and answers was given for 20- 15 minutes at the end of each session as well as educational manual containing materials offered a person with epilepsy and their families was provided at the end of the third session. In order to comply with research ethics, educational manual was also provided to the control group after completion of the survey. In order to avoid the disclosure of information, the control group was asked to refer to the association on odd days and the experimental group in even days. After 6 weeks, the experimental and control groups were then invited to complete the questionnaire again in a ceremony at the Epilepsy Society Center. The questionnaire used in this research included: demographic questions related to person with epilepsy, patient information form, epilepsy self-management scale containing 38 questions in Likert scale in self-management behaviors in five domains of medication self-management, the safety and life-style management, seizure and information management which has been developed by Del Rio et al in 2010.Questions were scored in a Likert scale ranging from 1 "never" to 5 "always" and higher score indicates a greater use of self-management behaviors. The scores ranged from 38-190 and a high score indicates a high self-management. The patient self-management scores were determined according to the score obtained; scores less than 50% are indicative of low self-management (38-114), scores between 50 and 75% indicate medium self-management (115-150) and over 75% indicates high self-management (150-190).This questionnaire was used in the study by (18) and its Cronbach's alpha coefficient was calculated(./838).Self-management and education were the main variables of the study. Descriptive statistics were used for data analysis and inferential statistics to compare two groups of patients and the effect of education on self-management. In order to compare the two groups in terms of demographic characteristics, chi-square and Fisher tests were used and paired t-test was used to compare self-management of each group (before and after intervention) as well as independent t-test was used to compare self-management group in various aspects of at the same time. In this study, data were analyzed using the SPSS software version 22.

RESULTS:

Eventually 92 people participated in this study. The majority of patients in both control (66.7%) and experimental groups (68.9%) were male. In both groups, the majority of respondents aged less than 30 years in the control group (37.8%) and experimental group (44.4%).(51.1%) of control group and (53.3%) of the experimental group were single. The majority of respondents in both groups were educated. Both groups lived in urban areas than in rural areas The majority of respondents in both groups were unemployed and had poor economic growth. In both groups, the majority of people with epilepsy were diagnosed with epilepsy aged 6 to 20 years and most respondents had seizures in the past month for the last times as well as the majority of respondents were diagnosed with epilepsy less than 20 months. In both groups, most of the respondents used a range of drugs and the highest percentage of respondents was not suffering from other diseases. In both groups, the majority of respondents were covered by health insurance. Most respondents mentioned that they did not have a family history of the disease. Most respondents said that they did not receive special training about the disease. Most family members with epilepsy in both control and test groups were female. In both groups, the majority of active family member with epilepsy aged 40 years. The majority of active members of the family with epilepsy in both groups had primary education. The wife of patients with

epilepsy was most active members of the family in both control and experimental groups. In both control and experimental groups, the majority of family members of people with epilepsy were cared for more than 20 months. Details demographic characteristics are shown in Tables 1 and 2.Prior to implementing education program with family-centered approach, both control (84.4%) and experimental groups (86.7%) had lower self-management and showed no significant difference in total self-management score (P>0.05).After implementing the educational program with family-centered approach, the control group still had a low self-management (82.2%) and the experimental group had an average self-management (95.6%), as well as both groups showed a significant difference in total self-management score (P< 0.01).This means that the experimental group showed significantly higher self-management compared with the control group(Table 3). In the experimental group, the total self-management score of people with epilepsy after implementing the educational program with family-centered approach shows significant differences compared to the initial total self-management (P< 0.01),whereas score changes in the total self-management of people with epilepsy in the control group were not significant after training compared with the initial self-management (P>0.05).

Table 1: Demographic characteristics in patients with epilepsy in two groups and comparison test results

P_Value	Groups				Demographic characteristics in patients with epilepsy
	Control		Intervention		
	Frequency	Percent	Frequency	Percent	
99%	30 15	66.7 33.3	31 14	68.9 31.1	Male Female
84%	17 16 12	37.8 35.6 26.7	20 13 13	44.4 28.9 26.7	Age Less than 30 years 31-40 Over 40
94%	23 22	51.1 48.9	24 21	53.3 46.7	Marital status Single Married

Table 3: Comparison of total self-management before and two months after the intervention in both groups and the results of independent t-test and Mann-Whitney tests

Mann-whitney test	**Independent t test**	**Experimental**		**Control**			**Variable/Group**
		SD	Mean	**SD**	**Mean**		
Z=0.392 P=695%	t=3.18 df=88 P value	11.5	102.47	10.70	103.20	pre-test	Total self-management
Z=8.013 P<0.001	t=15.625 df=88 P value=0.000	10.85	102.33	8.97	135.13	post-test	Total self-management

DISCUSSION AND CONCLUSION:

This study was conducted to investigate the impact of the educational program with family-centered approach on self-management and medication self-management in people with epilepsy. According to the results, the educational program with a family-centered approach leads to improved self-management behaviors in people with epilepsy and during the intervention; the experimental group was able to improve their self-management skills. Results of this study showed that changes in the self-management score were not significant in the pretest and posttest control group. The results of the study by (18) also showed that there were no significant differences between the self-management before and after online program in the control group at the end of the eleventh week. The results of the study showed that changes in the self-management score of people with epilepsy were not significant in the pre-test and post-test of the experimental group. The results of a study conducted by(19) indicated that the experimental group used this database, showed more medical compliance, self-management and information compared to the control group. Also, according to the results of this study, changes in self-management score of people with epilepsy in the pre-test and post-test of control and experimental groups were also significant. Similar to the findings, the results of a study (20) entitled "Impact of self-management guidelines on the health of people with epilepsy" showed that self-management guidelines had a significant impact on self-management and health in the experimental group compared with the control group. Unlike the results of this study, research by (19) showed no significant changes in the self-management in people with epilepsy after telephone intervention in the experimental group compared to the control group. It seems that the difference might be due to small sample size (20) and type of intervention (medication, stress management and sleep).Additionally, due to learning difficulties in epilepsy patients, the benefits of face to face training and support family members with patients with epilepsy should not be overlooked. The present study utilized educational pamphlets by PowerPoint, which led to the selection of patients with literacy; the results are not generalizable to literate patients. The practical implementations of the research and final data collection have been conducted by self- reporting method; the accuracy of self-reported information should also be considered as a potential limitation. Therefore, this study is recommending to design clinical trials in other patient populations, as well as to measure the effectiveness of the program in a longer time.

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Unused medication waste: respondent's opinion from current study in Malaysia.

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Abstract

There are a lot of effort have been employed to find out the major factor which increase the volume of medication waste. However, several survey reports were highlighted the key factors of medication waste like lack of knowledge on the serious impact of unused medication waste, neglected the proper disposal technique, not following the drug take bag system, pharmacy or dispensaries were not providing proper guideline or any materials to return unused medicines to the pharmacy, not enough campaign or community activities on medication waste, educational institute were not taking any responsibility like institution base extra seminar or lecturer on dangerous environmental impact and serious public health problem due to unused medications. However, this report will be encouraged to the government policy maker, social and welfare department and health facilities department to take an emergency necessary steps to reduce or resolved this problem.

Keywords: Knowledge, Attitude, Unused medications, Medication waste, Public health, Environment.

Introduction

Medication return program (MRP) was first introduced in year 2010 as an initiative from Pharmaceutical Service Division, Ministry of Health Malaysia. With its objectives to preserve the environment from hazardous pharmaceutical compounds and to prevent accidental ingestion, misuse and abuse of extra medication, the core function of MRP is to provide public a safe place to dispose unused medication [1]. Unused medication collected by pharmacies is

managed as clinical waste and incinerated by waste management company. On the other hand, inappropriate disposal of unused medication has led to the traces of pharmaceutical waste like analgesic, anticonvulsant, antiepileptic, antibiotics accumulated in landfills and leached into freshwater environment [2]. This detrimental effect can be expected in countries where landfilling is the predominant method of managing municipal solid waste, such as Malaysia [3, 4].

More importantly, Malaysian's awareness on environmental hazard caused by unsafe medication disposal are largely unknown. Several international studies have shown that 48-75% of the population are aware that improper disposal of unwanted medication will lead to contamination of the environment [5-8].

From the previously published research reports which explored the opinion and practice regarding disposal of unused medication among patients and general medication consumers in Malaysia. This effort was conducted to elucidate unused medication disposal practice and their impact on environment as well as public health. Al-Nagar et al., (2010) performed an in-depth interview with 28 patients during the period from December 2009 until February 20. Majority of the participants were male, 15 (53.6%), older than 55 years old, 18 (64.3%), Malay, 20 (71.4%) and married, 24 (85.8%). The most common diseases reported among the participants were hypertension, 11 (39.3%) and diabetes mellitus type II, 6 (21.4%). There were three main frequent disposal methods practiced by the respondents, the majority of them threw unused medication into the trash, 16 (57.1%), followed by burning the unused medication, 4 (14.2%) and storing it in a refrigerator, 4 (14.2%). The majority of the participants, 17 (60.7%) mentioned that the best way to educate the public about disposal unused medication is through school, university and public campaign. The most used method to dispose unused medication among Malaysian patients is a throw of unused medication into the trash [9].

Azad et al., (2012) performed a descriptive cross sectional survey involving patients-based structured questionnaire format with answer sets; carried out at International Islamic University Malaysia (Health centre Gombak campus, Selangor) and the medical college of the International Islamic University Malaysia (Kuantan campus, Pahang). Although, 87% of the respondents had primary knowledge on medications waste and its impact on public health, majority of the respondents (93%) were not familiar with the drug-take-back system. However, only ~2% of the total respondents properly follow the drug-take-back system. Most of the participants reported disposing off in a manner that leads to more than 65% ending up in a landfill. In addition, 83% of the respondents added another disposal system that ultimately ended up in a landfill. A survey suggested that there is an urgent need to develop public awareness and dispensing policies & delivery to collection bag which reduces the volume of medication waste [10]. There is a growing concern of unintended consequences of inappropriate medications disposal on the environment and public health.

Lim et al., (2016) conducted a cross sectional survey using a self-administered closed-ended questionnaire on information, medications disposal and views, awareness of medications take back program and reasons for their unwillingness to return the unused and unwanted medication to pharmacy or

doctor. A convenient sample of 438 patients at Out Patient Pharmacy and Patient Registration areas in the hospital were collected which completed within three months. Only 44.5% had ever received information about medications disposal and were significantly more likely to return them to a pharmacy or doctor (29.2% versus 6.0%, $p < 0.001$). There were significant differences between tertiary and non-tertiary institutions with regard to not returning to pharmacy or doctor (22.8% versus 42.0 %, $p = 0.004$). Some common medications disposal methods were throwing medications away with household garbage,38.3% (n = 168), returning to pharmacy or doctor, 35.1% (n = 154) and flushing medications down the toilet or sink 11.0% (n = 48). About 50.2% (n = 220) knew about medications take back program and were significantly more willing to return the medication to the assigned location (34.7 % versus20.1%, $p < 0.001$). The main reasons for unwillingness were availability of time, not convenient or a bother and out-of-vicinity location. There is a clear need to create public awareness about issues on safe medication disposal and medications take back program [11].

Azad et al., (2016) conducted a descriptive cross-sectional audit involving patients-based structured questionnaire format with set answers. The data was analyzed using partial least square method. The results revealed that excess supplied, expired medicine, changed treatment and side effects have a significant impact on unused medication. In addition, overall unused medication had a significant relationship with environmental effect. In contrast, although excess supplied and side effects had no significant impact on environmental effect, expired medicine and changed treatment had significant impact on environmental effect. The data therefore suggested that there are few factors which increased the volume of leftover medicine and this led to an enhanced international awareness of the potential detrimental effects on the environment. More effort are needed to raise public awareness as an initial step towards promoting behavioural change in connection to medication wastage [12].

Visually impaired individuals are particularly at higher risk of experiencing medication error. In a study to identify the problems encountered by the visually impaired population when handling their medication, cross-sectional survey was conducted using an interviewer-guided questionnaire with 100 visually impaired individuals. The questionnaire comprised of series of questions in medication management. All of the respondents perceived that self-administration of medication was a challenging task. A total of 89% of respondents were unable to read the prescription labels, 75% of respondents did not know the expiry date of their own medication, and 58% of respondents did not know the name of the medication. With regard to storage of medication, 72% of respondents did not practice appropriate methods to store their medication, and 80% of respondents kept the unused medication. All of the respondents disposed leftover medication through household rubbish. A total of 64% of respondents never practice medication review. Most (96%) of them did not tell health-care providers when they faced difficulties in handling their medication. Most of the visually impaired individuals did not receive appropriate assistance regarding medicine use and having low awareness in medication management. This can lead to increased risk of medication errors or mismanagement among visually impaired population. Hence, effective strategies, especially in

pharmaceutical care services, should be structured to assist this special population in medication handling [13].

Yang et al., (2018) conducted a cross-sectional study in 33 out-patient pharmacies in Sabah healthcare facilities. Quota sampling was used to recruit 244 subjects. Data collected from each facility was identified and trained prior to data collection. Self-reporting questionnaire captured data of socio-demographic, awareness on MRP and patient's knowledge and practice towards unused medication. Independent t-test and chi square test were performed to detect differences and association. Subject mean (SD) age was 45.1(15.5) years and almost two-third (60%) of the subjects were female. Majority (73%, 95%CI 67- 78%) knew that inappropriate disposal of medication will cause environmental hazard. Only 54% (95% CI 47-60%) had heard of MRP, 26% (95%CI 21-32%) had utilized MRP to return unused medication.

CONCLUSION

To develop the public awareness about dangerous effect of medication waste on public health and environment is the most important target of this present report. This report will help facilitate an enhanced national or local and international awareness of the potential detrimental effects on the environment and public health of unused medication waste.

Subject's awareness on environmental hazard and MRP were associated with their practice to return unused medication ($p=0.001$ and $p<0.001$ respectively). Mean years of education and median family income were significantly different between the aware and unaware group respectively [11.3(6.0) vs 8.9(4.5) yrs, $p=0.003$; RM2000 vs RM1260, $p<0.001$]. The most common unused medication were analgesics (27.1%), antihypertensive (24.4%), antiglycemic (14.7%) and supplements (12%). The two predominant methods to "dispose" unused medication at home were through garbage (47.8%) and return to healthcare facilities (30.0%). This study established the need for public awareness on MRP, environment awareness and disposal practice of Malaysian citizen. Creative and innovative recommendations have been made for MRP promotion and to improve public knowledge on safety disposal of unused medication [14].

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CONFLICTS OF INTEREST

All authors declared no conflict of interest

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THE EFFECTIVENESS OF EMOTIONAL INTELLIGENCE TRAINING ON ANXIETY IN PRIMIGRAVID WOMEN

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Abstract:

Background: Anxiety is defined as a vague feeling of fear and with unknown origin and having components such as physical, cognitive, emotional and behavioral. The mental state of women during pregnancy and the stress of this period can be directly or indirectly affected on fetal and maternal health in the same period and or following years after the birth. The most appropriate treatment due to limitations of pregnancy is psychological treatment. The aim of this study was to evaluate the effectiveness of emotional Intelligence training on anxiety in primigravid women.

Materials and methods: This study was an Interventional study in parallel groups. Primigravid women consisted of 80 pregnant women in the two groups, intervention group (n = 40) and control group (n = 40) were randomly assigned. The intervention group trained at the workshop method in six weekly sessions and each session were about 120 minutes. Schering emotional intelligence questionnaire and Spielberger State-Trait Anxiety with pre and post-test to measure emotional Intelligence and anxiety were completed by both groups. The results were analyzed using SPSS V.19.

Results: The results of analysis of covariance showed that the adjusted mean any of the scores of emotional intelligence, general anxiety, trait anxiety and state anxiety in terms of group membership (intervention, control) there is a significant difference in post-test ($P<0.001$).

Conclusions: According to the results of this study, emotional Intelligence training can be used as reduce anxiety during pregnancy.

Key-words: Training, Emotional Intelligence, Anxiety, Pregnancy, Primigravid Women

INTRODUCTION:

Pregnancy is women's identification stage. They are faced with the existence of other human beings [1]. Although the process of the motherhood considered as enjoyable and completeness women's events in their life and often lead to dramatic and happiness in parents. However, because of physical and psychological changes can be caused with stress and concern. If stress do not management in pregnant women can lead to anxiety in pregnant women [2]. This phenomenon is more severe in primigravid; because, they first encountered with these changes. Pregnant women due to encounter with concerns about the status of the fetus, fear of childbirth, reducing daily activities, extreme care and apparent changes cause anxiety and fear. Anxiety and depression are two of the most common disorders that women may have experienced during their life and also the delivery is the stressful event during

women's life that often associated with anxiety [3, 4].

Anxiety is defined as a vague feeling of fear and with unknown origin and having components such as physical, cognitive, emotional and behavioral [5]. Anxiety is pervasive uneasiness, unpleasant and vague which often with associated symptoms such as headache, sweating, palpitations, feeling of tightness in the chest and a brief upset in the stomach. Anxious person may have a feeling of restlessness [6]. The study was carried out by Mangoli and et al. in Iran, the prevalence of mental disorders (depression and anxiety) has been reported in pregnant women as 28.8% and 15% respectively [7]. Karamoozian and et al. (2015) showed that more than 54% of pregnant women have some symptoms of anxiety during pregnancy and more than 37 percent of them have experienced depression during pregnancy [8].

The mental state of women during pregnancy and the stress of this period can be directly or indirectly affected on fetal and maternal health in the same period and or following years after the birth [9, 10]. The Studies in this area shows that Stress and anxiety have been related during pregnancy with the birth of premature and low birth weight, pregnancy poisoning, depression, negative perception of delivery and unnecessary fears. Also, the risk of hypertension in pregnancy and abortion have been increased and related to the allergic diseases in childhood [11, 12]. Also the other studies indicates that depression during pregnancy playing a role in diseases such as child with schizophrenia, emotional disorders in the future, autism and asthma in infancy [13, 17]. The relationship between prenatal maternal anxiety sleep problems in children found that maternal anxiety in babies is due to having nightmares [18]. Also Reviews of O'Connor and et al. have shown that there is significant anxiety at 32 weeks for the mother, can causes behavioral and emotional disorders in children about seven year [19, 20]. Training is the one of the key players in prenatal care which World Health Organization knows that [21].

Bastani et al. showed that the control anxiety with non-drug method as a self-help approach that involves the identification of stressful thoughts and behavioral techniques, a significant improvement in anxiety, depression and grading problems in the intervention group than the control group has been created [22]. World Health Organization (WHO) in its declaration of human's existential aspects, refers to psychical, mental, social and spiritual aspects [23].

Bar-On; a person who considered the emotional Intelligence (cognitive intelligence) as an important factor to the development of individual abilities for success in life. For the first time, Bar-on emotional Intelligence have proposed in 1980 and in the same year, he has paid to development the emotional intelligence questionnaire. He also believed that cognitive intelligence is not the only major index to predict success, because many people despite high cognitive intelligence, but they not successful in their life [24]. Mayer and Salovey have been counted that emotional intelligence is the ability to recognize emotions and relationships which enables person to solve their problems [25]. Goleman believes that emotional intelligence is an aspect of intelligence which people achieve to success in various aspects of life and playing a role rather than Intelligence Quotient (IQ) [26]. Different theories and studies show that emotional intelligence is learned [27, 28]. One of the advantages of being acquired emotional intelligence than IQ that is easy to learn, develop, improve and reform [29-31]. Mayer and Salovey by introducing the concept of emotional intelligence skills can be taught and Knowledge in the areas of personal feelings, using appropriate emotions, their relief capacity and ward off anxiety and depression, self-motivation and understanding the emotions of others and maintain relationships have been described [17].

Our age is called "the age of anxiety" and anxiety is obvious that in such an era of abundant and widespread protests [13]. Anxiety is a mental health component and its reduction can be used to promote mental health [5]. When people are under stress should have the necessary confronting skills to reduce anxiety effect. If Anxiety to be managed and providing effective confronting skills and person should be able to solve the needs and challenges of your life in a better way [32]. What was said about the importance of anxiety in pregnancy and

accordance with three and four regulations, midwifery's duties description approved by Ministry of Health and Medical Education of Iran where pregnant women ready to accept the role of the mother is one of the most important responsibilities of midwives has been proposed [33].

In this study, effectiveness of emotional intelligence training on anxiety in primigravid women has been examined.

MATERIALS AND METHODS:

This study was an Interventional study in parallel groups. Population examined in this study was chosen as cluster form through the three clinics of hospitals affiliated to Qom University of Medical Sciences. Primigravid mothers consisted of 80 pregnant women in the two groups and intervention group (n=40) and control group (n=40) were randomly assigned.

Inclusion criteria to identify pregnant women as records and interviews were applied. Inclusion criteria were included: having Iranian nationality, literacy, no having significant physical and mental illnesses, no history of first-degree relatives died during the last six months and avoiding the use of anti-anxiety drugs and sedatives. Exclusion criteria as the absence of more than three sessions, unwillingness to participate in the training sessions, complication of pregnancy which leads to the inability of the mother to attend training sessions. After completing the informed consent form by qualified personnel, they were randomly placed in intervention group and control group. Demographic information, Spielberger questionnaire and Schering Emotional intelligence questionnaire pre-test in both groups (intervention and control) were given.

Spielberger State-Trait Anxiety questionnaire contains 40 questions. Questions 1 to 20 assigned to the anxiety state and trait anxiety is assign to questions 21 to 40. Questions related to state anxiety scoring are in multiple-choice Likert scale including never, sometimes, usually or too much. Questions of trait anxiety was scoring as the same as multiple-choice including Almost never, sometimes, often or almost always [34]. Eventually the two score achieved that the first and second score represents state of anxiety and trait anxiety respectively. Each person also can earn two types of anxiety scores from 20 to 80. Cronbach's alpha coefficient have been reported by Spielberger et al. for anxiety and trait anxiety subscale as 0.92 and 0.90, respectively [35]. The test-retest coefficient for anxiety and trait anxiety subscale as 0.62 and 0.68, respectively have obtained. In a study that was conducted by taghavi and et al, Cronbach's alpha coefficient scale for anxiety and trait anxiety was carried out as 0.92 and 0.90, respectively [36]. Sieber or Schering emotional intelligence standardized questionnaire has five subscale including self-motivation, self-awareness, self-control, social conscience or empathy and social skills that totally contains 33 questions. This questionnaire has been validated by Mansoori in Iran. [37]. He has obtained the internal consistency using Cronbach's alpha as 0.85. The maximum and minimum score that the person can be gained as 165 and 33. Earn the higher score indicates high overall emotional intelligence and lower score indicates the overall emotional intelligence is low.

The control group have received regular prenatal care and intervention group have trained in emotional intelligence in six weekly sessions, each session is about 120 minutes. Workshop method and group discussion sessions were implemented by executive manager as intervention group. The intervention group (n = 40) were divided into four subgroups and each subgroups included 10 participants. Training tools were including educational booklets, pamphlets, slides and posters. The content of training sessions for each group of 10 participants based on emotional intelligence are as follows:

Session I: preliminary assessment and overview of the objectives of education and training programs to clients, emotional self-awareness. Session description: cooperation and assurance, emotional self-awareness (recognition and understanding their feelings).

Session II: Proximity emotional, social responsibility. Session description: (awareness, understanding others' emotions, create and maintain mutually satisfying relationships). Individual empowerment in introducing ourselves as part constructive and cooperative in their social group.

Session III: compatibility and problem solving. Session description: problem solving (providing solutions, evaluate and make decisions about the solutions according to priorities) - Flexibility (the cycle of thinking, emotions and behavior).

Session IV: Anxiety Management. Session description: The ability to tolerate anxiety (emotional rational and appropriate treatment against anxiety) - impulse control.

Session V: General mood. Session description: joy (satisfaction of self, happiness of self and others) - positive thinking (looking at the bright side of life and maintain a positive attitude even in the face of adversity and anxiety).

Session VI: closure. Session description: Review on participant's progress, review and generalize learned skills in previous sessions.

Two weeks after the sessions, Schering Emotional Intelligence questionnaire and Spielberg anxiety questionnaire again were placed at the disposal of people in both groups.

The data obtained from this study were analyzed by SPSS software V.19. Statistical analysis of data for analysis of covariance was used. The level of significance was considered less than 0.05.

RESULTS:

Frequency, mean and standard deviation of pre-test and post-test of emotional intelligence, general anxiety, trait anxiety and state anxiety in separate groups are shown in Table 1.

According to this table Average score of emotional intelligence after the training program was 124 which represents an increase in emotional intelligence scores than before the intervention in intervention group. Also, after intervention in intervention group, total score of anxiety, anxiety state and trait anxiety were, 81.40, 41.77 and 47.62 respectively that after the intervention, there were significant reductions.

As can be seen in Table 2, the results indicate that analysis of covariance that between adjusted mean for each scores of emotional intelligence, general anxiety, trait anxiety and state anxiety in terms of group membership (intervention, control), there is a significant difference in post-test ($p<0.0001$)

Table 1. Frequency, mean and standard deviation of pre-test and post-test of emotional intelligence, general anxiety, trait anxiety and state anxiety in separate groups

Variable	Group	Pre – test			Post - Test		
		Frequency	Mean	SD	Frequency	Mean	SD
Emotional Intelligence	Intervention	40	103.52	9.07	40	124.00	8.277
	Control	40	101.45	10.82	40	98.45	11.146
Total anxiety	Intervention	40	92.100	10.05	40	81.40	9.75
	Control	40	91.82	9.43	40	96.80	9.60
state anxiety	Intervention	40	47.62	5.30	40	41.77	5.08
	Control	40	47.12	4.86	40	49.75	5.01

Trait Anxiety	Intervention	40	44.47	5.02	40	39.62	5.00
	Control	40	44.70	5.05	40	47.05	5.18

Table 2. Results of analysis of covariance emotional intelligence scores, total anxiety, trait anxiety and state anxiety after adjustment for pre-test scores

Variable		Sum of squares	Average of squares	F	p-value
Emotional Intelligence	Pre-test	7033.154	7033.154	1177.188	< 0.001
	Group Memberships (Intervention, Control)	10996.945	10996.945	1746.820	< 0.001
Total anxiety	Pre-test	6946.350	6946.350	1462.790	< 0.001
	Group Memberships (Intervention, Control)	4907.549	4907.549	1033.451	< 0.001
State anxiety	Pre-test	1842.175	1842.175	969.567	< 0.001
	Group Memberships (Intervention, Control)	1425.295	1425.295	750.156	< 0.001
Trait anxiety	Pre-test	1915.646	1915.646	1345.493	< 0.001
	Group Memberships (Intervention, Control)	1037.370	1037.370	728.618	< 0.001

DISCUSSION:

Average emotional intelligence related to post-test in the intervention group was much higher than the average of the pre-test is in this group. Also the mean of total anxiety, trait anxiety and state anxiety related to post-test groups is below the average of the pre-test is in this group while control group's situation was opposite and the study shows that training has significant result. The study shows that emotional intelligence training has been significant impact on reducing anxiety.

The results of this study showed that significant and inversely relationship between emotional intelligence and anxiety and confirms by Sunil and Rooprai [38]. Sui in research showed that, there is a significant negative relationship between emotional intelligence and behavioral traits, including aggression, anxiety and depression among Hong Kong students [39]. Khanjani and et al. found that, there is a significant negative relationship between anxiety and depression among emotional intelligence of students [40] and also confirms the results of previous studies in this field.

Boussiakou and et al. have concluded that emotional intelligence is a necessary variable to lower the level of anxiety and disappointment and raise the level of confidence and courage [41]. In a study in Arak university students showed that, there is significant negative relationship between emotional intelligence and computer anxiety [42]. Mashhadi and et al. in a study to investigate the relationship between emotional intelligence and its components with symptoms of anxiety, they conclude that, there is an inverse and negative relationship between emotional intelligence score and anxiety symptoms [43].

Based on obtained results from this research, it is clear that the interaction between changes in emotional intelligence and anxiety scores is significant. A study of emotional intelligence training on intensive care units doctors and nurses were examined by Sharif and et al. They found that after the implementation of emotional intelligence training, personnel significantly reduced anxiety levels [44]. Also, in a study on the impact of education on emotional intelligence components in anxiety of nurses employed by Vahidi and et al. was carried out in Sabzevar. The results of their study showed that with the increase of emotional intelligence due to the effect components of emotional intelligence training, the state-trait anxiety have significantly reduced [45].

The findings of this study showed emotional intelligence training had a significant effect on reducing anxiety in pregnant women confirming the findings of the studies mentioned. Therefore, it can be used to reduce anxiety in pregnant women by emotional intelligence training.

The limitation of this study was that there was no opportunity for husbands' participants in the training program directly, and there was only indirect training if accepted

The strengths of this study can be referred to the newness subject and education workshop method because it is possible beneficial effects of psycho-social, Group dynamics and supportive atmosphere, friendly group training in addition to the effect of emotional intelligence, complementary intervention is located and a reduction in the variable research has been created.

This study is part of the Master thesis in Health Education field which has a code of ethics from the ethics committee of Qom University of Medical Sciences and IRCT number from clinical trials registration canter Iran as "IRCT2016083129619N1".

CONCLUSIONS:

Studies have been shown stress and anxiety during pregnancy has adverse consequences on the health of mother-fetus and child in first grade then it will results in public health. Considering the important role of pregnant women care during pregnancy, And given the importance of prevention, control stress and anxiety, improve the quality and effectiveness health care as well as the key role of emotional

intelligence training and can take appropriate effective step for measures to reduce stress and anxiety in our sensitive population.

With respect to the family is one of the most important social institutions which determining and fixing agents and integration the social institution can play an effective role in promoting cultural society. Hence, it is recommended educational programs in the future, Spouses participate in training programs be considered. It should be noted that this study was implemented in Qom province and its spread to other cities should also be noted similarities in culture and ethnicity.

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INVESTIGATING THE RELATION BETWEEN HEMOGLOBIN A_1C TO LEFT VENTRICULAR HYPERTROPHY AND LEFT VENTRICLE MASS IN CHILDREN WITH TYPE 1 DIABETES MELLITUS

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Abstract:

Left ventricular hypertrophy (LVH), is one of heart complications that increases the probability of cardiac arrhythmia and heart failure. Some researchers have claimed for the effect of factors such as high blood pressure, diabetes and kidney failure on LVH. This study investigates the relation between hemoglobin A1c (HbA1c) and left ventricular hypertrophy and left ventricle mass (LV mass) in children with type 1 diabetes mellitus. In this cross sectional study, the population consisted of patients referred to Afzalipoor hospital of Kerman in years 2014-2015 who were evaluated. In order to investigate heart diseases, Doppler echocardiography has been performed and to investigate hemoglobin A1C level, 2 ml blood was taken from patient. Then independent t-test and Pearson test were used for the analysis of obtained data. According to the results, the effect of HbA1c level on LVH and increase LV mass was not significant. Only some demographic factors (age, height, weight, maximum blood pressure) had positive and meaningful relation with left ventricular posterior wall (LVPW) ($p<0.05$). In this study, there was a significant relation between systolic annular velocity (Sa) and HbA1c ($P < 0.05$). Since Sa is one of the TD1 indicators, this relation shows that diastolic dysfunction is a predictor of increase LV mass. The increasing trend of diabetes mellitus prevalence and its associated problems impose major costs to developed and developing societies. Therefore, it calls for special attention by the medical communities and policy makers.

Keywords: Children, diabetes mellitus, left ventricular Hypertrophy, Left ventricle mass, hemoglobin A_1c

INTRODUCTION

Diabetes mellitus is one of the most common and costly chronic diseases in world. Outbreak Amount of type 1 diabetes mellitus in people under 30 years old is about % 0.3 and in Children under 5 years old is %1.2 which is increasing every year [1, 2]. According to recent researches by increase in diabetes period, micro and macro vascular complication will also increase. Therefore diabetes mellitus in Children and its outbreak in earlier ages increase probability of resultant complications [3, 4].

Among resultant complications of diabetes, macro vascular disease, which caused cardiovascular disease, is the most important and the main reason of death because of diabetes mellitus [5]. According to research in England probability of death because of cardiovascular complication in people with type 1 diabetes is 5 times more than other people [6]. Left ventricular hypertrophy (LVH) is one of systemic hypertension cardiovascular complication, which increases probability of cardiac arrhythmia and cardiovascular accident [7].

Also in addition to systemic hypertension there are other factors effective in LVH. In a research by Lepira et al. on about 100 hypertensive patients it has been shown that Dyslipidemia, high blood sugar and duration of hypertension are effective factors in LVH [8]. Also according to a research by Salmasi et al. in England it has been found that diabetes mellitus can affect diastolic function of left ventricle [9]. LVH is an important sign to predict cardiovascular complications and death probability in patients with cardiovascular disease [10]. In diabetic patients, left ventricle mass (LV mass) increase as another heart disorder is also seen. It is thought that increase of LV

mass due to metabolic, functional and structural inappropriate factors can increase risk of cardiovascular diseases. For example increase of left ventricle mass can caused Myocardial infarction and heart failure due to need of myocardial to more oxygen. Many researches shown that impairment of glucose tolerance (IGT) is in relation with increase of LV mass [11, 13].

Hemoglobin like other proteins of body combines with sugars such as glucose. This combination is stable (about 120 days) till red blood cell is alive. This is the base of hemoglobin A_1c (HbA_1c) test, since whatever the level of blood sugar in last 2-3 months is more than normal level, percentage of combined HbA_1c with glucose will be more. So measurement of HbA_1c is suitable method to determine control of blood sugar and adequacy of insulin therapy of diabetic patients [14].

Due to the content of last paragraphs, increasing outbreak of diabetes mellitus, high blood pressure and hyperlipidemia in Children during recent decades, and also due to resultant diseases of cardiovascular which can be controlled, early diagnosis and treatment of them is essential to reduce cardiovascular diseases and danger of death. On the other hand early diagnosis leads to increase longevity and improvement of life quality in patients. The goal of this study is to investigate relation of hemoglobin A_1c (HbA_1c) to LVH and LV mass in Children with type 1 diabetes mellitus.

MATERIAL AND METHOD

This study is a descriptive-analytical study, which had been conducted on diabetic Children referred to Afzalipoor hospital of Kerman during 2014-2015, and Sampling was randomized.

Inclusion and exclusion criteria to participate in study

Inclusion criteria: diabetic Children more than 6 years old that is proved are suffering from type 1 diabetes mellitus at least for more than 2 years.

Exclusion criteria: children with Hemoglobinopathies (such as major thalassemia) and diabetes mellitus resultant from Endocrinopathy (such as Cushing syndrome, hyperthyroidism) also children with diabetic complications (such as kidney diseases, hypertension) and resultant diseases of secondary diabetes like thalassemia and cystic fibrosis were excluded from study.

After satisfaction of patients and their parents a questionnaire including general information such as: age, sex, elapsed time from disease diagnosis was filled out.

Evaluation of left ventricular mass

In order to evaluate cardiac involvement, by mean of echocardiography machine (Medison, South Korea) Doppler echocardiography was performed by one cardiologist. Corresponding to suggestion of American society of echocardiography M-mode echocardiography has been used to evaluate end-diastolic dimension and end-systolic dimension from size of heart cavities and valves [15]. LV mass also was determined from diameter of left ventricle by the following formula [17].

$$LVmass = 1.04 \times [(LVEDD + PWD + IVS)^3 - (LVEDD)^3] - 13.6$$

Where: LVEDD, left ventricular end-diastolic dimension (; (PWD), posterior wall thickness ;(IVS), interventricular Septal thickness

Evaluation of left ventricular hypertrophy

In order to evaluate interventricular septal thickness in diastole, left ventricular end-diastolic size, left ventricular posterior wall thickness in diastole and ejection fraction doppler method was used.

Hemoglobin evaluation

Evaluation of hemoglobin was performed by photometric accuracy method on 2 ml blood of patient by means of Selectra device (Poland), and Pishtaz-Teb kit (Iran).

DATA ANALYSIS METHOD

After data collection statistical analyses were performed with SPSS software .For Descriptive statistic, average central index or relative abundance was used. Also independent t-test and Pearson test were used for analytical statistic. In this study meaningful level was considered below 0.05.

RESULTS

In this research 45 patients with type 1 diabetes mellitus were studied and their demographic information is shown in table 1.

Table 1: Demographic variables

Sex	**Abundance**
Male	26(57.8)
Female	19(42.2)
	Mean
Age	12.20(4.45)
Height	143.30(23.07)
Weight	39.94(17.57)
Maximum blood pressure	103(9.90)
Minimum blood pressure	65.22(8.91)
Years of getting diabetes	5.48(3.88)
Body mass index	18.36(3.75)
Hemoglobin A_1c	8.89(1.98)

By analyzing echocardiography data, mean values of LV mass, LVEDD, LVPW, **Left Ventricular Posterior Wall**; LVESD, left ventricular end-systolic dimension; LVEF, Left Ventricular Ejection Fraction; E/A, E/E, Sa, Ea, Aa were respectively 92463.62, 23.67, 8.14, 12.96, 65.14, 1.86, 5.38, 11.65, 18.72, 8.61.

Table 2 shows information about:

1- Relation of demographic information to LV mass, LVPW and LVESD

2-Relation of echocardiography information to LV mass, LVPW and LVESD

3- Relation of hemoglobin A_1c to LV mass, LVPW and LVESD

According to obtained information of echocardiography, just there was a meaningful relation between LVEDD and LVESD. Other echocardiography findings did not have relation to LVH and LVmass. Just some demographic findings such as age, weight, height, maximum blood pressure had meaningful relation to LVPW.

Relation of LV mass and hypertrophy to sex was studied which LV mass index (male=126038.65 female=67928.03) and LVESD (male=15.6 female=11.03) unlike LVPW index (male=8.06 female=8.21) were greater in male than female but this difference in each of three indexes was not statistically meaningful.

Table 2: Relation of LV mass and hypertrophy to investigated variables

Variables	LV mass Pearson coefficient (p.v)	LVPW Pearson coefficient (p.v)	LVESD Pearson coefficient (p.v)
age	0.154(0.313)	0.350(0.018)	0.00(0.998)
height	0.190(0.211)	0.342(0.021)	0.008(0.956)
weight	0.127(0.404)	0.309(0.039)	-0.092(0.546)
Maximum blood pressure	0.001(0.995)	0.413(0.005)	-0.086(0.572)
Minimum blood pressure	-0.053(0.729)	0.272(0.071)	-0.049(0.751)
Year of getting diabetes	-0.021(0.891)	0.210(0.166)	-0.169(0.267)
Body mass index	-0.038(0.804)	0.160(0.293)	-0.199(0.190)
Hemoglobin A_1c	0.234(0.127)	0.077(0.618)	0.077(0.618)
LVEDD	0.220(0.146)	-0.004(0.980)	-0.365(0.014)
LVEF	-0.068(0.656)	-0.132(0.388)	-0.124(0.419)
E/A	-0.025(0.872)	0.002(0.989)	-0.074(0.630)
E/E	-0.179(0.240)	-0.053(0.732)	-0.053(0.730)
Sa	0.097(0.525)	-0.065(0.673)	0.054(0.725)
Ea	-0.006(0.969)	0.081(0.595)	-0.124(0.417)
Aa	0.018(0.909)	0.293(0.051)	-0.167(0.273)

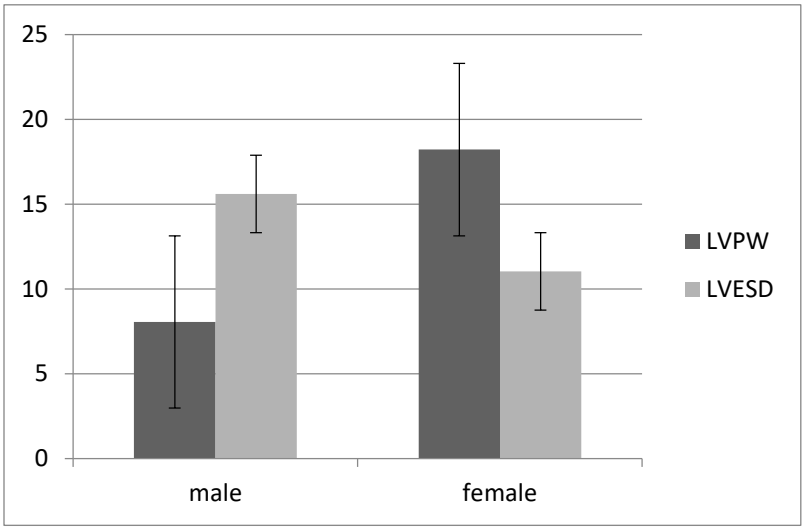

Figure 1: Comparison of LVPW and LVESD according to sex
LVPW, LVESD: Data were presented mean ± sd. P<0.05.

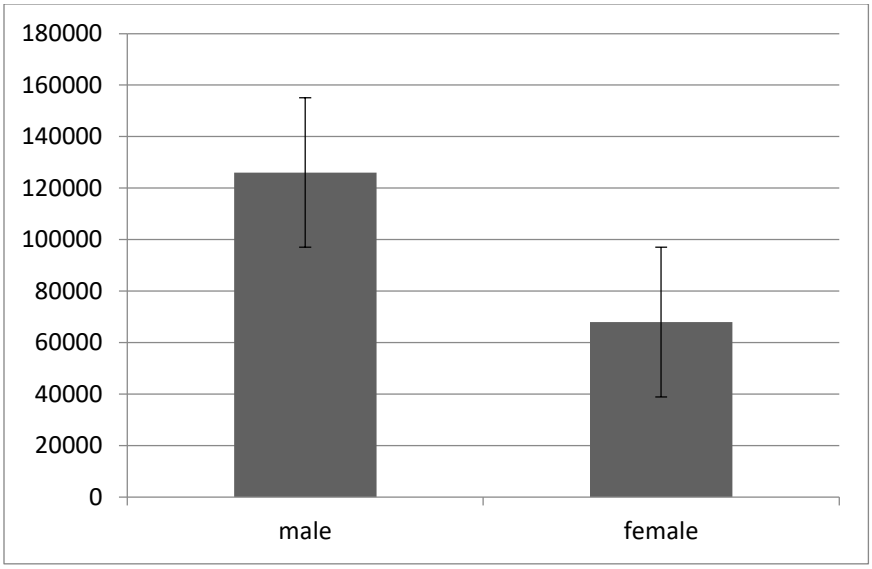

Figure 2: Comparison of LV mass according to sex
LV mass: Data were presented mean ± sd. P<0.05

DISCUSSION

According to this study hemoglobin A_1c is not related to LV mass, LVPW and LVESD in Children suffering from type 1 diabetes mellitus. Also sex is not in relation with LV mass increase and LVH. Echocardiography results show that just there is an inverse relation between LVEDD and LVESD. Other echocardiography findings did not have relation to LV mass and LV hypertrophy. Also some demographic findings just had meaningful relation to LVPW.

In research by Chan Yengo et al., it is shown that hemoglobin A_1c has meaningful relation to diastole function and acoustic densitometry in patients suffering from type 2 diabetes mellitus [17]. Seravi et al. showed that Diastolic dysfunction in patient with type 1 diabetes mellitus is more and strongly in relation to blood sugar level (HbA1c) [18]. In another research effect of blood sugar control on LVH development and diastolic failure in children with type 1 diabetes mellitus was investigated and results showed that 14.6 percent of patients had LVH and 47.9 percent of patients had Diastolic failure. Diabetes period in patients with LVH was meaningfully more. LVH outbreak and diastolic dysfunction in these patients were more and control of diabetes could not affect LVH outbreak and diastolic dysfunction [19]. In research by Gosh et al., it is shown that diabetes period is an independent predicting factor of LV mass. Where the increase of diabetes period significantly leads to LV mass increase [15]. Chahal et al. showed that there is a meaningful relation between carotid intima-media thickness and LV mass in patients with type 1 diabetes mellitus. Also this relation is weak in patients with short disease period [16]. Maybe the difference of our study with others is in following up of patients for longer term and type of study. Also for closer examination of the issue, a comprehensive study would be useful. Low number of patients can be regarded as restriction of this study which is because of the absence of referring patients to hospital in predetermined times. Therefore these patients were excluded from study population.

Because of increasing in diabetes mellitus outbreak and resultant problems which yearly impose great costs to develop and developing countries, special attention of medical communities and country planners is necessary. According to results of different researches, weak control of blood sugar due to hemoglobin index, can affect echocardiography indexes. Diabetes mellitus is associated with the risk of cardiovascular diseases, and could be control to decrease high outbreak of cardiovascular diseases in diabetic patients. Therefore planning for diabetes prevention, making changes and effective interference in life style of people in a country is necessary to prevent diabetes where effective treatment of type 1 diabetes mellitus can reduce risk of cardiovascular diseases.

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Assessing the Levels of Social Responsibility among Nurses in the City of Ilam

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Introduction: Taking responsibility is considered an important element in providing quality nursing care. Social responsibility among nurses has also led to more comprehensive care being provided to patients; thus, patients' attitudes toward nursing care within hospitals have changed. For this reason, the present study aimed to determine the levels of social responsibility among nurses in the city of Ilam, Iran.

Materials and methods: The present descriptive cross-sectional study was conducted among a group of nurses employed in public hospitals in the city of Ilam. Data collection instruments included a demographic characteristics questionnaire for nurses (gender, age, level of education, etc.) and the Persian version of the 35-item Questionnaire on Social Responsibility associated with measuring social responsibility among nurses. The questionnaire comprised four dimensions, including a legal component (seven items), an economic component (seven items), an ethical component (nine items), and a philanthropic component (12 items). Data were analyzed using the SPSS Software Version 16, as well as descriptive statistics.

Results: Findings of this study showed that social responsibility among nurses in the city of Ilam was at a high level, with mean and standard deviation scores equaling 133.42 (5.17). The statements reflecting the highest levels (the largest number and percentage) of social responsibility among nurses included "Meeting patient satisfaction is very important to me," with 143 (95.3%) Totally Agree responses; "I really believe in the statement that patients have rights to receive appropriate nursing services" with 142 (94.7%) Totally Agree responses; "If a shopkeeper gives extra money to me, I will give it back," with 143 (95.3%) Totally Agree responses; "I am glad that I am able to solve one problem out of others' problems," with 142 (94.7%) Totally Agree answers; "I am bound to help poor people," with 143 (95.3%) Totally Agree responses; "Helping others is kind of worshipping and it pleases God," with 147 (98%) Totally Agree answers; and "Supporting paralyzed and disabled people is a public duty," with 140 (93.3%) Totally Agree responses.

Conclusion: Furthermore, based on the study's findings, social responsibility among nurses in Ilam was at high levels in all dimensions; therefore, nurse administrators are required to take the necessary measures to maintain and promote it.

Keywords: Social Responsibility, Responsibility, Nurses

INTRODUCTION:

Nursing is a science that has always been a need for humans and nurses are also recognized as individuals endowed with superior dignity within most communities because they are in direct relationship to human health and life (1, 2). Furthermore, nursing care has been defined as donating, supporting, and facilitating activities performed in order to meet the actual and potential needs of an individual or a group and also improve the condition of people's life (3).

The main Goal of hospitals is to provide high-quality of care to patients. (4). Organizations achieving a higher level of qualityservices will obtain higher levels of customer satisfaction as a prelude to attaining a sustainable competitive advantage (5). In this respect, nurses are considered as the first, largest, and most accessible healthcare providers (6, 7). It should be also noted that the first characteristic of quality nursing care is that nurses are goal-oriented based on patient need, the process of nursing, exhibiting a caring attitude, accommodating patient satisfaction, as well as having skilled knowledge and awareness of the profession. As a result, the issue of providing the most appropriate care can lead to an increase in the quality of nursing care (8, 9).

Nurses are the largest group among healthcare providers and they are responsible for the quality of care, from ethical and legal perspectives (1, 10). The nursing profession has a long history of dealing with the changing needs of communities to ensure access to high-quality healthcare. That is why the nursing profession is considered as one of the most important pillars of health systems for providing healthcare services and meeting health policies. In addition to meeting patient needs, nurses are aware of health systems and social systems, and they are in a unique position for providing care (11).

Taking responsibility is considered an important element for nurses in providing nursing care (12). Social responsibility among nurses has also resulted in more comprehensive nursing care being provided to patients and consequently patients' attitudes to nursing care within hospitals have changed (13). To achieve greater success, nurse administrators would do well to increase the awareness of the importance of social responsibility among their staff so nurses may react positively to patients' expectations and greet patients in the best manner.

Social responsibility among nurses in Iran was investigated in a study by Hassanian et al. whose results suggested that 72.6% of nurses held overall responsibility at a high level. Moreover, 70% of the participating nurses were endowed with a high level of economic responsibility, 76.7% of them held economic responsibility at a moderate level, 76.3% regarded ethical responsibility at a high level, and 86.7% of them held philanthropic responsibility at a high level. It was noteworthy that none of the nurses showed low levels of responsibility in any of the components (14). Considering the importance of the phenomenon of taking responsibility by nurses and given that this issue had not been well examined in Iran, or had only been briefly delineated in a few investigations, the present study was conducted to determine levels of responsibility held among nurses in the city of Ilam in 2017.

MATERIALS AND METHODS:

The present study was a descriptive cross-sectional research conducted among nurses in the city of Ilam in 2017. The study population consisted of nurses working in Imam Khomeini and Shahid Mostafa

Khomeini hospitals that were selected using a nurse with simple random sampling method. The number of nurses was determined to equal 150 nurses, considering previous studies in this domain (14). In this respect, nurses with more than six months of clinical work experience and those declaring informed consent were included in the study.

Data collection instruments in this study included a demographic characteristics questionnaire for nurses (gender, age, level of education, etc.) and the Persian version of the Questionnaire on Social Responsibility (14), with 35 items related to measuring responsibility among nurses, which was completed using a self-reporting method. The Questionnaire on Social Responsibility for nurses also comprised four dimensions, including a legal component (seven items), an economic component (seven items), an ethical component (nine items), and a philanthropic component (12 items). The items were scored based on a 5 point Likert-type scale, ranging from Totally Disagree (score One) to Totally Agree (score Five). Additionally, the reliability of the questionnaire had been already endorsed in international (15) and domestic (14) studies.

The present study commenced after obtaining permits from the Research Ethics Committee at Ilam University of Medical Sciences (IR.MEDILAM.REC.1396.106). To this end, researchers reached out to nurses working on different shifts and selected those who were eligible for inclusion in the study. The research objectives were then explained to the participating nurses and they were assured that the results would not have any impact on their evaluations by nurse administrators and that the data obtained would be reported in general terms. After collecting the questionnaires and entering their contents into the SPSS Software Version 16, the data were analyzed using descriptive and inferential statistical tests.

RESULTS:

The findings revealed that, among 150 nurses participating in the investigation, most were women (92, 61.3%). There were also 120 single nurses (80%) and 120 who were native Persian speakers (80%). Moreover, the mean age of nurses was 29.78 (4.43) (Table 1).

The study's findings indicated that social responsibility among nurses in the city of Ilam was at a high level, with mean and standard deviation scores equaling 133.42 (5.17). The statements reflecting the highest levels (the largest number and percentage) of feelings of social responsibility among nurses included "Meeting patient satisfaction is very important to me," with 143 (95.3%) Totally Agree responses; "I really believe in the statement that patients have rights to receive appropriate nursing services," with 142 (94.7%) Totally Agree answers; "If a shopkeeper gives extra money to me, I will give it back," with 143 (95.3%) Totally Agree responses; "I am glad that I am able to solve one problem out of people's problems," with 142 (94.7%) Totally Agree answers; "I am bound to help poor people," with 143 (95.3%) Totally Agree responses; "Helping others is kind of worshipping and it pleases God," with 147 (98%) Totally Agree answers; and "Supporting paralyzed and disabled people is a public duty," with 140 (93.3%) Totally Agree responses (Table 2).

Table 1: Demographic characteristics of nurses participating in the study in the city of Ilam

Variable		N (%)
Gender	Man	58(38.7)
	Female	92(61.3)
Marital status	Married	72(48)
	No wife	78(52)
Residence status	Native	120(80)
	Non-native	30(20)
Age	M(SD)	29.78(4.43)
work experience	M(SD)	6.28(3.27)

Table 2: Frequency distribution of the levels of social responsibility among nurses in the city of Ilam

Items of social responsibility	Totally agree	Agree	Neutral	Disagree	Totally disagree
Nurses' relationships in this hospital are governed by an administrative hierarchy based on regulations.	111(74)	34(22.7)	5(3.3)	0(0)	0(0)
In my opinion, the promotion and assignment system in this hospital is based on legal criteria.	32(21.3)	47(31.3)	31(20.7)	31(20.7)	9(6)
In my opinion, nurses in this hospital receive salaries and bonuses in accordance with administrative regulations.	86(57.3)	49(32.7)	15(10)	0(0)	0(0)
I think that each nurse should work in the hospital according to their own duties.	91(60.7)	52(34.7)	7(4.7)	0(0)	0(0)
Meeting patient satisfaction is important to me.	143(95.3)	7(4.7)	0(0)	0(0)	0(0)
I really believe in the statement that "Patients have rights to receive appropriate nursing services."	142(94.7)	8(5.3)	0(0)	0(0)	0(0)
I am not basically very involved with people's problems because it does not matter to me.	117(78)	28(18.7)	5(3.3)	0(0)	0(0)
I pay more attention to the profitability of this hospital than anything else.	25(16.7)	48(32)	39(26)	29(19.3)	9(6)
Financial or non-financial rewards in this hospital are important to me.	40(26.7)	30(20)	36(24)	28(18.7)	16(10.7)
I do my duties and do nothing with other colleagues' concerns.	31(20.7)	53(35.3)	40(26.7)	21(14)	5(3.3)

In my opinion, the interests of the medical staff are the main objectives of the Ministry of Health and Medical Education.	43(28.7)	30(20)	29(19.3)	33(22)	15(10)
My salary is very important to me, but patient satisfaction is not either.	0(0)	4(2.7)	6(4)	11(7.3)	129(86)
If I were to choose between the hospital and the people, the hospital's survival is more important to me.	23(15.3)	45(30)	49(32.7)	28(18.7)	5(3.3)
Timely payment of taxes is a social duty.	22(14.7)	58(38.7)	34(22.7)	32(21.3)	4(2.7)
I cannot think of others at all in the current situation.	7(4.7)	19(12.7)	33(22)	57(38)	34(22.7)
I do not really accept the statement of "Kindness brings its own reward."	2(1.3)	7(4.7)	17(11.3)	64(42.7)	60(40)
I think prevention of environmental degradation is a public duty.	118(78.7)	17(11.3)	1(0.7)	14(9.3)	0(0)
I do not have any expectations for rewards (financial or non-financial) if I help others.	88(58.7)	38(25.3)	11(7.3)	11(7.3)	2(1.3)
I am willing to spend some non-administrative time on hospital issues.	98(65.3)	46(30.7)	6(4)	0(0)	0(0)
In my opinion, each family should regularly clean the pavement in front of their homes.	131(87.3)	5(3.3)	10(6.7)	3(2)	1(0.7)
If a shopkeeper gives me extra money, I will give it back.	143(95.3)	7(4.7)	0(0)	0(0)	0(0)
I would always love to help others in charity fundraising celebrations.	91(60.7)	43(28.7)	16(10.7)	0(0)	0(0)
Forgiveness and loyalty are two basic principles of my life and work.	127(84.7)	12(8)	5(3.3)	2(1.3)	4(2.7)
I would like to confer with others considering the hospital's issues.	14(9.3)	55(36.7)	44(29.3)	29(19.3)	8(5.3)
I am glad that I am able to solve one problem out of others' problems.	142(94.7)	8(5.3)	0(0)	0(0)	0(0)
I will help a driver who needs help along the road.	25(16.7)	57(38)	32(21.3)	32(21.3)	4(2.7)
I feel responsible for the environment and try not to contaminate it.	96(64)	34(22.7)	15(10)	5(3.3)	0(0)
In my opinion, no problems will arise if nurses do not act in accordance with the rules and regulations.	1(0.7)	4(2.7)	13(8.7)	38(25.3)	94(62.7)
I sometimes have to pretend and feign in order to advance my goals.	14(9.3)	52(34.7)	45(30)	33(22)	6(4)
I do not really accept honesty and truthfulness as values in my workplace.	0(0)	0(0)	2(1.3)	45(30)	103(68.7)
I am bound to help poor people.	143(95.3)	7(4.7)	0(0)	0(0)	0(0)
Helping others is kind of worshipping and it pleases God.	147(98)	3(2)	0(0)	0(0)	0(0)
Supporting paralyzed and disabled people is a public duty.	140(93.3)	10(6.7)	0(0)	0(0)	0(0)
I would love to join social groups with good intentions.	61(40.7)	79(52.7)	10(6.7)	0(0)	0(0)
I enjoy providing services for patients, provided that I also get rewarded.	2(1.3)	6(4)	25(16.7)	65(43.3)	52(34.7)

DISCUSION:

Nurses' attitudes toward issues around them are very important (17) And nurses have an important role in improving the health of patients (18-20).The findings of the present study revealed that most of the nurses were endowed with a high level of responsibility, considering the overall dimension of legal responsibility, which was consistent with the results of study by Hassanian et al. In that study, 70% of nurses had a high level of responsibility (14) as well as in the the study by Beigzadeh et al., in which a high level of legal responsibility among nurses was reported (16). Furthermore, the results of this study showed that the statement of "Meeting patient satisfaction is very important to me" was awarded with 143 (95.3%) Totally Agree responses by nurses, and this value in the study by Hassanian et al was 105 (70%) answers out of the total number of responses provided by 148 nurses participating in that study and in agreement with the statement. The statement "I really believe in the statement that patients have rights to receive appropriate nursing services" obtained 142 (94.7%) Totally Agree responses by nurses in the present study, and this value in the study by Hassanian et al. (14) was 100 (66.7%) answers out of a total number of 148 responses by nurses participating in that study who agreed with the statement. Moreover, results of this study indicated that the statement of "Helping others is kind of worshipping and it pleases God" was assigned 147 (98%) Totally Agree responses, and this value in the study by Hassanian et al. (14) was 100 (66.7%) Totally Agree answers by nurses. According to the findings of the present study, the statements of the Questionnaire on Social Responsibility received higher scores among nurses in the city of Ilam, compared with those recruited in the study carried out by Hassanian et al. in the city of Hamedan (14). Among the reasons for such a variance was the differences between the two cities, which appeared to have their own impacts on taking social responsibilities among nurses.

Furthermore, the results demonstrated that increasing age in nurses could add to their interest in social responsibility, which was consistent with the findings of the study by Hassanian et al. (14). It seems that increased age could lead to a rise in the levels of social responsibilities among nurses. Base on the findings of this study, no statistically significant difference was found between social responsibility among nurses and their marital status, which was in conflict with the results of the study by Hassanian et al. (14). According to the investigations conducted by the researcher in Iran, levels of social responsibility among nurses using a researcher-designed and specific questionnaire had been only examined in the study by Hassanian et al. (14); therefore, it was not possible to compare the findings of this study with those of other investigations.

One of the limitations of this study was that participating nurses were examined using a self-reporting questionnaire method, which could affect the accuracy of the information. Therefore, prior to conducting the study, the nurses were assured that the study results would not have any impact on their evaluations by nurse administrators. It was assumed that this factor could increase the nurses' honesty in their responses. Another limitation of the study was the small sample size. Thus, it was suggested to employ a larger sample size by including nurses in different Iranian cities in order to provide a more accurate depiction of the levels of social responsibility among the country's nurses.

Conclusion:

According to the study's findings, social responsibility among nurses in all dimensions was at a high level. Therefore, nurse administrators were strongly encouraged to take the necessary measures to maintain and promote it.

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Patients' Attitudes toward Cancer Pain Relief

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Abstract:

Introduction: Pain management and supportive-care are critical for cancer patients. The purpose of this care is to focus on the patients' needs in physical, psychological and social aspects.

Objectives: Given the importance of pain in cancer patients and its role in patients' quality of life, the present study was conducted to determine the attitude of cancer patients toward pain relief in Ilam.

Materials and methods: The study was cross-sectional descriptive conducted on 220 cancer patients using convenient sampling method. The questionnaires used were demographic characteristics form, cancer patients' attitudes towards pain, and visual analog scale (VAS). If the patients could complete the questionnaires, they would do it as a self-expression; and if not, the researchers would complete it for them. The patients completed VAS questionnaire. After collecting data and entering spss16, they were analyzed using descriptive and inferential statistics.

Results: The results of this study showed that most of the patients selected "agree" and "fully agree" in the first dimension for "if in low pain analgesic is used, in case of severe pain, it will not be effective;" in the second dimension, "pain prevents enjoying entertainment and social activities." Moreover, they selected the same options in the third dimension for "thinking about pain increases the pain intensity" and in the fourth dimension, "analgesics are very addictive." Furthermore, in the fifth dimension, the results showed that 48.7% of patients fully agree and agree "There is no control over pain and relief by the individual."." Concerning the fear of injection, 46.4% of the

patients agreed and fully agreed with “The injection of analgesics is painful”. The results also showed that the mean and standard deviation of the perceived pain severity in patients were 8.39 ± 1.33.

Conclusion: Given the effects of different factors affecting pain in cancer patients, it is necessary to do perform appropriate interventions in proportion to the attitudes of cancer patients to reduce their pain.

Keywords: pain, cancer, attitude, relief

Introduction:

Cancer is one of the chronic diseases with a growing trend and among non-communicable diseases is the third cause of death [1-3]. After cardiovascular diseases, cancer is the second leading cause of death, and it is predicted that the number of these deaths could reach 20 million in 2020 without adopting effective prevention programs. Thus, cancer has turned into a major dilemma in the health system[4, 5]. Cancer has various effects on the occupational, economic, social and familial status of the person and disrupts the mental and psychological aspects of the patient[6].

Cancer is diagnosed at the later stages[7] leading to many complications in the patients[2]. Among the complications of cancer in patients increased pain can be cited with pain being one of the most commonly reported [8, 9]. The pain caused by cancer, besides the negative effects on the patient, causes his/her family members to feel angry and distrustful towards the treatment staff [(21)]. In fact, pain is a stressful experience, which leads to a lack of satisfaction with one's life, disruptions in daily functioning and one's life[10, 11].

Pain management and supportive care are critical for cancer patients[12]. The purpose of this care is attention to the needs of patients in physical, psychological and social dimensions[13]. Proper pain management depends on the systematic and correct examination of the pain to guide decision making to prioritize the types of analgesics and prescribe PRN medications[14]. Acquiring proper understanding of the patient's attitude towards pain can be very helpful[15] as an attitude expresses one's ideas and beliefs that manifests itself in the person's behavior, and feelings[16].

Given the importance of pain in cancer patients, the present study was conducted to determine the attitude of cancer patients towards pain relief.

Materials and methods:

This study was a descriptive cross-sectional study conducted in Ilam. The population was all patients with cancer in Ilam and the sample was cancer patients admitted to Shaheed Mostafa Khomeini Chemotherapy Center and cancer sub-specialists' offices, 220 of whom were selected as the sample by convenient sampling method. Tailored to the research objectives, inclusion criteria were at least 6 months from the onset of cancer according to the physician and medical records, giving informed consent to participate in the study and the ability to communicate verbally. Incomplete questionnaires

were excluded from the study and re-sampling continued to reach the desired volume. The questionnaires used were demographic characteristics form, cancer patients' attitudes towards pain[15], and VAS[16]. The questionnaire of cancer patients' attitudes towards pain had 31 items in the dimensions of tendency to pain (9 items), attitude toward physical dimensions of pain (6 items), attitude towards the psychological dimensions of pain (8 items), addiction of analgesic drugs (3 items), perceived control of pain (3 items), and fear of injection (2 items). They were categorized on a 5-option Likert scale from fully disagree to fully agree. NajafiGhezeljeh et al.[17]confirmed the validity and reliability of this questionnaire. In this study, the reliability of the questionnaire was 0.94. VAS scale is a line of ten centimeters that shows the severity of pain from -0- to ten[18].

To begin the research, after obtaining permission from the Council of Ethics in the research number (IR.MEDILAM.REC.1396.172), the researcher went to Shahid Mostafa Khomeini Hospital and the offices of the desired doctors and after explaining the research objectives for patients and obtaining informed consent from them, started the research. It was explained that the lack of participation in this study would not be harmful to them, and if they participated, their information would be completely confidential. The patients were assured that the data would be analyzed in a general form anonymously. All the principles of ethics were respected in the research. If the patients had the ability to complete the questionnaires, they would express themselves in writing and if not, they would be completed by the researchers. Patients completed the pain intensity by the VAS scale. After collecting data and entering spss16, data were analyzed using descriptive and inferential statistics.

Results:

Of the participants, 115(52.3%) of patients were male while 105(47.7%) were women. 173(78.6%) were illiterate while 30(13.6%) of patients had diploma and 17(7.7%) of patients with university education. In addition, 93(42.3%) of patients with income Weak, while 112(50.9%) had income Average and 15(6.8%) had an income of Good.

The results showed that in the case of tendency to bear pain, most of the patients agreed and fully agreed with "If in little pain, we use analgesic, it will not affect the severe pain." Moreover, in this dimension, most patients disagreed or fully disagreed with "Only weak people complain of pain." In the aspect of the attitude towards the physical aspects of pain, most patients agreed and fully agreed with "Pain prevents enjoyment of entertainment and social activities" and "Pain is the symptoms of illnesses." In the third dimension of this questionnaire, which was the attitude towards the psychological aspects of pain, the results showed that most patients agreed and fully agreed with "Thinking about pain increases the intensity of the pain" and "Anxiety intensifies pain." Regarding the results concerning the addictive dimension of pain relievers, most patients believed that "Analgesics are very addictive" and "There is a possibility of analgesic addiction." In addition, in perceived control of pain, the results showed that 48.7% of patients fully agree and agree "There is no control over pain and relief by the individual."." Concerning the fear of injection, 46.4% of the

patients agreed and fully agreed with "The injection of analgesics is painful" (Table 1). The results also showed that the mean and standard deviation of the perceived pain severity in patients were 8.39 ± 1.33, which indicates the high severity of the perceived pain in these patients.

Table 1. Attitudes of cancer patients towards pain relief

	Item	Phrases	Fully agree	Agree	No idea	Disagree	Fully disagree
1	Tendency to bear pain	Before asking for analgesic, one should wait so long that the pain really gets severe.	37(16.8)	92(41.8)	50(22.7)	33(15)	8(3.6)
2		By repetitive request for analgesic, the nurse is bothered.	17(7.7)	58(26.4)	75(34.1)	56(25.5)	14(6.4)
3		It is better to wait until the nurse asks for the need for analgesic.	14(6.4)	41(18.6)	54(24.5)	65(29.5)	46(20.9)
4		Analgesic should be used for cases where pain is most severe.	30(13.6)	73(33.2)	59(26.8)	39(17.7)	19(8.6)
5		Human must show strength and strength without any expression of pain.	11(5)	22(10)	36(16.4)	90(40.9)	61(27.7)
6		Only weak people complain of pain	6(2.7)	6(2.7)	39(17.7)	79(35.5)	90(40.9)
7		The request for analgesic will cause concern and fear	30(13.6)	105(47.7)	40(18.2)	37(16.8)	8(3.6)
8		The pain tolerance is better than the complications of analgesic.	25(11.4)	61(27.7)	74(33.6)	48(21.8)	12(5.5)
9		If in little pain, we use analgesic, it will not affect the severe pain.	53(24.1)	99(45)	51(23.2)	9(4.1)	8(3.6)
10	Attitude toward towards the physical dimensions of pain	Pain prevents enjoyment of entertainment and social activities.	100(45.5)	98(44.5)	18(8.2)	3(1.4)	1(0.5)
11		Pain is a sign of illness	76(34.5)	122(55.5)	13(5.9)	4(1.8)	5(2.3)
12		The intensity of the pain depends on the injury.	48(21.8)	98(44.5)	51(23.2)	18(8.2)	5(2.3)
13		Pain is a symptom of a problem for the body.	54(24.5)	99(45)	40(18.2)	23(10.5)	4(1.8)
14		Physical activity intensifies pain.	17(7.7)	75(34.1)	74(33.6)	42(19.1)	12(5.5)
15		The pain is the result of damage to the tissues of the body.	24(10.9)	74(33.6)	74(33.6)	35(15.9)	13(5.9)
16	Attitude toward towards	Depression intensifies pain.	107(48.6)	66(30)	17(7.7)	25(11.4)	5(2.3)
17		Anxiety intensifies pain.	60(27.3)	128(58.2)	13(5.9)	11(5)	8(3.6)
18		The severity of pain can be controlled by changing thoughts.	48(21.8)	111(50	45(20.5	14(6.4)	2(0.9)

	the			.5)	)		
19	**psychological**	Thinking about pain increases pain intensity.	153(69.5)	46(20.9)	2(0.9)	14(6.4)	5(2.3)
20	**dimensions of pain**	At relaxation, it is easier to adapt to pain.	36(16.4)	87(39.5)	46(20.9)	41(18.6)	10(4.5)
21		Concentration or relaxation can be effective in reducing pain.	55(25)	84(38.2)	32(14.5)	43(19.5)	6(2.7)
22		There is the possibility of learning pain control.	35(15.9)	85(38.6)	58(26.4)	37(16.8)	5(2.3)
23		It is possible to affect the severity of the pain felt.	57(25.9)	68(30.9)	37(16.8)	47(21.4)	11(5)
24	**Analgesic being addictive**	Analgesics are very addictive.	59(26.8)	97(44.1)	28(12.7)	30(11.6)	6(2.7)
25		There is a possibility of analgesic addiction.	48(21.8)	94(42.7)	39(17.7)	32(14.5)	7(3.2)
26		Humans easily develop addiction to analgesic.	35(15.9)	84(38.2)	38(17.3)	53(24.1)	10(4.5)
27	**Perceived control of pain**	Full pain relief is impossible.	27(12.3)	68(30.9)	27(12.3)	69(31.4)	29(13.2)
28		There is no control over pain and relief by the individual.	29(13.2)	78(35.5)	31(14.1)	65(29.5)	17(7.7)
29		There are few methods to relieve pain and to do away with it.	19(8.6)	84(38.2)	52(23.6)	50(22.7)	15(6.8)
30	**Fear of Injection**	The most effective and most commonly used method of prescribing analgesics is the injectable method.	23(10.5)	73(33.2)	60(27.3)	55(25)	9(4.1)
31		The injection of analgesics is painful.	24(10.9)	78(35.5)	58(26.4)	44(20)	16(7.3)

Discussion

The results showed that most of the patients experienced high pain. In a study by Higginson et al., the prevalence of pain in the early stages of cancer was 45.6%, ranging from 21.4% to 84.1%, and in advanced stages of cancer, 73.9%, ranging from 53% to 100% [19]. A study by Ger et al. reported that 65% of cancer patients had the worst pain and 31% had moderate pain[20]. In the systematic review and meta-analysis, Van den Beuken-van Everdingen et al. reported high perceived pain in patients with cancer[19], which is consistent with the results of the present study.

According to the results, most patients believed that "thinking about pain increases the severity of pain. HeidariGorji et al. reported that distraction technique and hypnosis could reduce pain when performing Bone Marrow aspiration[21], which is consistence with the suggestion that thinking about pain increases pain intensity. Considering that today non-pharmacological techniques for pain relief have attracted the attention of nursing systems, and as patients themselves tend to use these methods[22], it is therefore necessary to use non-pharmacological methods to reduce pain in patients.

The results showed that most patients believed that "analgesics are highly addictive," which was consistent with the results of NajafiGhezeljeh et al. on cancer patients[17]. Moreover, other studies have

shown that there is a concern in cancer patients over addiction to analgesics[21]. According to the findings, most patients agreed and fully agreed with "Pain prevents enjoyment of entertainment and social activities," which is consistent with the results NajafiGhezeljeh et al. in the cancer patients in Iran[17] and the results of Yates et al. on a group of Australian cancer patients[23].

Conclusion:

Given the effects of different factors on pain in cancer patients, appropriate interventions tailored to the attitude of cancer patients to reduce their pain should be practiced

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Investigating the Impact of Cognitive-Behavioral Therapy on the Mental Health Status of Patients Suffering from Myocardial Infarction

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Abstract

Introduction and Purpose: Depression and anxiety, social dysfunction, and somatization in patients suffering from myocardial infarction are common and usually associated with mortality. Therefore resolution of depression, anxiety, social dysfunction, and somatization in these patients is an important step to reduce the probability of the next infarction. Given the importance of mental health in these patients and the role of training in its improvement, the present study aims to assess the impact of cognitive-behavioral therapy on the mental health status of patients suffering from myocardial infarction.

Materials and Methods: This study was conducted in the form of a controlled clinical trial with pre-test and post-test in the ValiAsr Hospital in the city of Dareshahr-Iran. In general, 30 patients suffering from myocardial infarction were randomly divivded in two: intervention (n-15) and control (n-15) groups and investigated. The intervention group received eight sessions of Cognitive -Behavior Therapy individually,

and the control group was not intervened. Standard questionnaires (demographic characteristic form, and General Health Questionnaire) were used in order to collect data, and SPSS software (21) was used in analyzing the data.

Results: There was no difference between the mean pre-intervention scores of depression, anxiety , social dysfunction and somatization, among the two groups, but based on the T-test, after the intervention, the mean depression scores in the intervention group (28.93±6.193)has had a significant reduction compared to the control group(39.67±5.327) ($p\leq0.001$).Also, the mean anxiety scores of the intervention group (9.73±2.789) had a significant reduction compared to the control group (13.87±2.200) post-intervention ($p\leq0.001$). Furthermore, the mean scores of physical signs of the intervention group) 2.27±2.764) has had a significant reduction after the intervention compared to control group (12.93±2.631) ($p\leq0.007$), and a significant reduction can be seen in the mean social dysfunction scores of the intervention group (9.93±2.576) after the intervention, compared to the control group (12.87±2.949)($p\leq0.001$) .

Conclusion: The results of this study showed that Cognitive Behavioral Intervention can be utilized as a beneficial intervention method for cardiac patients.

Keywords: Myocardial Infarction, Mental Health, Cognitive Behavioral Therapy

Introduction

Cardiovascular diseases, including myocardial infarction, are the most important disorder in developing countries and among the main causes of death all around the world, such that annually 1.1 million people encounter this disease in the United States and a large number of them are hospitalized (1). This disorder is among the main causes of death in the world, with the highest percent of it being in the developing countries. Also, Iran holds the first place in mortality rate for people over 35 years (2). Considering the vital connection between the heart and mental status, it comes to mind that anxiety and depression are some of the main issues that myocardial infarction patients experience. Anxiety and depression not only bring about heart diseases, but also the occurrence of a heart disease will cause such reactions (3). Undesirable heart reactions (increased heart rate, shortness of breath, chest pain etc.) following a myocardial infarction are common, also depression is the most important factor in repetition of myocardial infarction (4). One of the common methods for improving mental health is counseling and rehabilitation (6).

Materials and Methods

This clinical trial was conducted on 30 patients suffering from myocardial infarction admitted to the ValiAsr hospital in the city of Dareshahr-Ilam west of Iran. The sampling method was convenience and patients who met the inclusion criteria (history of myocardial infarction, 35-65 years age range, education level of high school and higher, lack of significant physical and mental illnesses such as psychotic disorders including schizophrenia and severe depression), were randomly divided in two groups of intervention (n = 15) and control (n = 15). The exclusion criteria were absence of more than three consecutive meetings and existence of severe life stresses, such as divorce, mourn, severe physical disability which could prevent them from participating in intervention sessions.

At the start of the study, after obtaining written informed consent for each patient on groups, the demographic characteristics and the GHQ-28 questionnaire was completed. The General Health Questionnaire was first generated by Goldberg (1972). Its original form consists of 60 questions and shorter forms of it are available in 38 languages with 12 to 28 questions. Psychometric studies have been conducted on this questionnaire in 70 countries (11). This questionnaire evaluates pathologic symptoms of the patients from one month prior to the implementation of the questionnaire (12).GHQ-28 consists of four subscales and 28 items. Each subscale includes 7 items which cover physical symptoms, anxiety and insomnia, social dysfunction, and depression. Gibbons evaluated the factorial structure, reliability, and validity of GHQ-28 in El Salvador. The sample consisted of 732 students and the Likert scoring and principal components analysis was used. Using the Test-retest method, the reliability coefficient were 75% and considering the cutoff point of 6.7, the sensitivity of the test and specificity were calculated 88% and 84.2%, respectively (13).

After random allocation for the intervention group, eight sessions of cognitive-behavioral therapy were conducted (14) by the researcher who was familiar with CBT under the supervision of therapist (the researcher completed the CBT training course under the supervision of therapist and also experimentally performed the cognitive-behavioral therapy method on many individuals). Scheduling of the meetings was as follows: the first session, a month after myocardial infarction, and subsequent meetings, weekly (individual) for 60 minutes in clinic of the hospital. No intervention was conducted in the control group; however, they received the conventional intervention and

routine care. Prior the intervention and one week after completion of the meetings, the GHQ questionnaire were completed by the intervention and control groups.

By SPSS software version 19 data was summarized into tables and indices of mean and standard deviation. Paired t-tests were used to compare the mean, before and after scores on both groups. Also, the independent t-test was used to compare the difference between the two groups.

Results

The mean age of the participants was $56/60 \pm 5/82$yearsand were in the range age of 35 to 65 years. No significant difference was seen between the intervention group and control group in terms of demographic characteristic (table 1).

Table 1- Variable Distribution Comparison among the Intervention and the Control Group

Variable		Intervention Group		Control Group		Test
		Count	Percent	Count	Percent	Results
Gender	Male	9	60.0	7	46.7	P<0.464
	Female	6	40.0	8	53.3	
Job	Employed	8	53.3	6	40.0	P<0.464
	Unemployed	7	46.7	9	60.0	
Smoking	Do	8	53.3	8	53.3	P<1.000
	Don't	7	46.7	7	46.7	
Residence	City	9	60.0	8	53.3	P<0.713
	Village	6	40.0	7	46.7	
Education	Diploma & lower	6	40.0	7	46.7	P<0.910
	Associate Degree	5	33.3	4	26.7	
	BA	4	26.7	4	26.7	
Number of Children	Less than 2	2	13.3	3	20.0	P<0.856
	Between 2&4	5	33.3	4	26.7	
	More than 4	8	53.3	8	53.3	

The t-test was used to compare the mean scores of depressive symptoms in both groups. This score indicated no significant difference between the two groups prior to the intervention. However, after comparing the two groups after conducting the intervention, the mean depression scores of the intervention group (28.93 ± 6.193) showed a significant decrease compared to the control group (39.67 ± 5.327) (table 2).

The t-test experiment which was used to investigate the impact of cognitive-behavioral intervention on the anxiety of patients suffering from myocardial infarction, showed no difference between the two groups prior to the intervention. However, after conducting the intervention, the mean score of anxiety after

intervention in the intervention group (9.73 ± 2.789) indicated a significant decrease compared to the control group (13.87 ± 2.200) (table 2).

After assessing the comparison of mean scores of physical symptoms between the two groups using the t-test, it was shown that no difference exist between the two groups prior to the intervention, however after performing the intervention, the mean scores of physical symptoms of the intervention group (9.27 ± 2.764) showed a significant reduction compared to the control group (12.93 ± 2.631) (table 2).

In terms of social dysfunction, results obtained from t-test indicate that no significant difference exist between the two groups prior to the intervention, but post intervention results show that the mean score of social dysfunction in the intervention group (9.93 ± 2.276)has a significant decrease compared to the control group (12.87 ± 2.949) (table 2).

Table 2- Mean and Standard Deviation of Pre and post Scores in both groups regarding Physical symptoms, Anxiety, Social Dysfunction, and Depression using the T-test

GHQ-28 Dimensions	Questionnaire	Control Group		Intervention Group		P	T
		M	SD	M	SD		
Physical	Before	14/07	2/685	11//80	3/144	0/053	-2/123
	After	12/93	2/631	9/27	2/764	0/001	-3/721
Social dysfunction	Before	13/73	2/963	12/40	4/171	0/322	-1/009
	After	12/87	2/949	9/93	2/576	0/007	-2/901
anxiety	Before	14/80	2/704	13/67	4/186	0/386	-0/881
	After	13/87	2/200	9/73	2/789	<0/001	-4/506
Depression	Before	42/60	5/705	37/87	8/774	0/093	-1/752
	After	39/67	5/327	28/93	6/193	<0/001	-5/089
Physical Difference	Before	1/13	0/743	2/53	1/060	<0/001	4/188
Anxiety Difference	Before	0/93	0/884	3/93	2/314	<0/001	4/692
Social dysfunction Difference	Before	0/87	0/834	2/47	2/615	0/038	2/258
Depression Difference	Before	2/93	1/335	8/93	4/079	<0/001	5/415

Discussion

The result showed that before the cognitive behavioral therapy, in both intervention and control group, a considerable proportion of the patients were suffering from anxiety, depression, social and physical dysfunction. Although, following

the psychological intervention, this proportion reduced in the intervention group, while the amount of reduction was not much in the control group, and the results express the significant effect of intervention in reducing anxiety, depression, and improving the physical and social functions of the patients. Evidence-based nursing interventions can improve the health status of patients (22-24).

Cognitive behavioral therapy has the highest effect on depression and anxiety, although in other studies the role of factors such as age, gender, job etc. has been mentioned in emergence of depression and stress of cardiac patients (15), but in the current study no significant difference was witnessed. In the current study the amount of prevalence of chronic depression prior to intervention was 60%, which is same as other studies. After the intervention this amount significantly reduced and was consistent with Kuper's study (16). In a study, Sekala et al, in addition to pointing out to the connection between the causes of depression and it mechanisms with cardiac consequences, brought attention to the results of cognitive behavioral therapy in improving depression and the significant difference in the mental health of the intervention group compared to the control group (17). The current study has had the most effect first on depression, and then anxiety. Oei in his study has deemed cognitive therapy effective in reducing the intensity of depression in his patients visiting the counseling clinic during eight sessions, such that cognitive therapeutic behavior causes the patients to believe that negative thoughts can be resolved and changed (8).

Sabregts et al (2005), during a trial clinical study on patients suffering from myocardial infarction, reported that training the patients in prevention programs causes a reduction in the signs of tiredness and an improvement in mental health of the group, which is consistent with the results of the current study (18).

In the current study the physical aspect and social function was also affected by cognitive behavioral intervention. Atlantis et al also reported that the two social and emotional fields are less affected by interventions (19).

While Izawa et al also found during a studythat implementation of cardiac rehabilitation during 3 to 12 months could cause a significant statistical difference in the social aspect of mental health of the intervention group (20), which is consistent with the results of the current study, although the intervention duration has been longer.

The findings of the present study show that training, control and consistency have a considerable role in reducing the heart risk factors, which is consistent with the results of Mats et al. study, expressing the significant effect of cognitive behavioral intervention(21).

The implementation of rehabilitation program is necessary, since the patients gradually forget medical recommendations; therefore the patients must be trained with these items at home. Considering the findings of the study, mental health has shown a considerable increase in most fields.

One of the benefits of the study, is the possibility of its implementation by nurses with not much expertise and experience, and can be used in health care organizations.

Conclusion

The findings showed the effects of cognitive behavioral therapy. The effects of the intervention can be accessed in focusing on challenges with irrational beliefs, muscular relaxation, confrontation skills training, causing awareness, understanding and changing the patients' view during the intervention, and since depression is an unpleasant feeling that the patients have to experience, and also that the root of one's feelings are in one's thoughts, the researchers try to change the thoughts and consequently the feelings of the patients by guidance and motivation, and eventually the patients' adherence to medical suggestions will be better.

Considering that this study was a short-term intervention, the persistence of its effects is also rather short, being 3-6 months. And yet, considering that sampling was convenience and in low quantity, certain limitations would be encountered in trying to generalize the results. Therefore, it is suggested that if cognitive therapy on this patients be attempted more extensively and with a higher sample pool.

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The relationship between constructs of Social Cognitive Theory and food habits in middle aged women in Isfahan

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Abstract

Background: The relationship between nutrition and adult's health is confirmed and it is essential to identify the factors associated with the formation of eating habits in the community. The goal of this study was to identify the predictive power of structures of social cognitive theories for healthy food habits in middle-aged women.

Materials and methods: This cross-sectional study was conducted on 280 middle-aged women. Outcome expectations, social support, observational learning, and awareness were assessed as variables associated with social cognitive theory and food habits and also receiving main food groups were assessed using a questionnaire. Collected data were analyzed using descriptive statistics and Pearson correlation coefficient test and linear regression analysis.

Results: Among structures of social cognitive theory, observational learning ($p < 0.36$) and social support ($p < 0.02$) had significant role in explaining the variance of level of receiving food groups in middle-aged women.

Conclusions: Observational learning and social support were the main factors interpreting feeding behaviours in middle-aged women. Therefore, they should be considered in nutritional health promotion programs.

Key words: food habits, middle age women, Social Cognitive Theory, social support, Observational learning, Iran

Introduction:

The relationship between an unhealthy diet and chronic diseases has already been proven [1-2]. The growing increase in sedentary lifestyles, especially among the middle-aged, has made the significance of unhealthy diets in causing diseases more evident [2]. The frequency of nutrition and diet-related diseases has become a central issue for researchers and social health planners. It is important to note that the number of middle-aged people is generally increasing [3]. Especially among the middle-aged women, due to hormonal changes and its effects, chronic disease is one the major cause of mortality

and disability [4-5]. Accordingly, nutrition is of significant priority in women's health [6]. Although the critical period in ensuring one's health precedes the middle-age, promoting a healthy lifestyle is one the main strategies for maintain and improving one's health during the middle-age [4]. Studies have shown that a healthy diet can reduce the risk of contracting colon and breast cancer, and decrease cardiovascular diseases in middle-aged women by boosting the immune system [9]. Dietary habits are a set of behaviors and beliefs that influence the use of food resources [10] and are in turn influenced by many factors [11]. Previous studies have shown that there are different factors which affect the dietary habits of people [12-13]. However, it is important to examine these factors in a model that can help identify them [14]. Social cognitive theory is one of the most efficient theories for predicting behaviors with an emphasis on personal and environmental characteristics [15]. This theory is able to represent the elements influencing the formation of behavior and suggest ways to change these behaviors [16]. Before using this theory, we need to test its validity in predicting behaviors. While personal characteristics play an important role in the formation of behaviors, environmental features may have a different role in the formation of dietary behaviors among middle-aged women. Therefore, the aim of this study was to investigate the relationship between the elements of the cognitive social theory and dietary behaviors among middle-aged women to design effective intervention programs by analyzing the impact of personal-interpersonal and environmental factors.

Materials and methods:

This research was a cross-sectional study which was conducted on 280 middle-aged Iranian women (aged 40-60) who were referred to health centers in Isfahan over the period of September to January 2016. The research received the approval of the Ethics Committee of Isfahan University of Medical Sciences. Random cluster sampling was used in choosing the health centers. After selecting 8 center of the health network based on population covered by each center, the sample size was determined for each center. 20-55 people were selected by convenience sampling. The inclusion criteria were: absence of any dietary restrictions, absence of any mental disorders, and absence of vegetarian diet. Informed consent was obtained from all eligible participants. Then the following were evaluated with social cognitive theory: the status of different groups of food / dietary habits and the expected outcome, social support, observational learning and their information about nutrition and diet. Data collection was done by self-report questionnaires. To measure each of the variables we used a researcher-constructed questionnaire based on previous studies. Expected outcome, social support, observational learning, and information were respectively measured by 6, 7, and 5 questions. All questions were based on the five-item Likert scale of 1 to 5 for strongly agrees to strongly disagree. Information was measured by the use of 5 questions with correct, wrong, do not know, options. The total score was recorded in the scale of 0-100. To check the form and content validity of the questionnaire, it was examined by 6 experts in the field of health and nutrition studies. To check the reliability of internal consistency of the questionnaire, Cronbach's alpha coefficient was used; items higher than 0/7 were considered acceptable. The check the reliability of the stability of results, a test-retest method was used. The questionnaire was given to 30 participant women to be filled. After 14 days, the questionnaire was filled again by the same women.

Dietary habits and nutrition were measured by researcher-constructed questionnaire – based on previous studies – in terms of never (1), hardly ever (2), sometimes (3), often (4), and always (5). 8 questions were about dietary habits graded in terms of acceptable, almost acceptable, and unacceptable. With regard to acceptability of nutrition habits, 80 points were allocated. In the scale of 100, below 50% means unacceptable, 50-70% almost acceptable, and above 75% acceptable [17]. Acceptable nutrition referred to proper food groups, received enough from each of the food groups based on the levels recommended for the middle-aged by the Department of Health, Treatment and Medical Education of Iran [18]. The validity of dietary habits questionnaire was confirmed by experts in the field and its reliability was confirmed by Cronbach's alpha coefficient. Data collection was done by interviewing the people who were referred to the health centers.

Data was analyzed in SPSS19 and linear regression test. 0/05 was considered significant for information level.

Results:

Cronbach's alpha coefficient for each of the items of questionnaire, i.e. outcome expectation, information, observational learning, and social support was respectively, 0/73, 0/71, 0/77, and 0/72. The questionnaire of dietary habits was developed in terms of repeatability and reliability index ICC = 66/0; the correlation between the two was R = 55. Background characteristics of the subjects are presented in **[Table 1].**

Table 1: Basic characteristics of the individuals studied

Variable		Percentage	Number
Age (year)	**40-50 years**	63.21	177
	51-61 years	36.7	103
Level of Education	**Elementary**	13.2	37
	Reading and writing	22.5	63
	Middle school	22.9	64
	Diploma	15.7	44
	University degree	25.7	72
Employment status	**Employed**	79.3	222
	Housekeeper	20.7	58
Economic situation	**Poor**	9.1	25
	Medium	71.3	196
	Fair	19.6	54

79/3% housekeepers, 71/3% moderate economic condition. Different food groups are shown in **[Table 2].**

Table 2: frequency distribution of receiving food groups based on recommended contribution rate

	Number		Percentage
Daily consumption of dairy	Never	11	3.9
	Rarely	63	22.4
	Sometimes	106	37.7
	Often	46	16.4
	Always	54	19.2
Daily consumption of fruit	Never	8	2.8
	Rarely	43	15.3
	Sometimes	70	24.9
	Often	38	13.5
	Always	120	42.7
Daily consumption of vegetables	Never	14	5
	Rarely	62	22.1
	Sometimes	108	38.4
	Often	44	15.7
	Always	50	17.8
Daily consumption of cereals	Never	8	2.8
	Rarely	24	8.5
	Sometimes	90	32
	Often	61	21.7
	Always	94	33.5
Weekly consumption of meat and beans	Never	71	25.3
	Rarely	89	31.7
	Sometimes	71	25.3
	Often	24	8.5
	Always	22	7.8
Daily consumption of water	Never	50	17.8
	Rarely	69	24.6
	Sometimes	58	20.6
	Often	43	15.3
	Always	57	20.3

Regular receiving of meals	Never	3	1.1
	Rarely	13	4.6
	Sometimes	18	6.4
	Often	57	20.3
	Always	186	66.2

In [Table 3] shows the scores obtained from the variables associated with social cognitive theory, food groups and dietary habits. The mean score of food groups in middle-aged women in Isfahan was partially favorable. However, analyzing the different food groups showed that only 6.35 percent of the participants received dairy, 2/56 percent received fruit, 5/33 percent received vegetable, 2/55 received fish and grains, 6/35 percent received the recommended level of water.

Table 3: mean (100-0) and standard deviation of structures of Social Cognitive Theory and Food habits

		Mean	Standard deviation
Receiving food groups		69.42	14.22
Food habits		49.68	12.11
Social Cognitive Theory	Social support	63.24	9.24
	Observational learning	80.96	10.80
	Awareness	26.64	4.89
	Outcome expectations	83.91	9.16

The results showed that the mean score dietary habits among middle-aged women was unfavorable. The results of multi-variable linear regression analysis of the evaluation of the relationship between the variables of social cognitive theory and the level of receiving food groups and different dietary habits in terms of age, number of children, body mass index, employment status, economic status, menopausal status, and level of education are presented in [Table 4]. Based on the results, observational learning and social support structures, independent of demographic variables, have a significant role in explaining the variance in middle-aged women in receiving different food groups.

Table 4: Multivariate linear regression by adjusting the results for receiving food groups and food habits, age, Body mass index, Employment status, Menopausal status, Number of children and Level of Education

Statistical indicator of		Utility score of receiving food groups

variables		Score of food habits							
		Beta	0.10 =r2Δ P	CI (0.95)		Beta	0.15=r2Δ P	CI (0.95)	
				Low Bound	High Bound			Low Bound	High Bound
Background variables	Age	-0.06	0.33	-0.07	0.02	-0.083	0.195	-0.09	0.02
	Body mass index (BMI)	0.22	0.001	0.57	2.26	0.032	0.620	-0.75	1.25
	Level of education	0.20	0.02	0.08	1.30	0.143	0.085	-0.08	1.32
	Employment status	-0.09	0.24	-2.44	0.62	-0.148	0.048	-3.77	-0.01
	Economic situation	-0.07	0.31	-1.83	0.58	0.207	0.019	0.88	3.81
	Menopausal status	0.11	0.10	-0.23	2.46	0.07	0.237	-0.63	2.57
	Number of children	-0.14	0.07	-1.87	0.08	-0.08	0.270	-1.75	0.49
Social Cognitive Theory	Outcome expectations	0.08	0.31	-0.13	0.39	-0.120	0.120	-0.56	0.06
	Observational learning	0.05	0.55	-0.19	0.36	0.22	0.005※	0.14	0.82
	Awareness	-0.10	0.15	-0.60	0.09	-0.032	0.645	-0.52	0.32
	Social suppose	-0.05	0.41	-0.24	0.10	0.195	※0.005	0.09	0.52

Discussion:

This study showed that there is a significant relationship between social support and receiving different food group. This finding is consistent with the findings in a study conducted on pregnant women [19-20]. It seems that familial responsibilities, household chores, and the time spent for children's nutrition, leaves little time for the women themselves. Social support by others decreases the motivation of women to take dietary regimes seriously. The results show that the presence and cooperation of other members of the family and society can improve the dietary habits and health of the women. There is also a significant relationship between observational learning and the receiving of different food groups. This is consistent with the findings of Salimi et al., [21] and the research conducted by Booth, Pinkston, & Poston [22]. This study shows that observing the symptoms of the

diseases within the family by improves healthy leads to undertaking healthy activities among the middle-aged women [4]. There is not a significant relationship between having information about nutrition and dietary behaviors. This is not consistent with the findings by Jalili [23], and Baghimoghadam [24]. In the latter studies, most people were more educated which could have an effect in improving dietary behaviors. Accordingly, having information about nutrition is not enough for improving dietary behaviors. The results have also shown that outcome expectation has a significant relationship with both aspects of dietary habits. This is consistent with the findings by Abbasian et al.[25] However, in a study conducted by Beiranvand et al., there was a significant relationship between the two variables; the women believed that healthy dietary behaviors and habits can prevent chronic diseases and obesity. According to the results of the present study, it seems that the expectations of middle-aged women about having healthy dietary habits were not sufficient motives for shaping healthy behaviors.

Conclusion:

Based on the results concerning the conditions of dietary habits and receiving different food groups among the middle-aged women, it seems that designing programs for encouraging the middle-aged women to observe healthy dietary habits for their special age is highly important. Given the fact that observational learning and social support play a pivotal role in receiving different food groups among the middle-aged women, these two variables can be used in developing dietary intervention programs. One of the limitations of the present study was its cross-sectional analysis which in comparison to long-term studies has certain shortcomings.

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Effectiveness of structural family therapy (SFT) in hopefulness and resilience of people released from drug addiction

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Abstract

This study aims to investigate the effectiveness of structural family therapy (SFT) in hope and resilience of people freed from drug addiction. This research is a pretest-posttest quasi-experimental study design with a nonequivalent control group. The statistical population consists of all people released from drug addiction in Sabzevar who were referred to addiction centers affiliated to the Welfare of this city in the winter of 2015. The research sample comprised 16 people released from drug addiction who were selected through voluntary and available sampling method. For data collection, Snyder Adult Hope Scale (SAHS) and Connor-Davidson Resilience Scale (CD-RISC) and addiction test were used. For analyzing the data and investigating the effectiveness of training structural family therapy (SFT) in hopefulness and resilience, analysis of covariance (ANCOVA) test was applied. The findings demonstrated that structural family therapy is effective in hopefulness and resilience of people released from drug addiction (P>0.05). Thus, based on to the findings of the study it can be concluded that structural family therapy could increase the rate of hope and resilience of people freed from drug addiction by changing and reconstructing the family structure.

Keywords: Structural family therapy, hopefulness, resilience

Introduction

The World Health Organization does not accept the use of the term “addiction” so in 1964, the organization recommended the use of the term “drug dependence” instead of “addiction” (Zare’ei &Naji, 2009). Today, the problem of addictive substances is among the psychiatric disorders common around the world (Sinha, 2011). Around 3.4 billion people worldwide consume drugs and more than 12% of deaths are related to substance abuse (Jupp & Dalley, 2014). According to the statistics of the World Health Organization, in every 8 seconds, one person in the world loses his life due to the consumption of tobacco products (World Health Organization, 2010). It is not yet clear which variable has a greater role in the tendency to addiction. Resilience is a concept that has been recently raised in the domain of addiction prevention and other mental disorders and injuries and is an appropriate method (Middlemiss, 2005). In this respect, Yelkin (2014) wrote an article entitled “The relationship between resilience and addiction relapse” and stated that regarding the addiction preparation

scale, resilience skills training has created significant changes in this domain. Studies show that resilience acts as the protection course against drug use and is effective in reduced consumption and substance relapse prevention (Wong, 2007; cited in Raeisian et al., 2011). Resilience simply means positive adaptation in response to adverse conditions (Waller et al., 2012). Resilience is one of the factors reducing the tendency to addiction (Goldstein & Brooks, 2012). Resilience can be defined as a method to measure the individual's ability in coping with stressful factors and factors threatening people's mental health (Kross& Hough, 2016; Newman, 2005). Resilience factors cause the individual to use his existing capacities in achieving his own success and growth in difficult situations despite the existence of risk factors and benefit from this challenge as an opportunity to empower himself and succeed (ZarrinKelk, 2010). When features of resilience are identified and made available to people, prevention and treatment take a second dimension which includes the strengthening of individuals' positive characteristics in order to deal with and avoid drug use (Garmezy, 2011). Mcallister and Mckinnon (2009) have described resilience as an ability to improve in adverse conditions and overcome problems in the individual life and believe that people and groups showing resilience have greater hope and motivation and these characteristics make them equipped to overcome life problems. Therefore, one of the concepts that exist at the heart of the concept of resilience is the component of hopefulness. In the definition of hopefulness, Snyder, Rand and Sigmon (2012) have mentioned that hopefulness is a positive motivational state and a cognitive process that includes the overcoming of the obstacles to reach the goal and creates a driving force with the nature of determination which facilitates the acquisition of the desired result. Many psychologists consider hopefulness as an important factor in mental health and psychological and physical well-being of individuals (Schrank, Woppmann, Hay,Sibitz et al., 2012). Hope is the talent of accepting and believing the achievement of dreams. Despite the unbalanced anger and insistence which are caused by dependence, hope is a favorable desire and idea (Khalaji, 2007). In the two-component hope pattern of Snyder, hope includes: 1) the individual's perception of his own ability in obtaining the routes to desired goals; 2) motivating oneself through factor thinking to begin and continue the movement along these routes (Snyder, 2000). Given that the complex coping strategies and interactions of the family as a unit may have a role in the chronic trend of the individual's drug abuse, structural family therapy approach has been used in this study in order to improve resilience and hopefulness of people released from drug addiction. Structural family therapy has been developed based on the experiences and studies of Salvador Minouchin and the colleagues. The main idea of structural family therapy is that when the individual's morbid symptom is evaluated in the context of the family's interaction patterns, it is better understood and recognized (Thompson & Rudolph, 2010). From the standpoint of structural family therapy, before treatment and elimination of morbid symptoms, it is necessary to make some changes in the structure or organization of the family. The family structure is an invisible set of specific roles through which family members are connected to each other (Goldenberg & Goldenberg, 2016). Nameni et al. (2014) conducted a study entitled "Investigating the effectiveness of combining solution-focused family therapy method and structural family therapy in the treatment (cessation of drug use) of substance abusers and enhanced family function". They reported that combining the two above-mentioned methods is effective in the treatment of substance abusers and enhanced family function. Based on data available, this study was undertaken to elucidate whether structural family therapy is effective in hopefulness and resilience.

Methods and materials

This research is a pretest-posttest quasi-experimental study design with a nonequivalent control group. The target population consists of all people freed from drug addiction in Sabzevar and referred to addiction centers affiliated to the Welfare of this city in winter 2015. The subjects were chosen through voluntary and available sampling method.

Ultimately, 16 people released from drug addiction were selected and randomly assigned into two experimental (8 subjects) and control (8 subjects) groups. The interventions were made only for the experimental group. For data collection, Snyder Adult Hope Scale (SAHS) and Connor-Davidson Resilience Scale (CD-RISC) were employed.

Connor-Davidson Resilience Scale

This questionnaire was prepared by Connor and Davidson in 2003 in order to measure the power to deal with pressure and threat. This scale includes 25 five-option items (fully incorrect, rarely correct, sometimes correct, often correct and always correct) was adopted by Mohammadi, Jazayeri, Rafi'ei, Jokar and Pourshahnaz (2006) for use in Iran. The minimum score for this test is zero and the maximum score is 100. The results of factor analysis suggest that this test consists of five factors of personal competence (25, 24, 23, 17, 16, 12, 11, 10), trust in one's instincts and tolerance of negative affect (20, 19, 18, 15, 14, 7, 6), positive acceptance of change and secure relationships (8, 5, 4, 2, 1), control (22, 21, 13) and spiritual influences (3, 9). Validity (through factor analysis and convergent and divergent validity) and reliability (through test-retest and Cronbach's alpha) of the scale have been confirmed by test makers in different groups (normal and at risk). Connor and Davidson (2003) have reported the Cronbach's alpha coefficient of resilience scale to be 0.89. Also, reliability coefficient was estimated to be 0.87 using the test-retest method in an interval of 4 weeks. In the study by Samani, Jokar and Sahragard (2007), Cronbach's alpha coefficient was obtained to be 0.87 for the reliability of this test. Five-option questions are rated on a 5-point scale including zero for fully incorrect, 1 for rarely correct, 2 for sometimes correct, 3 for often correct and 4 for always correct. Those who obtain scores of higher than 60 are considered among resilient individuals.

Snyder Adult Hope Scale

Snyder Hope Scale (1991) was translated by Khalaji in 2007 and based on Snyder hope theory, it is a scale that evaluates the individual's hope as a relatively stable personality trait. This scale is applicable for all individuals including psychiatric patients (Grewal & Porter, 2007) and for people aged 15 years and older (Kouhsarian, 2008). This questionnaire comprises 12 expressions and two subscales. Subscales of the hope questionnaire include factor thinking (four questions; 2, 9, 10, 12) and strategies (7, 4, 1, 8) and four questions of 6, 5, 3 and 11 were deviation questions (Pedrottit, Edwards & Lopez, 2008). The options range from completely true to totally false. In the study performed by Khalaji (2007), reliability of this scale was obtained to be 0.70 through Cronbach's alpha and 0.74 using test-retest method after one month. The internal consistency obtained from Cronbach's alpha was 0.74 for the subscale of factor thinking and 0.62 for strategies. In addition, in the study by BarzgarBafrouei, AhaliAbadeh and MohammadiQal'ehTaki (2015), Cronbach's alpha coefficient of this questionnaire was reported to be 0.69. Cronbach's alpha coefficients for the subscales of factor thinking and strategies were obtained to be respectively 0.85 and 0.67.

Implementation method

As shown in **Table 3**after a preliminary study, preparation of tools, and referring to addiction clinics in Sabzevar, the subjects were selected through voluntary and available sampling method and people freed from drug addiction were randomly divided into two experimental and control groups, each containing 8 participants. The subjects in the sample were asked through a letter to cooperate in the study and were assured that the research data is personal and confidential and will not be made available to others. After implementing the planned interventions on the experimental group, the questionnaires were collected and the obtained data was analyzed. The educational content of the sessions is as follows.

Table 1: Framework of training sessions

Number of sessions	Subject	Purpose
First session	Statement of the objectives and provisions of the sessions, generalities of structural treatment and concept of resilience and hope	1- Introduction of members and statement of the objectives of the sessions and the material presented 3- Next session, the client is required to write about the growth of his experiences about addiction issues, number of addiction withdrawals and role of the family in withdrawal and brings with him to the session.
Second session	Training modes of communication, displaying the prevailing situation of the family, introducing the subsystems in the family	1- Review of the previous session' assignment 2- Introducing the definition of communication and subsystems of the family and displaying and discussing the prevailing situation of families 3- Practicing communication skills and taking notes of the results of practices
Third session	Family therapy techniques training and better and further performance of transactional patterns	1- Starting the session with receiving feedback about the previous session 2- Practicing family therapy techniques such as incorporation, imitation and retelling 3- Taking note of some cases of the impacts of family therapy techniques on the improvement of people's daily life
Fourth session	Statement of common transactional patterns, triangles available around family problems	1- Receiving feedback about the previous session 2- Reviewing the assignments and providing a summary of the previous session and discussing common transactional patterns and triangles existing in family problems 3- Writing and raising each couple's expectation of the spouse about their resilience
Fifth session	Reconstructing and changing the family structure	1- Reviewing the previous session's assignments 2- Examining the strategies for family change and reconstruction and their role in raising the hopefulness 3- Individuals were required to write and provide two cases that lead to the reaction of family members
Sixth session	Statement of the rate of each couple's relationship with his relatives	1- Reviewing the previous session's assignments 2- Examining and training the manner and rate of

		each couple's relationship with the spouse versus the relationship with their family members 3- Each client was required to write some of his experiences that have led to his closeness to the original family and aloofness from the spouse.
Seventh session	Increasing or balancing the family relationship with the spouse's relatives and having a proper relationship with mutual friends in order to promote family resilience and greater hopefulness	1- Reviewing the previous session's assignments 2- Examining the family relationship with the relatives of one's spouse and friends 3- The clients were required to raise some of the strategies that increase or balance the family relationship with the spouse's relatives and cause to have an appropriate relationship with mutual friends.
Eighth session	Family members' support from each other instead of attracting the children's support	1- The main subject of this session is about the maintenance of wife and husband subsystems with the boundaries of children subsystems 2- Providing a summary of the sessions, practicing and reviewing the training sessions. 3- Implementing the posttest and explaining it

Findings

The data obtained from the scores of this study is analyzed at two descriptive and inferential levels. At the descriptive level, indicators such as mean and standard deviation were used and at the inferential level, analysis of covariance through SPSS-22 statistical software was applied. To describe the data related to the sample, central indicators and distribution of the research variables were initially calculated which are as follows:

Table 2: Descriptive indicator of resilience and hope in the experimental and control groups with pretest and posttest

Groups	Indicators	Test type	Mean	SD	Minimum	Maximum	Frequency
Experimental	Resilience	Pretest	50.75	9.28	41	63	8
		Posttest	74.25	9.48	65	92	8
Control	Resilience	Pretest	48.37	3.60	29	66	8
		Posttest	56	14.50	30	80	8
Experimental	Hope	Pretest	60.25	3.61	54	66	8
		Posttest	70	4.03	63	76	8
Control	Hope	Pretest	59.25	3.95	54	65	8
		Posttest	59.87	3.60	54	64	8

As shown in **Table 2**, the mean score of resilience and hope among the members of the experimental group significantly increased in the posttest compared to the pretest but this change was not observed in the control group.

In this research, analysis of multivariate covariance test has been used due to its greater suitability and compatibility with the research hypotheses. Before conducting the analysis of covariance test, two assumptions one quality of the regression line slope and homogeneity of variances were investigated, whose results are presented in the following tables:

Table 3: Investigating the assumptions of using the analysis of covariance test

Variables / Levene's test for the equality of variances			Equality of the regression line slope	
	F value	Significance	F value	Significance
Resilience	1.4	0.11	2.12	0.09
Hopefulness	0.52	0.75	2.10	0.10

In **Table 3**, the assumptions of using the analysis of covariance were examined. Levene's test to investigate the equality of variances and regression line slope test demonstrated that variances are homogeneous for all the research variables and the equality of the regression line slope is established (P>0.05). Considering the significance of the assumption testing, multivariate analysis of covariance test is employed to investigate the research hypothesis which is as follows:

Table 4: Results of analysis of covariance for the mean difference of resilience and hopefulness scores in the experimental and control groups

Variable	Status	Degree of freedom	Mean Square	F value	Significance level	Effect size	Statistical power
Resilience	Pretest	1	594.175	47.953	0.010	0.56	0.867
	Group membership	1	3125.089	9.117	0.000	0.76	1
Hope	Pretest	1	30.463	5.271	0.04	0.34	0.867
	Group membership	1	371.737	27.708	0.000	0.67	0.992

Table 4 shows the research finding after the intervention. The mean posttest score of the experimental group significantly increased in regards to the variable of resilience and hopefulness when compared to the pretest and control group. The effect of the intervention is 0.76 for the total score of resilience and 0.67 for the score of hopefulness. In other words, subjects of the experimental group showed an increase in resilience and hopefulness by 76 to 67 percent relative to the control group.

Discussion and conclusion

The aim of this study is to investigate the effectiveness of structural family therapy in hope and resilience of people freed from drug addiction. The overall results indicated that structural family therapy is effective in hope and resilience of people freed from drug addiction and there is significant difference between the experimental and control groups in terms of hopefulness and resilience so that the scores of both components in the experimental group compared to the control group showed a significant increase in the posttest. The results of this study which showed the effectiveness of structural family therapy in hopefulness and resilience of people freed from drug addiction are consistent with the findings reported by Ramisch, Mcvicer and Sahin (2009), Tavakkoli (2009), Holly, Donohue, Warren and Allen (2011), Sim (2007), Robbins, Alonso, Horigian, Bachrach et al. (2010) and Szapocznik, Schwartz, Muir and Brown (2014). This study suggests the potential effectiveness of structural family therapy in hopefulness and resilience of people freed from drug addiction. It should also be added that the purpose of the structural family therapy model is to change the pattern of maladaptive interactions into adaptive interactions. Although family can be one of the factors that prepare the ground for addiction, it is definitely considered as an important factor helping in the treatment process. If the family looks at the patient more logically instead of rejection, humiliation, blame or conflict or even too much insistence for treatment and accepts the disease of addiction and supports the addict and avoids useless conflicts over trivial issues, it can be an important factor in the process of treatment and improvement. One of the problematic aspects of such families is relationship. Relationship is associated with boundaries and rate of agreement among family members. In this intervention, the relationships between members were improved through reconstructing the boundaries and breaking the harmful triangles. Reframing the negative states made a change in the cognitive view of family members towards the behavior and feelings of each other. This change in attitude led to reduced conflict and closeness of the members and caused to find effective solutions to solve the family problem. This was a factor that promoted hopefulness in people freed from drug addiction. Moreover, by strengthening the unity of members, the ability to control and monitor the activities of individuals freed from drug addiction in the family increased. This caused the people released from drug addiction to believe that their family members are worried about them and monitor their activities. In this regard, in a study entitled "Investigating the effectiveness of combining solution-focused family therapy method and structural family therapy in the treatment (cessation of drug use) of substance abusers and enhanced family function", Nameni et al. (2014) demonstrated that combining the two above-mentioned methods is effective in the treatment of substance abusers and increases family function.

In explaining the study hypothesis, it can be mentioned that in order for the individual to continue the cessation of drug use, the family system should change with the family structure (including a change in transactional patterns, removal of conspiracies and alliances, elimination of hard and turbulent boundaries in the family system, strengthening of subsystems especially marital subsystem, enhanced family solidarity and modification of hierarchy of power). When the family structure is changed, there is no need for each member to show an addictive behavior or sign. Hence, by modifying the structure of the family system, this therapeutic intervention could significantly increase the individual's resilience against substance use among the subjects of the experimental group. Goldberg and Northey (2013) in a study also reported that structural family therapy could enhance the resilience of family members in dealing with problems by improving the family structure and function, regulating individual emotions, creating emotional closeness among family members and promoting their interpersonal relationships. In explaining another research variable, it can be said that by changing the boundaries, modifying and improving transactional patterns, changing the roles, returning the people freed from drug addiction to their past desirable position in the family system and sitting in the position of the family decision-maker, we could improve the

hope of the person released from drug addiction in the family structure. In a study entitled "The effectiveness of hope therapy in reduced depression and relapse prevention among drug-dependent women seeking treatment", Raeisian, Golzari and Borj'ali (2011) indirectly showed that training hope therapy can cause a significant reduction in the rate of depression syndrome in addicted women.

But this study was faced with certain limitations including inattention of some subjects participating in this study when answering the questions. Given the results of this research, it can be stated that although methadone maintenance treatment is useful in the short term to prevent substance craving, the duration of treatment is not sufficient in the long run. However, from this study, it can be inferred that family-based therapy along with methadone treatment can be considerably effective in reducing addiction relapse. So, therapists in the field of addiction are recommended to consider non-drug treatment especially structural family therapy in their treatment program in addition to pharmacological interventions.

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A Comparison of the Effect of Protocol Replacement Therapy and Common method on the Diagnosis Time and Treatment of Electrolyte Imbalances in Multiple Trauma Patients Bedridden in the Surgical ICU

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Abstract:

Introduction: Electrolyte imbalances are one of the common problems in intensive care units. Protocol-based intervention may speed diagnosis time of these imbalances, facilitate their modification, and pave the way for providing patients with homogeneous services. The aim of this study was to examine the effectiveness of the electrolyte replacement therapy in an adult intensive care unit based on a protocol.

Method: In this clinical trial, data from 124 patients (62 patients using common approach and 62 patients using protocol) bedridden in an adult intensive care unit with one of the hypokalemia, hypocalcemia, hypophosphatemia, and hypomagnesemia imbalances during the study was recorded. The effectiveness of treatment with protocol was then examined based on the imbalance diagnosis and replacement time. Diagnosis time was measured based on the time interval between lab report and the beginning of replacement.

Results: By using the protocol treatment the diagnosis and replacement time decreased in all cases of electrolyte imbalances.

Conclusion: Using replacement protocol for electrolyte imbalances leads to more effective and shorter treatment.

Key Words: Electrolyte Modification, Protocol, Hypophosphatemia, Hypokalemia, Hypocalcemia, Hypomagnesemia

Introduction:

An intensive care unit (ICU) and its patients are liable to various water and electrolyte imbalances because of several reasons. One of the important electrolyte imbalances which is significant in these patients is any increase or decrease in the amount of sodium, potassium, magnesium, calcium and phosphorus. Undoubtedly, immediate diagnosis and treatment of these imbalances is effective in prognosis, cost reduction as well as reduction of medical errors and mortality and morbidity rates (1).

In ICU, several critical care protocols are at the moment being researched and implemented according to the specific circumstances of the patients. For example, glycemic control protocols, electrolyte imbalances protocol, separation of ventilation, etc. Among them water and electrolytes protocols are one of the most important running protocols in which electrolyte imbalances understudy are hypokalemia, hypomagnesemia, hypocalcemia and hypophosphate. Hypokalemia can cause nausea, vomiting, weakness, acute respiratory failure, cardiac arrhythmias and sudden death. Hypomagnesemia may lead to tetany, generalized seizures, muscle weakness, cardiac arrhythmias and even torsades des pointes life-threatening arrhythmia. Hypocalcemia causes paresthesia, seizures, cardiac arrhythmias, severe muscle weakness and even severe respiratory failure in ICU patients (2).

The common method employed to diagnose these imbalances involves frequent blood testing according to doctor's order and then if the aforementioned imbalances exist, treatment by a doctor in ICU is required. It should be noted, however, that time-consuming tests and sometimes late diagnosis of these imbalances as well as delays in timely remedial action may result in irreparable consequences, including death. Using an alternative diagnostic method can help diagnose and treat these imbalances more quickly, hence reducing their consequences. Moreover, this type of therapy helps save time which is quite pleasant to doctors, nurses and laboratory. In particular, it seems that using an alternative diagnostic method speeds up the diagnosis and treatment of these imbalances and facilitates the continuance of patient monitoring. On the other hand, a treatment protocol for electrolyte imbalances brings convenience to physicians, laboratories, and nurses (3). In effect, in critically ill patients in ICU, a protocol-based treatment provides the leeway for the doctor`s correct and timely judgment which in turn leads to the timely treatment of the patient. It also reduces disagreements in treatment among physicians who are trained in ICU (4). Still another advantage of the treatment protocol is that ICU nurses and doctors get familiar with a replacement therapy which is an easier treatment (5 and 6). Several studies have reported the beneficial effect of treatment protocol in specific actions of ICU. The specific actions of ICU refer to prolonged ventilation, separating patients from ventilator, blood components transfusion, treatment and rehabilitation of patients, sedation and analgesia (6 and 7). In addition to the diagnosis of these imbalances, the protocol provides the opportunity for timely health care actions taken by nurses (4). For example, in the designed protocol in Tod et al.`s study, the nurse was allowed to prescribe 60meq potassium as IV or po for patients with potassium in the range of 3.1 to 3.4. In another study, Rose et al. examined the treatment protocol of electrolyte imbalances in 2009 and concluded that the treatment protocol in the surgical ICU had significantly satisfactory results in the replacement of electrolyte imbalances and had positive effects on the treatment of patients (4). At the University of British Colombia in Canada in 2009, Zahra Ganji et al implemented PRT (Protocol Replacement Therapy) in a clinical ICU on two groups, in the first two months with the protocol and in the next two months without the protocol. Then they compared the effectiveness and cost reduction in the protocol group and non-protocol group. The results showed that the treatment in the protocol group was better and faster and the doctor and the nurse`s satisfaction was statistically significantly higher (6). In a systematic study in 2002, Mead et al. concluded that implemented protocols in ICU had a positive effect. Some of these

protocols included breathing with positive pressure protocols, separation of ventilator, infusion of blood products, sepsis resuscitation, glycemic control, and sedation and analgesia (7). Large-scale prospective studies have also shown that protocols not only homogenize costs in ICUs but also reduce morbidity and mortality rates in critically ill patients. A number of studies in 2001 examined protocols related to the administration of respiratory support, separation of ventilation, sedation, analgesia, and blood transfusion. The findings of these studies revealed the positive effects of these protocols (8). In 2001, Mckinley et al., studied 67 trauma patients with ARDS for ventilator support. As many as 33 patients were assigned to the protocol group (according to the respiratory support protocol) and 34 patients were assigned to the non-protocol group. The ventilator was set by a doctor. The findings showed that the protocol functioned successfully for these patients and had no harmful effect on their outcome (9). In another study in 1995, Esteba et al. employed the clinical trial method to examine different separating methods from ventilator among 546 patients. The findings showed that attempts for automatic breathing once a day is faster than other methods, including ventilation with positive pressure, intermittent mandatory breathing, and several attempts for separation during the day (10). In 2001 in New Zealand, Marinella et al studied the treatment protocol in relation to potassium in ICU. The results indicated that the distribution of hypokalemia or hyperkalemia decreased internally in these patients without doctor intervention (11). In their study-in 2001, Wall et al demonstrated that mortality rate decreased in the ICU with the implementation of protocols (12). Electrolytes are involved in many metabolic and homeostasis functions. Electrolyte imbalances are common in adult patients bedridden in the ICU and research has shown that they can be associated with increased mortality (13). Najafi et al. in 2007 found that no significant change occurred in serum magnesium level by the routine prescription of magnesium. Moreover, unexpectedly, no significant relationship was observed between serum magnesium level and postoperative arrhythmias. Therefore, although the prescription of magnesium within the common range has no effect on the incidence of postoperative arrhythmia, it is necessary to maintain serum magnesium within the normal range (14). Given the above-mentioned research findings, this study aims to compare the effect of protocol replacement therapy and common approach on diagnosis time and treatment of electrolyte imbalances in multiple trauma patients bedridden in the surgical ICU of Vali-Asr hospital in Arak, Iran.

Materials and Methods:

This study is a single-blind clinical trial. The study population included all patients bedridden in the surgical ICU of the Vali-Asr hospital in Arak. Simple non-probability sampling method was employed to select patients. The sample size for each protocol and control group was estimated as 62 people. The Inclusion criteria were multiple trauma patients with Apache score less than 25, minimum age of 18 years and maximum age of 60 years, no previous history of underlying diseases such as diabetes, renal failure, rhabdomyolysis, the absence of any previous electrolyte imbalance and lack of pregnancy. The exclusion criteria included patient with oliguria (reduction of urine volume less than 30 ml/h) during the hospitalization, more than 50% increase in serum creatinine level during hospitalization (acute renal failure) and severe electrolyte imbalances in patients during the study. After sample selection, patients qualified for inclusion were selected randomly based on odd or even reception file number and were divided into two groups of control and protocol. Protocol about the of the ICU nurses was trained about the protocol of diagnosis and modification of electrolyte imbalances by the anesthesiologist and interns (students).

Findings:

A total of 124 patients were studied, 93 (75%) men and 31 (25%) women. Moreover, 66 patients (53.2%) were connected to the ventilator and 58 patients (46.8%) were without it. Two groups were identical in terms of sex and the use of ventilator based on chi-square test. Moreover, independent groups't-test showed that the two groups were identical in terms of age and initial level of electrolytes. In the following, the diagnosis time for each of the imbalances in two groups are compared. Table 1 presents the results for variables with normal distribution based on t-test and for variables with non-normal distribution based on an equivalent nonparametric statistics.

Table 1: Comparison of diagnosis time for electrolytes imbalance in each group

Variable	Group	Number	Average/Minute/Hour	Standard Deviation	π
Hypocalcemia	Protocol	20	(6.33)380	70.5	003/0
	Common	15	(9.06)544	61.9	
Hypophosphatemia	Protocol	7	(2.7)432	129.4	0.001
	Common	10	(2.11)672	234.6	
Hypomagnesemia	Protocol	16	(5.63)338	768.2	0.000
	Common	14	(6.8)408	244.1	
Hypokalemia	Protocol	36	(2.06)124	111.8	0.001
	Common	22	(41.7)445	146.4	

The results from independent group t-test showed a statistically significant difference ($P \leq 0.05$) between the two groups (i.e. control and protocol) in the start time of electrolyte imbalances treatment. The comparison of the means showed that the start time was shorter in the protocol group.

Furthermore, the comparison of treatment duration between the two groups separated by the intensity of electrolyte imbalance as mild, moderate and severe revealed that severe electrolyte imbalance was not recorded in any of the cases understudy; however, it was found that the use of protocols to identify and treat mild cases of electrolyte imbalances was more effective than the common method (see Tables 2 and 3).

Table 2: Comparison of electrolyte imbalance diagnosis time based on the intensity of the imbalance

Variable	Intensity	Diagnosis Time/Minute		π
		Protocol	Common	
Hypocalcemia	Mild	298	349	0.002
	Moderate	399	420	
	Severe	0	0	
Hypophosphatemia	Mild	413	465	0.0001
	Moderate	461	482	
	Severe	0	0	
Hypomagnesemia	Mild	294	348	0.000
	Moderate	311	325	
	Severe	0	0	
Hypokalemia	Mild	93	129	0.004
	Moderate	122	131	
	Severe	0	0	

Table 3: Comparison of treatment time in electrolyte imbalances based on the intensity of the imbalance

Variable	Intensity	Treatment Time/Hours		π
		Protocol	Common	
Hypocalcemia	Mild	12.5	14.7	0.003
	Moderate	9.6	11.5	
	Severe	0	0	
Hypophosphatemia	Mild	23.2	28.6	0.037
	Moderate	18.1	20.7	
	Severe	0	0	
Hypomagnesemia	Mild	10.9	14.5	0.023
	Moderate	8.6	5.9	
	Severe	0	0	
Hypokalemia	Mild	9.6	3.9	0.004
	Moderate	8.6	9.6	
	Severe	0	0	

Discussion and Conclusion:

The results of this study are in line with those of Rose et al (4) in terms of the effectiveness of the protocol method in the reduction of diagnosis time. Evaluating the effectiveness of the treatment, however, was not the aim of the study byRose et al (4). Moreover, the positive effect of the protocol treatment on the diagnosis time reported in this paper is similar to the findings of Ganji et al (6) study. Nevertheless, it needs to be noted that the similarity of the common treatment method and the protocol treatment as well as the sensitivity of nurses in the treatment of detected cases and easy access to the medical staff in health centers and medical residents in the ICU could have confounded this hypothesis. Another point worth mentioning is that the present study did not examine costs and did not exclusively attribute the patient's morbidity and mortality rates to electrolyte imbalances. As such, although the overall findings are similar to the results of Holcomb et al `s (8) study, the details are not comparable. What can be concluded from these findings is that protocol treatment method provides homogeneous and timely services which are the outstanding characteristics of an ICU. This is owing to the fact that protocol-based intervention leads to a significant reduction in the diagnosis time of electrolyte imbalances and, therefore, replacement therapy can be started sooner and this naturally leads to a significant reduction in complications associated with electrolyte imbalances. The most common and important electrolyte imbalance diagnosed in the patients in this study was hypokalemia. This can be attributed to the frequent and routine

measurement of this ion and nurses and doctors` good command of sodium and potassium imbalances compared to imbalances such as hypophosphatemia and hypomagnesemia that are checked up merely due to obvious reasons and by doctor's order. Although, in this study, the treatment of hypophosphatemia and hypomagnesemia was evaluated based on positive protocol, due to small sample size, it is difficult to make judgment about them. Given that most cases of hypomagnesemia imbalance were generally within mild to moderate range and severe cases were few and far between, no serious complication was reported for this type of imbalance.

In both groups understudy (i.e. control and protocol), boundary electrolyte imbalance (with an approximate of 0.1 or one unit) was not actually considered by the medical and nursing team. This can be underpinned by the medical staff habit to boundary values and their quick request to repeat the experiment. The diagnosis time and subsequently the treatment time of hypokalemia imbalance was significantly shorter compared with that of other imbalances. This can be because of the medical staff`s more familiarity with sodium and potassium, performing routine tests, and measuring these elements for multiple therapeutic and medicinal purposes. Another reasons may be the shorter time for replacement therapy (generally 1 hour) compared with other elements (generally 4 hours). This study was not concerned with the side effects of replacement therapy or delays in treatment. However, due to numerous cases of mild to moderate electrolyte imbalances and no severe cases of this imbalance, making a good judgment is not possible.

In sum, , it can be argued that the existence of a particular diagnostic and treatment protocol in the ICU as a busy and sensitive unit reduces the need for doctor's orders for assessment and treatment. It also provides all patients with treatments based on the same principles, gives doctors and nurses legal protection, and enhances their satisfaction.

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Case study of Occupational hydrogen sulphide poisoning in an industry

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Abstract

Hydrogen sulfide is a colorless, highly toxic and lethal gas produced by sulfate and organic elements containing sulfur. Refinery gases are the main source of hydrogen sulfide gas. Human come into contact with the gas primarily through inhalation which is rapidly absorbed. The gas poisoning is reflected mostly with neurological symptoms and lung nervous system including dizziness, headache, seizures, coma, and paralysis of the respiratory center. Respiratory system symptoms may include wheezing, dyspnea, bronchiolitis, pulmonary edema and acute respiratory distress syndrome. Cardiac symptoms include dilated cardiomyopathy and arrhythmia. Management of the disease is treated with hydrogen sulfide including the immediate removal of the exposed gas, cleaning the skin and eyes, supportive treatment initiatives including administering the antidote. The purpose of this paper is to evaluate how medical personnel are familiar with various aspects of hydrogen sulfide gas poisoning and better management of these patients

Key words: Occupational, hydrogen, sulphide, poisoning, industry.

Introduction

Hydrogen sulfide is a colorless, highly poisonous, and deadly gas. It is produced by sulfate or organic elements containing sulfur. This gas is found in natural resources including crude oil, natural gases, volcanic gases, hot springs, coal, and etc. The main source of H_2S production is refinery gases. H_2S is metabolized through three methods; oxidation, methylation, and reaction with disulfide. Oxidation in the liver is the main detoxification path. Toxicity of H_2S is the result of its reaction with metabolic metalloenzymes (1). The exposure limit for H_2S is 10 ppm. The H_2S level in the air in living environments should not exceed 0.03 ppm (2). The environmental concentration of this gas in urban areas ranges from 0.11 to 0.33 ppm (3); however, its concentration is very low (0.02-0.07 ppm) in undeveloped areas (4). The emission of H_2S by oil and gas industries may threaten human health (3).

H_2S causes stimulation and asphyxia, and its effect on human health depends on exposure concentration and duration (3). Human exposure to H_2S commonly occurs through inhalation, and it is rapidly absorbed through this path (1). Concentrations of 50-100, 100-150, 200-300, 500, and higher than 700 ppm cause mucosal damage, olfactory fatigue, upper respiratory tract and eye damage, systemic effects, and rapid loss of consciousness and cardiopulmonary arrest (5). In the past, H_2S has been reported as the

cause of reduction of consciousness level and death in a number of risk occupations (6). It has been reported that approximately 125000 workers when working with farm slurry and effluent waste and 300000 workers in the oil and gas industries in England are exposed to H_2S (2). Low concentrations of H_2S can be tolerated indefinitely. Exposure to low concentrations of H_2S can cause eye irritation, sore throat, coughing, nausea, shortness of breath, and pulmonary edema. These symptoms usually persist for one week. Long-term exposure to low concentrations causes fatigue, lack of appetite, headache, irritability, poor memory, and vertigo. Chronic exposure to low concentrations of H_2S (about 2 ppm) increases the prevalence of miscarriage. The effects of H_2S depend on its concentration in the air. Its odor had been described as similar to that of rotten eggs (7). Toxicity of this gas commonly manifests as neurological or pulmonary symptoms. Nervous system symptoms consist of confusion, headache, seizure, coma, and paralysis of the respiratory center. Reparatory system symptoms include wheezing, dyspnea, bronchiolitis, pulmonary edema, and acute respiratory distress syndrome. Cardiac symptoms including arrhythmia and dilated cardiomyopathy (DCM) have also been reported in some cases (8). Workers in the oil and gas industries have been trained to recognize the emission of a high concentration of H_2S and react accordingly. The American Petroleum Institute (API) has published a list of recommendations for the prevention of exposure to high concentrations of H_2S in the working environment. In Europe, H_2S exposure limitation has been considered as 5 ppm or short-term exposure (15 minutes) to 10 ppm (9). With increase in the prevalence of biodegrading agents, the possibility of poisoning with H_2S is also increasing. The present text reports a case of H_2S poisoning in the refinery. The reporting of this case can be effective in the expansion and development of occupational safety plans, improvement of intra-occupational training, and increasing of knowledge for the utilization of safety equipment for the workers, and thus, reduction of mortality rate among workers. On the other hand, the presentation of H_2S poisoning cases and the health personnel's awareness of this type of poisoning is a step toward the better management of these patients.

Materials and methods

Case report: The patient was a 31-year-old man who was referred to the hospital on 7 April 2014 at 10:12 am by the Emergency Team. The patient had gone into cardiopulmonary arrest due to H_2S poisoning. The patient was intubated at the scene by medical emergency personnel and received cardiopulmonary resuscitation (CPR) several times before reaching the hospital. He had received electroshock therapy (ECT) several times due to ventricular tachycardia (VT). The patient entered the hospital in a coma, intubated, and under bag-valve-mask ventilation (BVM). On arrival, the patient's vital signs were blood pressure of 40/80 mmHg, heart rate of 110, temperature of 37 °C, 40% oxygen saturation (O_2Sat), blood sugar (BS) of 353 mg/dl, and Glasgow coma scale (GCS) score of 3/15. The patient had mydriasis, and the pupils of his eyes were unresponsive to light. The patient received synchronized intermittent-mandatory ventilation (SIMV) immediately, preliminary tests were conducted, and the patient was transferred to the intensive care unit (ICU). The results of tests are presented in **table 1**. In clinical examination, diminished breath sound was reported on both sides. Due to presence of pneumothorax in chest x-ray, the left chest tube was fixed for the patient. Upper and lower limb pulses were weak and symmetrical. Increased liver echogenicity was reported during ultrasound examination which represented grade III fatty liver. The spleen was at the maximum normal size. Edema around the gallbladder and a small amount of fluid in Morrison's pouch were observed. Parenchymal echo of both kidneys increased.

The prescribed medicine regimen included 300 mg sodium nitrite 3%, 1 l normal saline (stat dose), and 3 vials of sodium bicarbonate, amiodarone protocol, and injection of 200 mg hydrocortisone (stat dose). Subsequently, 100 mg ceftriaxone was intravenously injected as stat dose every 8 hours, and then, 1 g every 12 hours. Then Pentazole injection 40 mg was administered as start dose, and then, 40 mg was administered every 12 hours. Subsequently, 300 mg mannitol serum was administered as start dose. Due to reduction of blood pressure to 40/70 mmHg, dopamine infusion (10-15 µg/kg) was initiated. A nasogastric tube was fixed for the patient and had no blood discharge. The nasogastric tube and fully was fixed and had natural diuresis. During the hospitalization, complete blood count (CBC), blood urea nitrogen (BUN), serum glutamic oxaloacetic transaminase (SGOT), and serum glutamate-pyruvate transaminase (SGPT), and fasting blood sugar (FBS) tests were conducted and serum creatinine (Cr), sodium (Na), potassium (K), albumin (Alb), protein, calcium (Ca), and phosphorus (P) were determined daily. Due to severe metabolic acidosis and Cr level of 2.6 and K level of 7.5, nephrology consultation was conducted. As a result, 2 calcium gluconate injections as start dose was given and then 10 injections during 24 hours were prescribed. On the second day of hospitalization, rectorrhagia was observed in the patient so gastrointestinal consultation was performed and pentazole infusion was initiated. Moreover, coagulopathy [prothrombin time (PT) = 25, partial thromboplastin time (PTT) = 43, international normalized ratio (INR) = 4/1] was observed in the patient; thus, hematology consultation was conducted, but no evidence of disseminated intravascular coagulation (DIC) was found. Therefore, 2 units of fresh frozen plasma (FFP) daily were prescribed. On the fifth day of hospitalization, serum K level of the patient reached 7.1, and based on the nephrologist's orders, femoral catheter was fixed and dialysis was conducted for 2 hours. On the sixth day of hospitalization, serum K level was again reported at 8.2, and the nephrologist again prescribed dialysis. During dialysis, the patient went into cardiopulmonary arrest, and resuscitation was conducted successfully. On the ninth day of hospitalization at 10 am, the patient went into cardiac arrest and received CPR, but it was unsuccessful and the patient was pronounced dead.

Discussion

Although the danger of occupational exposure to H_2S has been extensively recognized, it has remained an unresolved issue in the occupational safety of workers, especially in gas industries. Despite the increase in awareness of the deadly consequences of occupational exposure to H_2S, deaths caused by this issue are still reported. In many cases, sufficient safety measures are not taken, and in some cases, the workers do not follow safety guidelines correctly (10). Most organs are susceptible to H_2S, especially mucous membranes and tissues with higher oxygen demand. High concentrations of H_2S prevent cellular respiration. The mechanism of toxicity of H_2S is similar to that of cyanide. A 50 ppm concentration of H_2S causes conjunctivitis, 50-100 ppm affects the respiratory tract, 100-200 ppm causes olfactory nerve paralysis after short-term inhalation and loss of the sense of smell, 250-500 ppm causes pulmonary edema, and more than 500 ppm results in respiratory arrest (11). Concentrations of higher than 800 ppm for the duration of 5 minutes are considered as a fatal dose for 50% of individuals. Concentrations of higher than 1000 ppm, even after one inhalation, can immediately cause cardiopulmonary arrest (7). In the studied

patient, the symptoms of poisoning observed were reduction in consciousness level, respiratory arrest, and cardiac arrest from which the possibility of poisoning with more than 500 ppm of H_2S was inferred. Patients with H_2S poisoning present with neurological and pulmonary symptoms. Central nervous system symptoms of H_2S poisoning include confusion, headache, seizure, coma, and paralysis of the respiratory center. Its pulmonary symptoms consist of wheezing, dyspnea, bronchiolitis, pulmonary edema, and acute respiratory distress syndrome. Moreover, the cardiac symptoms of arrhythmia and DCM have also been reported in some cases (12, 13). Arnold et al. reported reduced consciousness level, headache, nausea and vomiting, dyspnea, lack of balance, pulmonary edema, and seizure as results of occupational exposure to H_2S (14). In their study, 42 patients (46%) went into cardiopulmonary arrest at the scene (14). Inoue et al. and Amino et al. reported 2 cases of sudden death due to cardiac damage and 1 case of heart failure in individuals who had committed suicide with H_2S gas (15, 16). Significant cardiac symptoms result from the inhalation of high concentrations of H_2S. Lancia et al. reported the death of a factory worker after H_2S inhalation during work. The medical examination based on the autopsy report of the patient with H_2S 33% poisoning and histological examination and analysis confirmed the presence of this toxin in the blood, lung, liver, and brain. Furthermore, cyanosis, gray nails, bruises and scratches on the left side of the body due to collapsing, extensive brain edema, dark red tongue and tracheal mucosa, pulmonary edema, and congestion in the liver, spleen, and kidneys were reported (10). The primary management of patients poisoned with H_2S includes immediate removal from the exposure environment and cleansing of the skin and eyes. Treatment measures consist of supportive therapy and antidote prescription. The pre-hospital supportive measures consist of transference out into open air, oxygen 100% prescription, and emergency measures such as hyperventilation and oxygenation. Then, positive end expiratory pressure in case of acute lung injury, acidosis treatment, and crystalloid and vasopressor for reduced blood pressure are conducted. The next step is antidote (sodium nitrite 3%) administration. Sodium nitrite administration has the most effect within the first hour of poisoning and improves tissue oxygenation through the creation of methemoglobin and sulfhemoglobin (SulfHb) (5). Recently, it has been reported that hydroxocobalamin can assist in the reduction of serum sulfide and thiosulfate concentrations in H_2S poisoning cases (11).

Table 1. Results of tests are presented

Tests	Results	Normal rate
pH	7.11	
PCO_2 (mm/Hg)	26.20	35-34
PO_2 (mm/Hg)	184	78-92
HCO_3 (mEq/l)	8.60	22-26
O_2Sat (%)	98.20	93-98
WBC	11.40	4-10000
Hb (g/dl)	13	13.5-18.5
Platelet	225	140-440000
Sodium (mEq/l)	140	136-145
Potassium (mEq/l)	4.50	3.7-5.5
Glucose (mg/dl)	471	70-115
BUN (mg/dl)	15	9-20
Cr (mg/dl)	1.70	0.7-1.4
PT	25	11-13
PTT	43	25-38
INR	4.10	0.9-1
SGOT	1019	0.37
SGPT	1078	0.41
ALKp	130	80-306
Ca (mg/dl)	8	8.6-10.3

PCO_2: pressure of carbon dioxide; PO_2: pressure of oxygen; HCO_3; O_2Sat: Oxygen saturation; WBC: White blood cells; BUN: blood urea nitrogen; PT: Prothrombin time; PTT: Partial thromboplastin time; INR: International normalized ratio; SGOT: Serum glutamic oxaloacetic transaminase; SGPT: Serum glutamate-pyruvate transaminase.

Conclusion

Due to the high mortality caused by hydrogen gas poisoning, sulfide is the best treatment for prevention. Plans to develop a safety plan, improved training, supervision and close monitoring of workplace fatalities can reduce poisoning. Protective measures include the transfer of people with poisoning to the outdoor, administration of 100% oxygen, hyperventilation, acidosis treatment and prescribing antidote (sodium nitrite 3%).

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Cognitive therapy vs Behavioral activation therapy in the Treatment of Social Anxiety Disorder

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Abstract

The aim of this study was to compare of group behavioral activation treatment and group cognitive therapy in reducing Social anxiety symptoms, depressive symptoms, and negative attributions and improving general functioning. The design of the present study was pretest, posttest, and 3-month follow up with two groups: experimental group (group behavioral activation treatment) and comparison group (group cognitive therapy). The sample consisted of 23 university students who were selected on the base of inclusion criterion of having diagnosis of social anxiety disorder and exclusion criteria of having axis I disorders including Bipolar, psychotic, and substance abuse with use of the Structured Clinical Interview for DSM Disorders and being concurrently under psychotherapy or medication. All participants also completed the Social Phobic Inventory, Beck Depression Inventory, interpretation of negative social events and the Work and Social Adjustment Scale. They were randomly assigned to the experimental and comparison groups. The experimental group received 8 sessions of group behavioral activation treatment and the comparison group received 8 sessions of group cognitive therapy. The data analyzed by analysis of covariance. Results showed a statistically significant superiority of group behavioral activation treatment over group cognitive therapy in reducing depressive symptoms ($p<.05$) and a statistically significant superiority of group cognitive treatment over group behavioral activation therapy in reducing interpretation of negative social events ($p<.05$). But there were no statistically significant difference between two interventions in social anxiety and functional impairment ($p>.05$). The findings of follow-up also

showed the effects of both treatments have been continued in overall. The implications of the findings were discussed.

Keywords

Behavioral activation; cognitive therapy; social anxiety disorder; interpretation of negative social events; depression; general function

1. Introduction

Social anxiety is defined as evident and constant fear of social and functional situations and it occurs from this belief of the individual that he/she acts shamefully and with embarrassment in these situations, and will be judged negatively by others. People with social anxiety usually avoid participating or attending social and functional situations or tolerate such situations with great anxiety [1]. Throughout an individual's lifetime, the prevalence of social anxiety disorder (SAD) as a disease is estimated from 3 to 13 percent. Obviously the prevalence of nonclinical and no pathological types of social anxiety in the general population is far more. Social anxiety, either clinical or nonclinical types, has many negative effects on the educational, occupational and relational functions of the individual. Overall, co morbidity seems to be the rule rather than the exception which is true not only for SAD but also for the majority of other psychiatric disorders. For SAD, epidemiological studies in the community yield lifetime co morbidity rates with any other mental disorder between 69 and 81 percent. Three groups of disorders were particularly frequently studied and proved to be strongly associated with SAD: other anxiety disorders, mood disorders, and substance problems/disorders [2].

In cognitive therapy for anxiety and depression patients are taught a very basic idiom: "The way you think affects the way you feel." This simple statement is the cornerstone of cognitive theory and therapy of emotional disorders, and yet individuals often fail to recognize how their thoughts affect their mood state [3]. Behavioral activation (BA) traditionally used in the treatment of MDD [4, 5, 6, 7, 8 & 9]. In order to alleviate depression, BA assumes clients must be assisted in engaging in behavior that they will ultimately find pleasurable or productive, or that will improve their life situations in such a way as to provide greater rewards. Toward this goal, BA also focuses on processes that inhibit activation, such as escape and avoidance behaviors. The avoidance and social withdrawal behaviors serve to maintain SAD symptoms [10].

The decision whether to use a group or an individual format for treatment is usually made on the basis of clinical judgment and practicality. Group treatment has several advantages that make it popular. A number of these are: Group treatment reduces the sense of isolation felt by most peoples, who withdraw from interactions and believe that others cannot understand their feelings. It provides social support that is unambiguous and no blaming. It helps to validate and to normalize feelings and reactions to the anxiety. Group treatment confirms the reality of the

stress experience and allows sharing of coping strategies. It counteracts self-blame and promotes self-esteem. Because it is more egalitarian than individual therapy, group treatment can promote reempowerment and decrease dependency. It provides a safe environment for developing attachment and intimacy with others and an opportunity for sharing feelings. Finally, group treatment can help patients assign meaning to the event and promoting cognitive processing [7].

There are a number of well-established treatments for SAD. Cognitive-behavioral therapies have strong empirical support in meta-analysis as the treatments of choice for SAD [11, 12]. BA were used for anxiety disorders [2, 13, 14 & 15]. In this study BA use for SAD in comparison with Cognitive therapy.

2. Methods

CT package is combinations of various forms of cognitive restructuring. In this research group format of CT is used. BA, a psychotherapy that has been shown to be an effective treatment for depression and has shown potential for the treatment of other disorders as well. BA assumes clients must be assisted in engaging in behavior that they will ultimately find pleasurable or productive, or that will improve their life situations in such a way as to provide greater rewards. Toward this goal, BA also focuses on processes that inhibit activation, such as escape and avoidance behaviors [9].

2.1. Subjects and design

The present study included 30Participants. Participants were students of Amirkabir University who met the DSM-IV-TR [16] criteria for SAD. They were recruited from counseling center of Amirkabir University in Tehran. To determine eligibility, a clinical psychologist administered Structured Clinical Interview for DSM-IV [17]. Individuals who were actively psychotic, suicidal or met criteria for substance and/or alcohol dependence were excluded from participation. Consented participants were 10 males (43 %) and 13 Females (57 %), single (100 %), and had a mean age of 21.99 years (SD=3.02). Over the duration of the study period, seven participants withdrew from the study for various reasons. Twovariable$\chi 2$ tests revealed no group differences between BA and CT groups in gender status ($\chi 2s < 0.25; p > .05$). In addition, one-way ANOVAs failed to reveal any group differences in age, $F(1, 21) = 0.76, p > .05$, or any measures of baseline symptoms($Fs\ p > .05$).

2.2. Procedures

Consented participants were randomized to BA or CT using a block randomization procedure. All participants received ten; 90-minutesessions of BA and CT administered by master's-level therapists. Sessions were audio-taped and monitored by an independent rater to ensure treatment fidelity. The Social Phobia Inventory [18], Beck Depression Inventory [19], The consequences of negative social events questionnaire [20] were administered at pre and post treatment.

2.3. Design

The patients were randomly assigned to BA or CT treatments. The study used a basic two-group design with assessment pre and post-treatment and at follow-up 3 months after the end of treatment. A wait-list control group was not included because there is a general agreement that such a controlled design is unethical.

2.4. Treatments

General aspects: Treatment was group and the therapy sessions lasted 90 min, and were scheduled once a

week for a total of eight sessions. Between sessions the patients had homework assignments to carry out and record on specific forms. These were reviewed at the beginning of each session.

Cognitive group therapy: This treatment included a flexible combination of psycho education cognitive therapy. During education, patients were provided with a general overview of SAD, including common patterns of expression, co morbidity of other anxiety and depressive disorders, impact on social functioning, and a review of cur-rent treatment strategies and group rules. This phase was important for ensuring that participants developed a realistic understanding of their symptoms and prognosis, as well as an overall positive expectancy regarding the efficacy of cognitive-behavioral interventions. Cognitive therapy was used in order to teach the patient to identify and to dispute their unrealistic or exaggerated thoughts about themselves, the world, and their futures with more probabilistic reasoning and evidence-based argument. The patients also taught to decatastrophize his interpretations of intrusive recollections [21] and generate an alternative, no catastrophic interpretation of the intrusive recollections. Treatment was included Socratic questioning and teaching clients to challenge their thinking about their social events and the implications they have constructed through the use of progressive worksheets. During Anxiety management skills training, participants were taught skills to better manage their anxiety and stress levels, including elements of relaxation training and breathing retraining.

Behavioral activation group therapy: This treatment was based on group BA manual (22). During two first sessions, introduction of members, expressing group rules and introduction of SAD, depression and BA was use. Also, the therapist provides participants with psycho education about common reactions to social events, development of SAD and MDD, and how avoidance and withdrawal operate to maintain SAD and MDD symptoms. BA techniques used included daily activity monitoring, daily activity scheduling, TRAP and TRAC skill, self care and seeking social support. Because in a BA model, daily routines are protective against the development of mood disorders, so active-duty deployment was used as structured and reutilized. Daily activity monitoring homework is used to looking for patterns of avoidance and reinforces coping strategies. In daily activity scheduling technique, patients create their own Accomplishment-Pleasure Rating Scale and then schedule activities that provide a sense of pleasure and/or accomplishment for them. The "TRAP & TRAC" skill involves recognizing the connection between situations, emotional reactions, and coping strategies. It helps veterans recognize and change their tendencies to avoid. Self-care means doing specific pleasurable activities that focus on increasing your sense of well-being, health and enjoyment.

2.5. Measures

Structured Clinical Interview for DSM-IV: The SCID-IV is a semi structured diagnostic interview designed to assess the DSM-IV diagnostic criteria for Axis I disorders. The SCID have shown adequate interrater reliability for all disorders (rs range: .69 to 1.0) and adequate test-retest reliability over a 1- to 3-week interval in patient samples (rs range: .40 to 1.0). In present study, we used only the MDD module.

Social phobia inventory (SPIN): this scale was developed by Connor et al (18) to assess social anxiety. This questionnaire is a self report scale consisting of 17 items which contains three subscales of fear (6 items), avoidance (7 items) and physiological discomfort (4 items). Connor et al [18] has reported its internal consistency with the alpha method, 0.82 to 0.94. Furthermore the test retest reliability was 0.78 to 0.82. In Iranian population, Amoozadeh [23] has reported its internal consistency with the alpha method, 0.82 for its first half, and 0.76 for its second half. Furthermore the correlation between the two halves was 0.84. The alpha coefficients for each of the subscales are as follows: fear subscale, 0.74, avoidance subscale, 0.75, and physiologic discomfort subscale, 0.75.

Beck Depression Inventory - 2nd Edition (BDI-II): The BDI-II is a 21-item measure designed to assess the cognitive, affective, behavioral, motivational and somatic symptoms of depression in adults and adolescents [19]. Each Item of the BDI is rated on a four point scale, ranging from 0 to 3 with the total score, out of a maximum of 63 giving an indication of clinical severity. The BDI-II has demonstrated excellent test-retest reliability over a 1-week interval (r =.93),

excellent internal consistency (α = .92), and convergent and discriminant validity in multiple samples [19]. Psychometric characteristics of this test In Iranian population are good [24].

The consequences of negative social events questionnaire: this questionnaire was designed to explain the consequences of negative social events. In this questionnaire 16 negative social events were described, and four subscales: negative self-evaluations, negative evaluations by others, short term and long term negative consequences of social events were also included [20]. Each of the scales demonstrated high internal consistency (.95 for belief in negative evaluations by others, .97 for belief in negative self-evaluations, and .97 for belief in negative long-term consequences). In Iran, Ostovar [25] used the two scale form of this questionnaire and, by calculating the alpha, reported its reliability for the negative self-appraisal, 0.89, and the negative appraisal by others, 0.90.

Work and Social Adjustment Scale (WSAS): The Work and Social Adjustment Scale (WSAS) is a self report scale of functional impairment attributable to an identified problem. This scale is an outcome measure for the Improving Access to Psychological Therapy programme [26]. The WSAS is a simple, reliable and valid measure of impaired functioning. It is a sensitive and useful outcome measure offering the potential for readily interpretable comparisons across studies and disorders. Cronbach's α measure of internal scale consistency ranged from 0.70 to 0.94. Test—retest correlation was 0.73. Interactive voice response administrations of the WSAS gave correlations of 0.81 and 0.86 with clinician interviews. Correlations of WSAS with severity of depression and obsessive—compulsive disorder symptoms were 0.76 and 0.61, respectively. The scores were sensitive to patient differences in disorder severity and treatment-related change [27]. Psychometric properties of WSAS in Iranian population (n=67) is good. Pearson correlation of WSAS and Depression, Anxiety & Stress Scale (DASS) is 0.66. Test retest correlation was 0.69 [28].

3. Results

There were no significant differences between two groups in demographic characteristics and pretest evaluations. Results for the two treatment groups across time are shown in

"**Table 1**". The ANOVAs on the measures revealed significant main effects of time on SAD symptom severity, depression, Negative evaluations (Self appraisal and other appraisal) and General functions. Post hoc Turkey tests indicated that the treatment groups improved significantly on each of the self-report scales between pre-treatment and post-treatment ($p < 0.01$), between pre-treatment and follow-up ($p < 0.01$), and between post-treatment and follow-up. Also results show that two groups were equal in social anxiety and General functions, but BA group was more effective in decrease depression symptoms and CT group was more effective in decrease negative evaluations. Discussion of this results offer in conclusion.

Table 1. Efficacy of BA & CT.

Measure	BA	CT	ANOVA *F*-values
Social anxiety severity			
Pre	39.6 (6.6)	37.2 (5.4)	G: 0.46
Post	17.6 (6.1)	16.7 (4.1)	T: 2.48*
Follow-up	18.1 (5.1)	17.7 (5.2)	
Beck Depression Inventory			
Pre	15.3 (3.2)	14.2 (3.8)	G: 8.12**
Post	8.2 (4.3)	9.6 (5.0)	T: 7.21*
Follow-up	9.4 (5.1)	10.5 (4.8)	
Negative evaluations: Self appraisal			
Pre	53.3 (7.7)	54.3 (7.6)	G: 8.73**
Post	25.2 (4.5)	19.7 (3.6)	T: 12.53**
Follow-up	24.4 (4.6)	20.2 (4.4)	
Other appraisal			
Pre	61.4 (7.4)	64.3 (8.4)	G: 6.13**
Post	36.2 (6.3)	32.2 (5.3)	T: 2.21*
Follow-up	37.5 (3.7)	33.3 (5.7)	
General functions			
Pre	18.2 (5.2)	17.3 (6.5)	G: 0.08
Post	11.2 (6.0)	12.4 (6.9)	T: 2.21*
Follow-up	13.3 (4.2)	13.5 (5.4)	

G, Group effect; T, time effect; I, interaction effect in the ANOVA. * $p < 0.05$, ** $p < 0.01$.

4. Conclusion

We evaluated the effects of CT versus BA for patients with SAD. Results show that both treatments were highly efficacious. Effect of treatments both immediately afterwards and 3 months after treatment assessed. The results of this study showed that BA and CT decreased the patients' Social Anxiety and depression symptoms, decrease negative evaluations about self and others and improve general functions. These results were largely maintained at the 3 month follow-up. The second aim of this study was to compare BA with CT. The results were not in line with the prediction that CT would be more effective than BA. Both treatments were equally effective and there was no significant difference between them on decreasing Social Anxiety symptoms and general functions. But BA was more effective in decreasing depression symptoms and CT was more effective in decreasing negative evaluations about self and others. This result is predictable and can be concluded.

These results provide evidence that real-time increases in activity-levels (activation) that are functionally related to anxious behaviors might be associated with decreases in anxiety. The outcomes of the study have important implications for the practitioner seeking to provide

Cost-effective treatment for adult anxiety in typical out-patient settings. BA targets avoidance, withdrawal, isolation and inactivity, it is hypotheses that BA will favorably affect Social Anxiety and depression symptoms [29]. However, avoidance behaviors will be targeted through examining the individual's general behavioral repertoire, rather than through exposure techniques, possibly making BA acceptable to clients. BA strategies (e.g., scheduling and participating in positively reinforcing and/or valued activities) may enhance exposure therapy for Social Anxiety symptoms by directly targeting co morbid depression symptoms and areas of functional impairment. BA highlight the relationship between stressful life events and the development of psychopathology, both emphasize the concepts of avoidance and engagement. BA strategies may target a broader range of symptoms and psychosocial domains. [9].

According to the cognitive theory [21] individuals interprets the occurrence of the social recollections in a catastrophic way. The clinical improvements in CT may have been due to cognitive interventions. This tentative conclusion suggests that different mechanisms can lead to the same results in the treatment of Social Anxiety (3). This is further supported by results from a study in which Jacobson et al. [29] compared Behavioral Activation (BA) with BA plus an Automatic Thought (AT) treatment and Cognitive Therapy (CT) that included BA, AT plus a component focused on core schemas. They found that all three treatments performed equally well and concluded that BA was the most cost effective treatment method for depression. If several treatments are equally effective for one specific disorder, the most cost-effective alternative should be chosen. Since BA requires less amount of training and time and can be taught to therapists with less training and experience than CBT it should be preferred to CBT in the treatment Social Anxiety symptoms. Behavioral strategies consist of restoring an adequate schedule of positive

reinforcement in the person's life, thereby reducing dysphoria and depression. Commonly, alterations are made in the frequency, quality, and range of the patient's activities and social relationships. Targeting avoidance behaviors may be an important innovation. Addressing avoidance is standard in treatments for anxiety, and recent models propose that avoidance may be a fundamental element underlying multiple psychopathologies and that blocking avoidance may be a critical element of treatment [30]. Avoidance minimizes immediate distress at the cost of both diminishing opportunities for reinforcement and exacerbating ongoing stressors. BA explicitly targets the reduction of avoidance behaviors related to both intrapersonal and interpersonal difficulties. The BA model uses focused activation strategies to explicitly target avoidance patterns and associated functional consequences. In essence, in BA, patients learn to identify patterns of avoidance and to respond with activation; this basic principle is applied repeatedly across multiple situations in therapy. Moreover, the BA model utilizes a fundamentally different approach to negative and ruminative thinking than used in CT. First, behavioral interventions address the function of negative or ruminative thinking, in contrast to CT's emphasis on thought content. BA encourages attention to the consequences of ruminating (avoidance and withdrawal) and the use of activation strategies as alternatives [5]. In this regard, BA shares important elements with other contemporary behavioral therapies that emphasize function rather than topography of behavior. BA also overlaps in this way with strategies in CT that explore the utility (as opposed to the validity) of thoughts. It is possible that an emphasis on the utility or function of thinking has a particularly important role in the treatment of depression. Patients are encouraged to notice when they are ruminating and to move their attention away from the content of ruminative thoughts toward direct and immediate experience; for instance, a patient may be asked to experiment with attending to the sights, smells, or sounds around her when she notices that she is ruminating [29].

Both treatments have positive effect on negative cognitions and depressive symptoms but CT has more effect on negative cognitions and BA has more effect on depressive symptoms. It proposes that both treatments are treatment of choice for social anxiety disorder and this idea should be test in future researches.

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The role of body image concern, sexual body image, and sexual self-esteem in general health of women seeking rhinoplasty surgery

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Abstract

Aim: This study aims to investigate the role of body image concern, sexual body image and sexual self-esteem in general health of women seeking rhinoplasty surgery.

Methods: This study was a descriptive correlational design. Cases were defined as subjects who presented to beauty centers in Mashhad. A convenience sample of forty women participated. Each woman completed General Health Questionnaire (GHQ), Body Image Concern Inventory (BICI), Body Exposure during Sexual Activities Questionnaire (BESAQ) and Sexual Self-Esteem Index for Woman-Short Form (SSEI-W-SF). The data were analyzed with Pearson correlation coefficient and Stepwise regression.

Results: The results showed that there is a significant relationship between general health and body image concern, sexual body image and sexual self-esteem in women seeking rhinoplasty surgery ($P<0.005$). Body image concern and sexual body image predicted the general health, contributing to 24% of the variance ($p< 0.005$).

Conclusion: A lower rate of body image concern predicts higher general health in women seeking rhinoplasty surgery.

Keywords: Body image concern, Sexual self-esteem, General health, Rhinoplasty surgery

Introduction

Nearly ten million cosmetic surgical procedures were performed in 2009 according to the American Society for Aesthetic Plastic Surgery which is an increase of 147% since the procedure first began in 1997. In Iran, approximately25-30 thousand cosmetic surgical procedures are performed annually. 60% of them are related to nose reshaping and the rest are related to other cosmetic and plastic surgeries (Kalantar& Hormozi, 2013). Balouchi (1996) found that 75% of the individuals who underwent cosmetic surgeries in Iran are female and most of the people undergoing these surgeries are 18-35 years of age. Individuals with low self-esteem and low self-assessed attractiveness may be more open to cosmetic surgery (Swami et al., 2008). In another study, it was shown that 7% of those seeking cosmetic surgery show at least one of signs of general health disorder (Toutounchi, et al., 2007).In a study conducted by Bergeron and Derek(2007), they revealed that individuals dissatisfied with their body image are under mental pressures and report lower general health. Body image is the internal perception of the individual's external appearance which embraces physical, cognitive and attitudinal dimensions and consists of perceived experiences and personal and cultural attitudes towards the body and is influenced by experience and maturation processes (Cash et al., 2004). Baumann Ingo (2010) in a study examined the effect of cosmetic surgery on mental image of the body in women aged 22-25 in Norway and revealed that mental image of individuals improved 6 months after the surgery. In another study, Felix et al. (2014) studied 31 women with body dysmorphic disorder seeking rhinoplasty surgery. At the 1-year postoperative follow-up, there was a significant decrease from baseline in body dysmorphic disorder scores.

Since the early 1940s, sexual body image was considered as an important factor in the sexual function in both sexes. Sexual body image deals with the fact that after a successful or unsuccessful sexual relation, how each individual associate their feelings with their appearance and body (Grenier & Byers, 1995). The quality of the individual's sexual body image can be associated with sexual confidence, sexual assertiveness, sexual avoidance and sexual performance after experiencing sexual abuse (Katz & Farrow, 2000; Weiderman, 2000).

Studies conducted to examine the relationship between body image and domains of sexual

functioning have indicated that body image concern affects behaviors, attitudes and sexual cognitions (Quinn-Nilas et al., 2016; Woertman & van den Brink, 2012). Bradford and Meston (2006) have referred to the negative impact of dissatisfaction with sexual body image on the sexual arousal of women. Sexual concerns and fears weaken the sexual desire and non-sexual concerns affect the sexual response (Pereira et al., 2013). Watts and Nettle (2010) pointed to the greater dissatisfaction with body image among women suffering from problems of vaginal contractions compared to the control group.

One aspect of the self-esteem is sexual self-esteem which influences sexual behaviors and comprises people's emotional response to the evaluation of their own thoughts, feelings and sexual behaviors (Vissel et al., 2010). Rosenfeld (2004) believes that sexual self-esteem reflects the properties that facilitate sexual interactions while having sexual relations. In a study on 426 women seeking cosmetic surgery, it was suggested that much of the impetus for women's tendency to these surgeries is to gain beauty as a factor for increased confidence (Tavassoli & Modiri, 2013). In another research carried out by Rosenbaum et al. (2014) concerning self-esteem and life quality, it was found that one year after rhinoplasty surgery, life quality and self-esteem are enhanced and appearance-related mental confusions are significantly reduced.

Given the importance and necessity of conducting further studies to understand the psychological factors affecting the tendency to cosmetic surgery particularly nose surgery and also with regard to high rates of rhinoplasty surgeries in Iran, the objective of this research was to investigate the role of body image concern, sexual body image and sexual self-esteem in general health of women seeking rhinoplasty surgery.

Method

In this descriptive-correlational study which was conducted with the approval of research deputy of Neyshabur Islamic Azad University among the women aged between 20 and 40 years seeking rhinoplasty surgery who referred to beauty centers in Mashhad in the second half of 2015, 40 subjects were selected through convenience sampling method with regard to inclusion and exclusion criteria. The inclusion criteria consisted of (1) female gender, (2) age 20-40, (3) no history of any previous cosmetic surgery, (4) no history of trauma damaging the beauty

and consent to participate in the study. For data collection, General Health Questionnaire (GHQ), Body Image Concern Inventory (BICI), Body Exposure during Sexual Activities Questionnaire (BESAQ) and Sexual Self-Esteem Index for Woman-Short Form (SSEI-W-SF) were administered and the participants were assured that their answers were confidential. Pearson correlation coefficient test and stepwise multiple regression were conducted for data analysis.

Research tools

General Health Questionnaire (GHQ)

This scale includes 28 questions and four subscales of somatic symptoms, anxiety, social dysfunction and depression and is scored based on a 4-point Likert-type scale ranging from 0 to 3. The overall score is between 0 and 84 (Goldberg & Hillier, 1979). Reliability coefficient of this questionnaire was reported to be between 0.78 and 0.9 using test-retest method (Robinson & Price, 1982) and between 0.9 and 0.95 through Cronbach's alpha method (Failde et al., 2000). In the study by Taqavi (2001) on 75 medical students in Iran, the reliability of this questionnaire was obtained to be 0.70, 0.93 and 0.90 respectively through reassessment method, bisection method and Cronbach's alpha.

Body Image Concern Inventory (BICI)

The measure is a 19-item, multiple-choice, self-reported instrument. For each item, individuals indicate how often they have the described feeling or perform the described behavior on a 5-point Likert scale bounded by 1 (never) and 5 (always). This questionnaire includes three subscales of dissatisfaction, embarrassment because of appearance and poor individual performance due to worry about appearance. In the study conducted on an academic sample, Cronbach's alpha coefficient and internal validity for this questionnaire were estimated to be respectively 0.93 and 0.92. Further, its correlation with Body Dysmorphic Disorder Questionnaire (BDDQ) was 0.83 which indicates high validity of this scale (Littelton et al., 2005). In Iran, Basaknezhad and Ghaffari (2008) and Hasheminezhad et al. (2016) tested the reliability of the BICI items and Cronbach's alpha respectively reported 0.95 and 0.86 for this test.

Body Exposure during Sexual Activities Questionnaire (BESAQ)

This 28-item questionnaire was developed in 2004 by Cash et al. in order to evaluate the individual's experiences of mental image in sexual relationships. It is scored based on a 5-point Likert-type scale ranging from 0 to 4. A high score in this questionnaire suggests a sexual skewed image during the sexual relation. Cash et al. (2004) found that the BESAQ's Cronbach's alpha coefficient was 0.95 for men and 0.96 for women. In a study on 403 women, Cronbach's alpha was reported to be 0.97 (Claudat, 2013). In a study performed on a sample of 328 female nurses in Iran, Cronbach's alpha coefficient was equal to 0.794 and its reliability coefficient was estimated to be 0.88 through test-retest method with the use of 9-week interval (Toozandehjani & Soleymani, 2015).

Sexual Self-Esteem Index for Woman-Short Form (SSEI-W-SF)

This questionnaire includes 35 items and has been developed to evaluate the responses affecting women's sexual assessment of self. The questions are responded on a 6-point Likert-type scale ranging from 1 to 6 (totally disagree to totally agree). This questionnaire consists of five subscales including experience/skill, attractiveness, control, moral judgment and adjustment which reflect the sexual self-esteem domains. By adding up the scores of five domains, the total score of the scale is obtained and higher scores represent greater sexual self-esteem. Cronbach's alpha coefficients for the whole scale, experience/skill, attractiveness, control, moral judgment and adjustment were respectively 0.92, 0.84, 0.88, 0.80, 0.80 and 0.80 (Schwarz, 1996). In a study by Zeanah and Schwarz (1996), convergent validity of SSEI-W-SF through correlation with Rosenberg Self-Esteem Scale (0.57) was approved. In their study, Farrokhi and Shareh (2014) studied a sample of 510 Iranian married women and the same 5 factors of the original version were obtained by factor analysis on SSEI-W-SF. The internal consistency coefficient of items was 0.88 in the whole sample and correlation coefficients between each item and total score of the scale were obtained to be between 0.54 and 0.72. Test-retest reliability coefficient was reported to be 0.91 for the entire scale and between 0.82 and 0.94 for its five subscales.

Findings

Of the 40 subjects, 55% were married and 45% were single. Additionally, 2.5% of the participants were without diploma, 22.5% with a diploma, 60% with a bachelor's degree and 15% with post-graduate education.

Table 1 shows the mean and standard deviation of data obtained from administrating GHQ, BICI, BESAQ and SSEI-W-SF and assumption of normality of the variable scores with Kolmogorov-Smirnov test

Table 1: Mean, SD and results of Kolmogorov-Smirnov test for the research variables and their components.

Variable	Mean	SD	Statistic value	Significance level
Body image concern	42.6	12.2	0.76	0.58
Sexual body image	34.3	16.7	0.57	0.89
Physical symptoms	5	3.2	0.95	0.33
Anxiety	5.8	4.5	1.2	0.06
Social dysfunction	6.3	2.5	0.97	0.29
Depression	1.8	3.3	1.2	0.06
General health	18.9	11.4	1	0.24
Experience/ skill	29.1	4.2	0.96	0.31
Attractiveness	29.3	4.8	0.69	0.73
Control	24.5	5.6	0.71	0.69
Moral judgment	32.7	5.8	1.1	0.16
Adaptiveness	25.6	4.4	0.63	0.82
Sexual self-esteem	141.2	19.1	0.8	0.54

Results of **[Table 1]** demonstrate that scores of research variables are not far from normal distribution. The correlation matrix of variables has been provided in **[Table 2]**.

Table 2: Correlation matrix between research variables

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Body image concern		0.46**	0.52**	0.39*	0.43**	0.49**	0.54**	0.01	0.32*	0.32*	-0.29	-0.06	-0.28
2	Sexual body image	0.46**		0.44**	0.34*	0.27	0.39*	0.43**	-0.03	-0.44**	-0.46**	-0.45**	-0.26	-0.45**
3	Physical symptoms	0.52**	0.44**		0.78**	0.56**	0.56**	0.87**	0.10	0.24	0.14	-0.33*	0.03	-0.18
4	Anxiety	0.39*	0.34*	0.78**		0.57**	0.62**	0.91**	0.02	-0.24	-0.21	-0.31	-0.04	-0.20
5	Social dysfunction	0.43**	0.27	0.56**	0.57**		0.53**	0.75**	0.14	-0.02	-0.15	-0.31	0.006	-0.13
6	Depression	0.50**	0.39*	0.56**	0.62**	0.53**		0.80**	0.17	-0.24	-0.12	-0.15	-0.07	-0.12
7	General health	0.54**	0.43**	0.87**	0.19**	0.75**	0.80**		0.12	-0.23	-0.19	-0.32*	-0.03	-0.19
8	Experience/skill	-0.01	-0.03	0.10	0.02	0.14	0.17	0.12		0.30	0.40**	0.39**	0.55**	0.66**
9	Attractiveness	-0.32*	-0.44**	-0.24	-0.24	-0.02	-0.24	-0.23	0.30		0.48**	0.63**	0.49**	0.76**
10	Control	-0.32	-0.46	0.14	-0.21	-0.15	-0.12	-0.19	0.40**	0.48**		0.46**	0.48**	0.75**
11	Moral judgment	-0.29	0.45*	-0.33*	0.31	0.31	-0.15	0.32*	0.39*	0.63**	0.46**		0.65**	0.83**
12	Adaptiveness	-0.06	-0.26	-0.03	-0.4	0.06	-0.07	-0.03	0.55**	0.49**	0.48**	0.65**		0.82**
1	Sexual self-esteem	-0.28	0.45**	-0.18	-0.20	-0.13	-0.12	-0.19	0.66**	0.76**	0.75**	0.83**	0.81**	

3														

* The relationship is significant at the level of 0.05

** Correlation is significant at 0.01 level.

According to the findings of **[Table 2]**, body image concern and sexual body image have a significant positive correlation with general health and its components (P<0.05). Of the components of general health, physical symptoms (P<0.01, r=0.52) and depression (P<0.01, r= 0.49)had the highest correlation with body image concern (r= 0.52, r= 0.49) and sexual skewed image (r= 0.43, r= 0.39). Besides, sexual body image has a positive relationship with body image concern (P<0.01, r= 0.46) and a negative relationship with sexual self-esteem (P<0.01, r= 0.45) and its components.

In order to investigate the role of body image concern, sexual body image and sexual self-esteem in predicting the general health of women seeking rhinoplasty surgery, stepwise multiple regression test was applied.

Table 3: Summary of the regression model, variance analysis and the impact of the statistical indicators of body image concern and sexual body image on general health

Variable	Sum of squares	Degree of freedom	Mean Square	F ratio	Significance level	R	R2	Estimation error	Durbin Watson test	Assumption of collinearity	
										Tolerance	VIF
Body image concern	1835.9	1	1835.9	13.7	0.001	0.41	0.17	11.6	1.8	0.89	1.1
Sexual body image	2617.6	2	1308.8	10.6	0.001	0.49	0.24	11.1	1.5	0.89	1.1

In **[Table 3]**, numerical values of Durbin-Watson test (1.8) indicate the independence of errors and numerical values of tolerance test (0.89) and variance inflation factor (1.1) show that there is no collinearity between predictor variables. Regression results determine that 17% of the variance observed in general health is justified through the variable of body image concern (R2= 0.17). By adding the variable of sexual body image, predictive power reaches to 24 percent. **[Table 4]** displays the coefficients of variables in multivariate regression.

Table 4: Data related to regression coefficients of predictor variables in regression analysis

Variables	Beta	Standard error of beta coefficient	Standardized beta coefficients	T	Significance level
Constant number	-2.1	5.5	-	-0.37	0.72
Body image concern	0.37	0.13	0.32	2.8	0.006
Sexual body image	0.22	0.09	0.28	2.5	0.01

The regression equation obtained from the findings of Table 4 is as follows:

Estimation of general health= 0.22× (score of sexual body image) + 0.37 × (score of body image concern) – 2.1

Discussion and conclusion

This study was conducted with the aim of examining the role of body image concern, sexual body image and sexual self-esteem in general health of women seeking rhinoplasty surgery. The significant positive relationship between body image concern and sexual body image with general health indicates that a lower rate of body image concern which predicts higher general health in women seeking rhinoplasty surgery. These two variables can totally predict 24% of the variance of general health. The obtained results of this research are consistent with the findings of Na'eimi and Salehi (2016), Amissah et al. (2015), Yazdandoust et al. (2016), Cash et al. (2004) and Khanjani et al. (2012). Amissah et al. (2015) investigated the relationship between body image, eating behavior and psychological health among 140 students and found that body image is significantly associated with psychological health. In the study by Khanjani et al. (2012), they demonstrated that there is significant difference between applicants and non-applicants of cosmetic surgery in terms of anxiety disorders, depression and body image. This finding might be explained by the fact that when general health decreases for various reasons, problems may arise in social relationships with those around and subsequently, the individual's view of himself and his social attractions may be affected. Existence of such a situation increases the risk of mental and physical disorders (Webster & Tiggemann, 2003; Wells, 2010).

Based on the results of our study, sexual body image has a positive relationship with body image concern and a negative relationship with sexual self-esteem. In other words, women with higher body image concern and lower sexual self-esteem do not feel well about their appearance and body during sexual relationships and thus show weaker performance in sexual relationships. These results are congruent with the findings obtained by Steer and Tiggemann (2008) who studies the role of body image in sexual issues. Moreover, Pujols et al. (2010) evaluated sexual satisfaction and body image in 153 women aged between 18 and 49 years and found that there is a significant positive relationship between sexual function, sexual satisfaction and body image. In a study conducted to investigate the

relationship between body image, sexual function and body mass index of 193 women, the obtained results showed that women with a positive attitude towards their body image have better sexual function (Erbil, 2013). Results obtained in the study by Rosman (2013) on 219 women suffering from breast cancer showed that body image concern during the sexual relation mediates the relationship between body image, sexual dysfunction and sexual dissatisfaction. Empirical evidence has repeatedly shown that low self-esteem is related to negative body image in women (Heatherton & Wyland, 2003; Lowery et al., 2005).

In a study conducted on Canadian female students, it was reported that high body dissatisfaction and severely deformed body image are associated with low sexual self-esteem in various social and private situations (Weaver & Byers, 2006). Another research which examined three variables of self-esteem, self-efficacy and evaluation of appearance among women seeking plastic surgery, showed that self-esteem and self-efficacy mediate the negative effects on women's evaluation of appearance and their decision to undergo cosmetic surgery (Yin et al., 2016). Furthermore, there is a relationship between high self-objectification and low sexual self-esteem of women (Calogero & Thompson, 2009). Results of another study suggested the existence of low self-esteem, body image concern and symptoms of depression in the individuals seeking cosmetic surgery (Javid Larijani & Baqeri, 2016).

In general, the results of this research are consistent with other studies conducted in this field and show the importance of body image concern, sexual body image and self-esteem in general health of women seeking nose surgery. Considering that this study was conducted on a small sample of women seeking rhinoplasty surgery in Mashhad, it is important to be cautious in generalizing the findings. Additionally, the analyses conducted are the result of a cross sectional correlational study; hence, any causal inference from the results of this study is not allowed. For future research, we recommend a background querying including more extensive sampling and experimental or longitudinal designs which allow for the inference of a causal relationship to be used.

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Predicting job stress based on consultative and benevolent leadership styles in the staff of Mashhad Water and Wastewater Company

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Abstract

The present study aims to predict job stress based on consultative and benevolent leadership styles among the staff of Mashhad Water and Wastewater Company. This research is a descriptive-correlational study and its statistical population consists of all the staff of Mashhad Water and Wastewater Company in 2015. The sample under study comprises 196 subjects from the aforesaid population, who were selected through voluntary and available sampling method. For data collection, HSE standardized job stress questionnaire and leadership styles inventory by Renesis were applied. The obtained data was analyzed using regression analysis method and SPSS-23 software. The findings demonstrate that the consultative leadership style is a significant predictor of the component of job stress ($P<0.05$). But no significant relationship was found between the benevolent leadership style and job stress of the staff. Thus, according to the research results, it can be stated that institutions whose managers use the benevolent leadership style, their employees receive less job stress.

Keywords: Benevolent leadership style, consultative leadership style, job stress, Mashhad Water and Wastewater Company

Introduction

One of the most important stress sources is the type of job. The job pressure sustained by the individual to adapt to job requirements is an inevitable issue and may be tolerated in the short time, but in the long run, physical and psychological resistance is exhausted which leads to burnout (Qal'eei, Mohajeran & Mahmoudzadeh, 2015). Accordingly, the issue of job stress and its consequences in the staff is one of the common problems in service sectors, which can cause other physical and psychological problems (Qasemi Pirbalouti, Ahmadi & Alavi Ashkaftaky, 2013). Job stress refers to conditions like a tight schedule, administrative jobs and working with sophisticated and sometimes damaged equipment and complex hierarchies of power and skill which disrupt a combination of factors faced by employees (Anonymous, 2016). Job stress affects the staff, reduces their life quality and increases the likelihood of work-related injuries (Knezevic, Milosevic, Golubic, Belosevic et al., 2011).

Hall (1996) and other career development experts believe that a number of professional managers in each organization should do the necessary planning to improve their employees' job and lead them in this direction. A proper and fair career advancement path can lead to individuals' job satisfaction, their

commitment to the organization and so on (Hedge, Borman & Bourne, 2006). By the same token, D'Ettorre and Greco (2015) in their study revealed that occupational health along with leadership styles and stress management can partly decrease job stress among the staff of an organization. Given that the present age is considered as the most stimulating period of knowledge and management implementation, this fact becomes increasingly more visible that the success of any organization depends entirely on the correct choice of leadership styles (Appelbaum, Iaconi & Matousek, 2007). An appropriate leadership style is regarded as one of the most important organizational factors and is a key element for directing and managing the chaotic and stressful work environment, which has been used in this study as a mediating factor (Gelaidan & Ahmad, 2011).

In order to manage the affairs, leaders adopt different methods and strategies which are recognized under the title of leadership style (Smith, 2015). Leadership style is a set of attitudes, traits and skills of managers which are formed based on the four factors of system of values,trust in employees, leadership tendencies and nature and type of activities (Overstreet, Hazen, Skipper & Hanna, 2014).

Although every manager adopts a particular leadership style based on the existing conditions and dominant culture of society, leadership styles are generally divided into four categories: autocratic leadership style,benevolent leadership style, consultative leadership style and participative leadership style (Ehsani, Sedaqati & Qanbari, 2012). In the present study, two consultative and benevolent leadership styles are addressed. Consultative leadership style refers to the style in which there is considerable trust along with maintaining control over decisions on the part of the manager and the manager uses reward, accidental punishment and to some extent participation in the work to motivate individuals (Rezaeiyan, 2015). In the benevolent leadership style, the management shows trust and confidence together with tolerance towards the subordinates, such as trust and confidence of the master towards the servant. While adoption of all decisions and determination of organizational goals are undertaken by the manager, some decisions are made within the prescribed framework at lower levels. Rewards and some actual or potential punishments are applied to motivate employees. While the process of control is concentrated in the hands of top management, some are also entrusted to the intermediate and lower levels (Koontz & Veyrich, 2010; translated by Parsaeiyan).

Based on the foregoing, since the employees (human resources) of the organization are considered as the most important and most valuable organizational resources, the maintenance of this valuable resource is among the critical duties and responsibilities of managers and leaders of the organization. Identifying the factors causing job-related psychological stress in employees and elimination or reducing these factors and preventing their incidence in the organization are evaluated as instances of fulfilling these duties (Beiginiya & Kalantari, 2008). According to what has been said, this question arises as to whether consultative and benevolent leadership styles can be significant predictors of job stress.

Methods and materials

This research is a descriptive-correlational study and aims to predict job stress based on consultative and benevolent leadership styles. Since in this study, the component of leadership style has been used as the predictor of job stress, the regression method was employed to measure the predictive role of leadership style. The statistical population included all married employees in Mashhad Water and Wastewater Company in 2015. The subjects were selected through voluntary and available sampling method. The intended sample size was estimated based Morgan table after obtaining the number of people in the population. The population size was estimated to be 400 individuals according to the investigations conducted. The sample size was selected to be 196 subjects using Morgan table.

In the present study, HSE standardized job stress questionnaire and leadership styles inventory by Renesis were used to collect the data.

HSE[1] job stress questionnaire

In order to measure job stress, standardized job stress questionnaire of England's HSE Institute was

applied. This questionnaire includes 35 questions and 7 subscales of demand, control, managerial support, peer support, relations between colleagues, role and changes. Its reliability and validity have been previously examined by Azad Marzabadi and colleagues. In this questionnaire, each scale is scored from 1 to 5. The average score of expressions in each subscale represents the measured value of each subscale which ranges from 1 to 5 and score 1 indicates the optimal state and score 5 suggests the stressful and undesirable state. To examine the content validity of the questionnaire, the translated version of this questionnaire was sent to a group of psychology professors in Baqiyatallah University of Medical Sciences and Tarbiat Moallem University and also a group of professors in the Department of Epidemiology and Biostatistics in Isfahan University of Medical Sciences and Shahid Beheshti University of Medical Sciences and their final opinion about the content of the questionnaire was questioned. All of them without exception referred to the validity of the instrument studied in measuring job stress. Cronbach's alpha coefficients of the components of this questionnaire in the study by Azad Marzabadi and Gholami Fesharaki (2010) were obtained to be 0.57 for demand, 0.56 for control, 0.69 for managerial support, 0.73 for peer support, 0.67 for relations, 0.70 for role and 0.72 for changes.

Renesis leadership styles inventory

To carry out this study, Likert leadership style measurement questionnaire containing closed questions was used. The questionnaire consisted of questions about gender, age, marital status, education level, employment status, job category and 35 closed questions associated with the management style of managers. The responses to questions were rated based on a Likert scale (always, often, sometimes, rarely and never). The questionnaire was tested in the pilot sample in terms of reliability and validity. To measure the validity of the measurement tool of this study, content and face validity was applied. To assess the reliability, test-retest method was used. The reliability of the 35-item leadership style questionnaire was equal to 0.81 from the manager's perspective and 0.87 alpha from the employee's perspective, which is significant at the alpha level of 1% and indicates the high reliability of the measurement tool (Mosaddeq-rad, 2005).

Findings

The data obtained from the scores of this study is analyzed at two descriptive and inferential levels. At the descriptive level, indicators such as mean, standard deviation and frequency were used and at the inferential level, multivariate regression analysis was applied using SPSS-23 software. To describe the data related to the sample, central tendency indicators and dispersion of the research variables were initially calculated which are as follows in **[Table 1]**:

Table 1: Descriptive indicators of the research variables

Component	Number	Mean	SD	Variance	Skewness	Kurtosis
Job stress	196	96.6029	30.47422	940.908	0.742	-0.416
Benevolent leadership style	196	22.5588	4.27345	18.263	-0.390	0.333
Consultative leadership style	196	22.6765	4.66489	21.761	0.458	0.785

As can be seen in **[Table 2]**, the mean score of job stress is higher than the mean of the other two components. On the other hand, the amount of skewness and kurtosis in all variables is between 2 and -2, which suggests the normality of data.

In this study, multivariate regression statistical test was used due to its compatibility with the research hypotheses. Before doing the regression analysis test, three assumptions of normal distribution of scores, homogeneity of variances and collinearity between independent components (consultative and benevolent leadership styles) and criterion (job stress) were investigated whose results have been provided in the following tables.

Assumption of normality: As previously mentioned in the description of data, Skewness and kurtosis test was applied to examine the normality of data, whose

results are between 1.96 and -1.96 in all the research components, which shows the normality of data.

Homogeneity of variances test

To evaluate the homogeneity of variances, Levene's test was employed, whose results are as follows:

Table 2: Levene's test (homogeneity of variances)

Component	Levene	Significance level
Benevolent leadership style	1.588	0.139
Consultative leadership style	2.411	0.056

Because the significance level of Levene's test was higher than the alpha of 0.05, the variance of the scores of data is similar in both components.

Detection of collinearity between independent components (consultative and benevolent leadership styles) and the dependent component (job stress)

Tolerance values and variance inflation (VIF) are applied to examine the correlation between predictor variables. The closer the tolerance value to 1 and the greater the variance inflation, it can be said that collinearity between predictor variables is possible.

Table 3: Coefficients

Predictor variables	Diagnostic statistic	
	VIF	Tolerance
Benevolent leadership style	2.481	0.403
Consultative leadership style	1.693	0.591

As determined in **[Table 3]**, the tolerance value in the predictor variables is not less than 0.01 and VIF value is also high in the predictor variables, which indicate the linear relationship between variables.

To assess the research hypothesis regarding the prediction of job stress based on consultative and benevolent leadership styles, multivariate regression method was used whose results have been presented in **[Table 4]**:

Table 4: Results of examining the regression coefficient

Model	Unstandardized regression coefficients		Standardized regression coefficients	Test statistic (t)	Significance level
	B	Std.Error	Beta		

Constant value	292.740	10.710		27.333	0.000
Consultative leadership style	-1.514	0.633	-0.356	-2.391	0.018
Benevolent leadership style	-0.202	0.692	-0.043	-0.292	0.771

With regard to the significance level of the test, it can be stated that only the subscale of consultative leadership style is able to negatively predict the component of job stress since the significance level is lower than the alpha of 0.05. Hence, only consultative leadership style has a significant relationship with job stress in employees.

Discussion and conclusion

The purpose of the present study is to predict job stress based on consultative and benevolent leadership styles among the staff of Mashhad Water and Wastewater Company. The research results demonstrated that consultative leadership style is capable of predicting job stress.

Findings of the present research indicating the predictive role of consultative leadership style in the component of job stress are consistent with the results obtained by Kordi, Beheshtizad, Mohammadi and Beheshtizad (2015), Peyman-pak, Mansour, Sadeqi and Taqipour (2012), Zopiatis and Constanti (2010) and D'Ettorre and Greco (2015) since these researchers concluded in their studies that there is a significant negative relationship between consultative leadership style and job stress and that job stress can be predicted based on consultative leadership style. Peykarifar and Mahnegar (2013) in a study found that a relationship exists between consultative leadership style and job stress, but no relationship was observed between benevolent leadership style and job stress in their study. Accordingly, Qorbani Irandegan, Irandegani and Qorbani Irandegan (2015) investigated the relationship between leadership styles and job stress and obtained the same finding as the present study. They stated that there is no significant relationship between benevolent leadership style and job stress.

In explaining the results of the present study suggesting the predictive role of consultative leadership style in job stress, it can be mentioned that management plays a major role in the organization and considering the critical responsibilities assumed by managers, they should prepare the ground for organizational excellence by applying proper management practices. In this respect, based on new theories of leadership by Humphrey (2002), it can be said that managers are expected to enjoy an efficient leadership style in prospect-making, development of coordination and coherence,empowerment of colleagues, creativity and innovation, legitimization of laws and regulations andobservance of standards and ethics. Currently, human resource management implements modern methods of management with a focus on humans and develops the structures that encourage innovation, accountability and consultative attitudes instead of strict and traditional structures. Leadership theories influenced by classic theories believe that leaders must think logically without getting influence from their emotions and properly benefit from others' thoughts and then plan (George, 2000). Therefore, it should be said that participation and consultation in affairs and use of the subordinates' ideas in the management of organizations are like strong arms for managers which resolve many of the problems within the organization so that the organizational space or working environment in participatory and consultative management is much more enjoyable than the environments where individuals act only in accordance with the duties and demands expected by their managers while being away from cooperative groups because working in exclusive spaces requires individual thought, personal planning and individual decision-making which, however deliberate, bring a lot of job-related mental pressure. Hence, working in consultative environments where great importance is given to employees and subordinates and organizational affairs are conducted in consultation with them increases job satisfaction. Accordingly, Bass and Avolio (2005) introduce consultative leaders as individuals who by showing emotions make their subordinates committed and convince them to accept organizational goals and values and show great effortsbeyond their expectations to access them. This practice causes the leaders to develop a kind of emotional attachment with their subordinates. In this way, they become more committed and are able to tolerate the problems of the workplace and remain away from job stress.

But this study was faced with specific limitations, including the inattention of some participants and also their dishonesty in answering the questionnaire and their lack of interest and motivation which was a factor for lack of the subjects' proper cooperation. With regard to the research results, it is

recommended that attempts have been made to reduce and modify the stressful factors through informing the employees about stressors (including the normal life and working life) and offering specialized counseling on the part of occupational health experts. Further, providing mental health of the staff by paying salaries and benefits, insurance issues and application of consultative leadership styles by sympathetic and consultant managers are of crucial importance.

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Evaluating the distance between posterior teeth and the maxillary sinus floor using cone beam computed tomography (CBCT)

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Abstract

Background and Objectives: The maxillary sinus is the first paranasal sinus to develop and its development ends by 20 years of age. The topography of the sinus floor and its relationship with maxillary teeth roots varies with age, pneumatization size and grade, positioning of the teeth, and genetics. Therefore, this study used cone-beam computed tomography (CBCT) to evaluate the distance between posterior teeth and the maxillary sinus floor in patients from Rafsanjan (a city in Iran).

Materials and Methods: This descriptive cross-sectional study evaluated 35 CBCT radiographs from patients over 20 years of age who attended a private oral and maxillofacial radiology clinic in Rafsanjan for dentistry procedures. The CBCT imaging was performed. After obtaining multi-planar reformatted (MPR) images, a maxillofacial radiologist measured the vertical relationships (the shortest distance) between the mesiobuccal, distobuccal, and palatal roots of posterior maxillary teeth and the maxillary sinus floor and classified them as described by Didilescu. The collected data were sequentially entered into SPSS 21.0.

Results: In the second molars of the left region, the distances between the mesiobuccal, palatal, and distobuccal roots of the posterior teeth and the maxillary sinus floor were mostly type 0. In the first molars of the left region, the distances between the distobuccal, palatal, and mesiobuccal roots and the maxillary sinus floor were mostly type 1, 0, and 2, respectively. In the second molars of the right region, the distance between the maxillary sinus floor and mesiobuccal and distobuccal roots and palatal roots were mainly type 0 and type 1, respectively. In the first molars of the right region, the distance between the maxillary sinus floor and mesiobuccal, palatal, and distobuccal roots was mostly

type 0. Generally, the distobuccal root of the second molars had the shortest distance from the maxillary sinus floor. Statistical tests showed no significant relationships between the measured distances and age, gender, or the assessed region.

Conclusion: Since the distance between posterior maxillary teeth and maxillary sinus floor was mostly type 0 in the population of Rafsanjan, it is recommended that CBCT is use to obtain adequate knowledge of the anatomy and morphological details of tooth roots before any treatments, especially surgical procedures.

Key words: Teeth, maxillofacial, pathologies, maxillary sinus, cone beam computed tomography

Introduction

relationship of maxillary sinuses with the roots of posterior teeth is essential to the diagnosis of maxillofacial pathologies and preoperative treatment plans. The diagnosis of sinus disease of odontogenic origin is not easy and creates uncertainty in not only patients, but also physicians and dentists.[4] The most common causes of sinus disease of odontogenic origin are tooth abscess and periodontal diseases which perforate Schneider membrane, stimulate the sinus with inter-antral foreign objects, and ultimately leads to the secondary infection of the sinus.[5]

The topography of the sinus floor and its relationship with maxillary teeth roots depends on age, pneumatization size and grade, position of teeth, and genetics.[6, 7] The relationship between the roots of posterior maxillary teeth and maxillary sinus can be investigated by various radiographic techniques including two-dimensional (e.g. panoramic and periapical) methods or three-dimensional methods such as computed tomography (CT) and cone beam CT (CBCT).

The maxillary sinus is the first paranasal sinus to develop and its development ends by 20 years of age.[1] With the eruption of the permanent teeth, the sinus begins to pneumatize into the alveolar ridge. At the age 12 or 13, the sinus floor reaches the same level as the nasal floor, and at the age 20, sinus pneumatization stops following the complete eruption of the third molars.[2] The sinus size and development are different in different people. In half of the population, the sinus floor develops between roots, causing an elevation at sinus antral level or protrusion of roots into the sinus. In such cases, the thickness of the sinus floor is significantly reduced.[3] After the extraction of a tooth, sinus dilatation significantly decreases the amount of bone available for implantation.[1] Other complications caused by the projection of roots into the sinus include oroantral fistula (i.e. the extension of the root into the sinus following the extraction of the first and second molars) and the endoanteral syndrome (the progression and development of pulpal diseases into the sinus, causing sinusitis). Therefore, careful assessment of the anatomic

of vital facial structures (e.g. maxillary sinus), and tooth positioning in orthodontic treatments.[13]

The biological structures of different populations have different genetic features which can justify their distinct anatomic and topographic relations. Anatomical knowledge of the structures that form the middle and lower parts of the face, especially the maxillary sinus and its relationship with posterior teeth, is essential for not only careful diagnosis of maxillary sinus and periapical inflammatory changes, but also proper treatment, surgery, and rehabilitation programs.[6]

Clinicians performing implant surgery in the posterior maxilla should pay particular attention to the cases of root protrusion into sinus as they may entail a risk of pneumatization following tooth extraction and result in the reduced amount of available bone. The present study aim was to assess the distance between posterior teeth and maxillary sinus floor using CBCT in patients attending a private oral and maxillofacial radiology clinic in Rafsanjan (a city in Iran).

Materials and Methods

Patients born and living in Rafsanjan were included if they had fully erupted posterior teeth, fully formed apex, and at least one maxillary posterior tooth. The exclusion criteria were external resorption, periodontal envelop, bone changes, maxillary sinus infection, surgeries involving sinuses and

The advantages of panoramic radiography are availability, low cost, low radiation dose, extensive coverage of facial and teeth bones, short imaging time, and understandability of panoramic images for the patients.[8] The disadvantages of this method include superimposing anatomic structures, vertical and horizontal magnification (10%-33%), unavailability of faciolingual bone images, and lack of cross-sectional data.[9-11] CBCT has overcome the limitations of panoramic radiography by producing multi-planar images without magnification. Although this method provides high-quality images, the effective radiation dose of CBCT devices can range between 10 and 1200 µSv depending on device type. This amount of radiation is equivalent to 2-240 panoramic radiographies.

According to previous research, conventional periapical radiography cannot be used for predicting maxillary sinus perforation in periapical surgery. Advanced imaging techniques, such as CBCT, are hence required in such cases.[12]

CBCT imaging is also used in endodontic retreatment, trauma, temporal mandibular joint (TMJ) bone lesions and pathology, assessment

The present descriptive cross-sectional study evaluated a total of 35 CBCT radiographs belonging to patients aged 20 years or higher who attended a private oral and maxillofacial radiology clinic (in Rafsanjan, Iran) for dentistry procedures.

posterior maxillary teeth (except for wisdom tooth) and the maxillary sinus floor. All measurements were performed using Planmeca Romexis 3.8.3 software (Figure 2). The measured values were classified as described by Didilescu et al.[14] distances 0, 0-2, 2-4, 4-6, and > 6 mm were classified as type 0-4, respectively.

To assess the intraobserver agreement, 10% of images were randomly selected two weeks later and reassessed by the same radiologist (with no knowledge of the initial measurements).

The collected data were sequentially entered into SPSS 21.0 (SPSS Inc., Chicago, IL, USA). The relationships between teeth region and morphological classification, age, and gender were determined using independent t, paired t, and the non-parametric Kolmogorov-Smirnov tests. P values less than 0.05 were considered significant in all tests.

Results

(45.8%) roots of the posterior second molars were mostly of type 0. In the first molars, the distance between the maxillary sinus floor and distobuccal, palatal, and mesiobuccal roots were mostly type 0, 1, and 2 respectively (50%, 37.5%, and 43.8% respectively; Table 1)

absence or extraction of mandibular molars (due to overgrown maxillary molars). Moreover, patients with systemic diseases (e.g. hemolytic anemia and thalassemia) and bone lesions (benign and malignant tumors, cysts, and other bone lesions) in the maxillary sinus region which affected sinus size and its interaction with the teeth were excluded.

The CBCT imaging was performed using Planmeca Promax, CBCT 3D Classic (Helsinki- Finland) and the current, voltage, time were set at 12-14 mA, 82-84 kVp, and 12s, respectively.

After obtaining multiplanar reformatted (MPR) images (produced by placing sagittal and coronal axes along the longitudinal root axis, so that the tooth apex can be clearly observed) (Figure 1a,b), a maxillofacial radiologist measured the vertical relationships (the shortest distance) between the mesiobuccal, distobuccal, and palatal roots of

A total of 73 teeth from the 35 selected CBCT radiographs were evaluated. Of the 35 patients, 15 (42.9%) were women and 20 (57.1%) were men. The mean age of the patients was 20.38 ± 9.42 years. In all samples assessed from the left region, the distances between the maxillary sinus floor and mesiobuccal (37.5%), palatal (33.3%), and distobuccal

Table 1. Frequency distribution of various types of distances between posterior teeth and maxillary sinus floor in patients attending a private oral and maxillofacial radiology clinic in Rafsanjan, Iran during 2016-17

Group	Type	Left						Right					
		Second molar			First molar			Second molar			First molar		
		DB	P	MB	DB	P	MB	MB	P	DB	MB	P	DB
Total	0	11(45.8)	8(33.3)	9(37.5)	2(12.5)	6(37.5)	1(6.3)	4(25.0)	5(31.3)	3(18.8)	6(31.6)	5(26.3)	8(42.1)
	1	4(16.7)	7(28.2)	6(25.0)	8(50.0)	5(31.3)	6(37.5)	6(37.5)	6(37.5)	6(37.5)	3(15.8)	6(31.6)	4(21.1)
	2	4(16.7)	5(20.8)	6(25.0)	3(18.8)	1(6.3)	7(43.8)	3(18.8)	2(12.5)	4(25.0)	5(26.3)	4(21.1)	2(10.5)
	3	0	0	3(12.5)	1(6.3)	2(12.5)	1(6.3)	1(6.3)	0	1(6.3)	1(5.3)	1(5.3)	3(15.8)
	4	5(20.8)	4(16.7)	0	2(12.5)	2(12.5)	1(6.3)	2(12.2)	3(18.8)	2(12.5)	4(21.1)	3(15.8)	2(10.5)

second molars was mainly type 1 (26.3%). In the first molars, the distance between the maxillary sinus floor and mesiobuccal palatal, and distobuccal (37.5%) roots were mostly type 0 (Table 1). As seen in Table 1, the distobuccal root of second molars had the

Moreover, in all samples of the right region: the distances between the maxillary sinus floor and mesiobuccal (31.6%) and distobuccal (42.1%) roots of the second molars were mostly type 0. The distance between the maxillary sinus floor and the palatal root of

maxillary sinus floor in all studied first and second molars.

Independent t-tests also showed no significant differences in the mean distance between posterior teeth roots and the maxillary sinus floor between men and women (except for the first molar palatal root in the left region whose distance was significantly greater in women than in men). Paired t-tests showed no significant differences between the left and right regions in terms of the mean distance between posterior teeth roots and the maxillary sinus floor.

nearest distance from the maxillary sinus floor. Based on the studied CBCT images, the frequencies of type 0-4 were 30.2%, 29.7%, 20.4%, 6.2%, and 13.3%, respectively. Therefore, class 0 (distance = 0 mm) was the most frequent. Patients were divided into two groups according to their age (≤ 40 and > 40 years). A total of 50 teeth belonged to the first group (≤ 40 years) and 40 teeth belonged to the second group (> 40 years). According to the results of independent t-tests, no significant differences were found between patients > 40 years and ≤ 40 years in terms of the mean distance between posterior teeth and

Discussion

images to assess the relationship between maxillary posterior teeth and the maxillary sinus floor in residents of Rafsanjan. The results showed that the distobuccal root of the second molar had the shortest distance from the maxillary sinus floor. This finding agreed with the results reported by Kiliey[15], Asthana[16], and Kwak[7] and Kilic[17]. However, it was in contrast with the findings of Didilescu[14], Jung18, Poorebrahim[19] and Shokry[20].

Didilescu et al. studied a population in Romania and found the palatal root of the first molar to have the shortest distance from the maxillary sinus floor[14]. These researchers only evaluated the first molars and thus their results were different from those of the present study.

The anatomical knowledge of the maxillary sinus and its relationship with maxillary posterior teeth is highly important in not only surgical procedures such as the extraction of maxillary posterior teeth, implantation, and sinus lifting, but also understanding the development of pulpal diseases into the sinus and orthodontic movement (e.g. intrusion) of the maxillary posterior teeth. In half of the people, the maxillary sinus floor extends between the maxillary posterior teeth roots and causes the protrusion of the sinus floor or the tip of the roots into the sinus. The risk of pneumatization has been observed following tooth extraction in cases where roots protrude into the sinus. This would reduce the available bone for dental implants or maxillary denture.[3]

Given the differences in genetic characteristics of different populations, this study used CBCT

palatal roots) as the most frequent in Malaysia.[21] The difference with the results of the present study might have been caused the difference in sinus pneumatization in different ethnicities.

Shokri et al. identified type 3 (intrusion of roots into the sinus) as the most frequent type in Hamedan, Iran.[22] Discrepancies in growth patterns in different ethnicities might have caused the difference between their findings and ours.

Shubhasini et al. used Didilescu classification and found type one as the most frequent type in a population in India.[23] Ethnicity and small sample size might have been responsible for the difference between the results of their study and ours.

The present study showed no significant difference between the right and left regions. Similar results were obtained by Kiliey[15], Kilic[17], and Shokri[22]. However, although Shokry et al. found no significant difference between the left and right regions, the left side had a closer relationship with the maxillary sinus floor.[20] The difference from the present study might have been due to the difference in the sinus growth pattern and its asymmetrical growth.

The present study showed no significant difference between men and women. This was in agreement with the results obtained by Kiliey[15], Kilic[17] and Shokry[20], but in contrast with those found by Shokri et al. who reported the protrusion of roots into the sinus to be more common in men than in women.[22] This

Jung et al. identified the mesiobuccal root of the second molar as the nearest to the maxillary sinus floor.[18] The difference between their findings and ours might be justified by the difference in sinus pneumatization in different ethnicities.

Poorebrahim et al. reported the mesiobuccal root of the second molar to have the shortest distance from the maxillary sinus floor.[19] Differences in measurement methods (CBCT images vs. coroner autopsy) might have been responsible for the different results of their study and ours.

Shokry et al. used Didilescu classification and found the palatal root of the first molar to be the closest to the maxillary sinus floor.[20] The difference between their findings and ours might have been caused by the fact that they only evaluated the first molars.

Based on Didilescu classification, the distance between the maxillary posterior teeth and the maxillary sinus floor in Rafsanjan's population was mostly type 0. This is in agreement with the findings of Didilescu et al[14]. but in contrast with the results obtained by Shokry[20], Jeong[21], Shokri[22], and Shubhasini[23].

Shokry et al. used the same classification method but found type one as the most frequent in a population from Saudi Arabia.[20] Different ethnicities of the participants can justify the difference between their findings and ours.

Jeong et al. reported type one (maxillary sinus floor above the line connecting the buccal and

was significantly greater in 40-49-year-old patients.[23] The difference between the results of their study and ours might have been caused by the difference in ethnicity and limitation in sample size. Arji et al. showed that the distance between posterior teeth and the maxillary sinus floor increased until 20 years of age, but decreased thereafter.[24] Sinus enlargement might have caused the difference between their findings and ours.

difference between the two studies can be justified by the different shapes of the maxilla in men and women of different ethnicities.

The present study showed no significant difference between patients aged ≤ 40 and > 40 years. This was similar to the results obtained by Didilescu, [14] but disagreed with the findings of Shubhasini[23] and Arji[24]. Shubhasini et al. indicated that the distance

Conclusion

CBCT to acquire adequate knowledge of the root anatomy and its morphological details before any treatments, especially surgical procedures.

Given that the distance between maxillary posterior teeth and the maxillary sinus floor was mostly type 0 in the population of Rafsanjan, clinicians are recommended to use

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Figure Legends Title:

Figure 1: The method of providing Multiplanar reformatted (MPR) images

1a. Axial view 1b.Sajital view

Figure 2: Measurement of the shortest distance from root to maxillary sinus.

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EVALUATING THE EFFECTIVENESS OF NEONATAL RESUSCITATION TRAINING COURSE ON NURSES OF KOWSAR MEDICAL CENTER IN QAZVIN UNIVERSITY OF MEDICAL SCIENCES BASED ON KIRKPATRICK MODEL

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Abstract:

Field and target: Due to the importance of nursing care and neonatal life, evaluating the effectiveness of the neonatal resuscitation training course on nurses in Qazvin University of Medical Sciences is of high value. One of the popular methods for evaluating the effectiveness of the neonatal resuscitation training course is the Kirkpatrick model. This study aimed to evaluate the effectiveness of the mentioned course based on Kirkpatrick model.

Methods: This descriptive-cross-sectional study was conducted by census of nursing personnel in teaching hospital of Qazvin during2015-2016. Participants in this training course were nurses and midwives involved with neonates. They (n = 50) were participating in the workshop for the first time. The data collection tool was a researcher-made questionnaire by which the effectiveness of the training course was evaluated according to Kirkpatrick's four-level model (reaction, learning, behavior and result). The collected data were analyzed using SPSS software.

Results: According to the results of the first level (reaction), the course is desirable (mean = 19.50 and standard deviation= 6.40).

Second level (learning): The mean of post-test scores (17.89) is higher than the mean of pre-test scores (14.56). Calculated standard deviations in both phases show that the standard deviation is 2.62 at post-test and the dispersion is lower.

The third level (behavior): behavior has two levels of applying and performance for learner and supervisor (mean=24.68 and standard deviation= 7.94). The participants' average scores of skill are significantly increased in this section, too.

The fourth level (result): The overall index on effectiveness of the courses reflects the favorable situation and efficacy of the training course.

Conclusions: The findings of this study indicate that Kirkpatrick model is useful to evaluate the effectiveness of training courses. Through this model, we are able to find the weaknesses and problems of training courses and attempt to fix them. This model plays an important role in better planning for training employees and increasing the effectiveness of the courses and leads to enhanced job skills and knowledge.

Keywords: Kirkpatrick model, the effectiveness of the training course, neonatal resuscitation training.

Introduction

Education is one of humanitarian supplies for the practical development of each institution. Institution which concern to education and human resources and consider it as a policy and strategy for their institutions, do more successfully. A training institutions consider to to develop their own institutions and their employees is In-service training. In-service training is nothing else than efforts done to improve the knowledge and awareness, technical skills and good behavior of the staff of an institution and prepares them for performing job duties optimally . Since training the staff is a very strategic and important factor underpinning the growth and development of any organization, today the issue of education quality and effectiveness of the education system are among the great concerns of education system as well as development practitioners and decision-makers in each country. Staff training, as the main key to the development of any organization, is one of the main factors and important parts of each organization which brings dynamism and effectiveness to the organization (1). Identifying educational needs is the starting point of any educational activity that plays an important role in effectiveness as well as in developing a basis for evaluation and decision-making in different areas of learning. In the process of training and improving human resources, there is no more important duty than performing detailed needs assessment. Needs assessment refers to a process or flow whose result consists of a set of requirements that are set based on the priorities and basic measures arerequiredto reduce or eliminate them (2). If training does not lead to change and improvementof the quality of work in an organization, organizational growth will not happen. At first place, effective training will be provided when senior managers and staff make sure and believe that more aware and capable employeesare able to carry out their responsibilities betterand are more effective in improving the quality of work. Then this feeling must be established that changes and developments in technology and knowledge, as well as professional skills and job needs require that employees betrained in accordance with international developments. Finally, there must be an appropriate measure for evaluating the effectiveness and quality of the provided education (3).Moreover, staff training as the golden key of the development of any organizationis one of the main factors and important parts leading an organization to dynamism and its ultimate efficiency and effectiveness (4).In this study, nursing personnel form the majority of professional staff in hospitals. Since many experts believe that neither academic formal education nor intensive limited pre-service education prepare nurses to perform effective tasks (5), evaluating the effectiveness of training means to identify the success extentof a performed trainingsto improve practical and applied skills needed for the organization. Educational Evaluation is one of the most important programs of any organizationthat providegood information on the design and review of each system. In fact on one hand,evaluating the effectivenessof training courses help managers and staff have a clearer picture of the quality of educational activities and on the other hand it equips planners and teaching staff of the organization so that they become aware of positive and negative aspects of the program (1). The Kirkpatrick model is one of the best methods to evaluate the effectiveness of training courses.In fact, Kirkpatrick argues that the effectiveness of a training program has four different levels.These four levels are: 1. level of reaction:the minimum expectation is that when a training program comes to an end, learnersfeel good about that program.Satisfaction of the learners increases their motivation for learning and participation in the teaching-learning process.Dissatisfaction of learners with educational programs is an important factor leading to the failure of educational programs becauselearners are the main customers of educational system and today, the survival of educational systems depends on the satisfaction of its customers.At this level, attitude and feeling of learner about educational environment is questioned. 2. Level of learning, acquiringknowledge and experience: in training courses, teachers make attempt to improve learners' theoretical knowledge, correct their attitude, and improve their operational efficiencies.The learning extent of learners is the most important criterion in evaluating the effectiveness of these trainings.Learners should be able to present their learning at the end of this comprehensive training course.This level of model contains three sub-levels which are: evaluating learning right after finishing training course,evaluating learningsometime after finishing training course tostudy Learning Retention, evaluating learning by displaying performance (in simulated environments). 3. Level of behavior: at this level, evaluation follows evidences which indicate that learner is able to use his knowledge in real and clinical environment. This level is called transfer of learning.Transfer of learning: at this levelattention is paid to behavioral changesof learners in real environment. At this level,it is necessary to examine the commitment of learner to continue the learned behaviorwhich requires tenacious and consistent measures over time.Support from employees and managers of organization plays an effective role in the occurrence and continuity of a behavior.Performance standards have been determined at the level of criteria for judging the

individual performance. 4. Level of results: empowering employees and improving their performance areconsidered as the ultimate goals of implementing educational programs.Qualitative and quantitative indicators oforganizational productivity may be improved through effective training. At this level, evaluators determine the effectiveness of educational programs on organizational indicatorssuch as death toll, rates of postoperative infection, return on investment, increase in productivity, and increasein organizational productivity (6). In fact, this model seeks to answer four following questions.1. Reaction: Have learners of training course reacted desirably to the held courses? 2. Learning: Has the held course created a favorable increase in the knowledge of learners?3. Behavior:Has the held course created a favorable change in the behavior of learners?4. Result: Has the held course solved existing problem and has it realized organizational goals? Determining the effects of a training course on participants is a sophisticated process(7). Regarding that the researchersof the current study are seeking to investigate the effectiveness of neonatal resuscitation training course on nurses based on Kirkpatrick's modeland given that neonatalneeds more physiological adaptation immediately after birth compared to the rest of life, noteworthy is that 90% of neonatals pass this phase easily and without any difficulties and without any need for assistance; however, lesspercent is likely to require resuscitation.Need to neonatal resuscitation is not normally predictable in the delivery room.Therefore, it is wise that all those who are involved in the delivery and the maintenance of neonatal are trained to performneonatal resuscitation correctly.No resuscitation or incorrect resuscitation will lead toneonatal death or irreversible complications for life.Therefore, learning proper resuscitation, mastering, and continuous practice are of great importance.Groups consisted of doctors, nurses, midwives, anesthesia technicians, and other trained people may be involved in neonatal resuscitation. Regarding the lack of sufficient facilities for resuscitation training, these groups may not have enough skill to perform the task of resuscitation (8). Contemplating on the above mentioned items indicate the need to evaluate the effectiveness of neonatal resuscitation training on nurses,and a call to answer whether neonatal resuscitation training courses for nurses has had a favorable efficacybased on Kirkpatrick's evaluation model.

METHODS:

This descriptive-cross-sectional study was conducted by census of nursing personnel in teaching hospital of Qazvin in 2015-2016. Participants in this training course were nurses and midwives involved with neonatal who were participating in the workshop for the first time. Course materialswere provided and preparedaccording to the outline and program presented in the book entitled Textbook of Neonatal Resuscitation Training and outline and program provided bythe Ministry of Health and Medical Education by an educational supervisor who held a master's degree in nursing and the course was taught by a neonatologist. The course evaluation was conducted at four levels in accordance with the Kirkpatrick Evaluation model.The first level of Kirkpatrick's model is reaction.A closed questionnaire has been used to gather the information of the first level. The questionnaire of the first level (reaction) is composed of two parts;the first part of the questionnaire consisted of personal characteristics of respondents as well as demographic variables(gender, marital status, age, work experience, education level)and the second part,which is the main body of the questionnaire, includes 13 closed questions related to content, instructor, and organizer.Items 1 to 3 are related to the course content, items 4 to 10 are related to the instructor, and items 11 to 13 are related to the implementation of the course.In order to assess the reaction of the learners to the desirability of the course, the questionnaire of this level was completed immediately after completion of the course by learners.Tables 1 and 2 represent the structure and manner of classifying the items of the questionnaire of the first level of study.

Table 1: Classification of demographic questions of the questionnaire related to the first level.

Demographic questions	Classification of responses
Gender	Female
Marital status	Single/married

Age	Less than 25 years/ 26 to 30 years old/ 31 to 40 years/ more than 40 years
Education level	B.A./ M.A./ PhD
Years of work experience	Less than 5 years/ 6 to 10 years/11 to 15 years/ more than 16 years

Table 2.Classification of the questions of the questionnaire related to the first level based on its components.

Classification of the questions of the questionnaire related to the first level	Item number
Content of the course	1 to 3
Instructor	4 to 10
Organization and the manner of implementing the course	11 to 13

The second level of Kirkpatrick model is learning and its purpose is to determine the extent of learning the skill, techniques, and facts that are taught to participants during the course. Test sheets in the form of pre-test and post-test were used to collect information of the second level of study and to measure the learning levelof nurses.

The third level of Kirkpatrick model is change in behavior or performance.At this level, evaluation is conducted by examining evidences which indicatethe learner is able to use learningin a real and clinical environment. This level is called transfer of learning. At this level, attention is paid to the behavior change of learners in real environment. At this level,it is necessary to examine the commitment of learner to continue the learned behaviorwhich requires tenacious and consistent measures over time. Supportreceived from employees and managers has an effective influence on the occurrence and duration of a behavior.At this level,performance standards have been determined asjudging criteriaof individual performance.

At this stage, the changes in the behavior of learnersareevaluated by the supervisor in real and natural environment according to educational content and outline. A closed questionnaire was used to collect the information of the third level.The questionnaire of the third level (behavior) is composed of three parts;the first part of the questionnaire consisted of personal characteristics of respondents as well as demographic variableswhich are exactly the same of the first-level questionnaire and in accordance with Table 2. The second and third parts which are the main body of the questionnaire contain 10 closed questions.In the second part, learning objectives are evaluated through items 1 to 5 and in the third part,the content of the course is evaluated through items 6 to 10.It is worth noting that the questionnaire of thethird level has been set as described above for both learners and supervisors.Table 3 indicates the classification of the main body of the questions of the questionnaire related to the third level.

Table 3. Classification of the items of the questionnaire related to the third level on the basis of its components.

Classification of the items of the questionnaire related to the third level	Item number
The extent of applying the course content	1 to 5
The extent of the efficiency of course	6 to 10

The fourth level of Kirkpatrick model is results. Using this standard, the similarity of the results of a study can be compared with the expected results of decision and intervention (1).To collect data of the fourth level of study, results of training coursebefore and after the study from September of 2015to August2016 have been used. The objective of this level is to evaluate the effectiveness of the mentioned course.

To approve the validity of the questionnaire and its items, the consensus of experts, professors of management, and professors who were experts on the subject of study and questionnaires were used.Regarding the exercise ofconsensus and implementation of reforms recommended by experts and professors, a number of supervisors and nurses holding Master's degree were interviewed. Consideringthe overall form and schema of the questionnaires and the manner of their design, the items have been designed in the form of research questions.Likert scale which is the most effective scale of the evaluation of the attitude has been used for scaling the proposed answers in the questionnaire of this study.Thisscale consists of five parts which are:strongly agree (score 5), agree (score 4), neither agree nor disagree (score 3), disagree (score 2), and strongly disagree (score 1).Respondents examined items on the basis of this scale.However, the value assigned to a Likert item has no numerical basis so that it does not influence the respondents. After the

questionnaires are returned, the scale will be scored by numbers.Total scores given by respondents indicate their tendency.If observation is carried out using a certain scale, it is called measurement.

Questions relating to the course of "neonatal resuscitation training" show an almost reliable validity in all hospitals that are associated with neonatal resuscitation and exam questions arebased on the textbook of Neonatal Resuscitation Training. In the case of the third-level questionnaire, the consensus of experts and supervisors, as well as articles and preceding studies conducted in this area has been used.Moreover, the fourth level of research has reliable validity.In this study, Cronbach's alpha coefficient was used to approve the reliability which is about 93%.

Descriptive statistical methods used in this study include the quantities of frequency, percentage, mean, and standard deviation, respectively.

Inferential statistical methods applied in this study include the one-sample t-test.

FINDINGS

First, demographic information which is based on marital status, education level, age, and work experience has been shown in the following tables.

Describing the studied sample according to the marital status of respondents:

Table 1.Frequency and percentage of the studied sample according to the marital status of respondents.

Marital status	Frequency	Percentage
Single	31	62%
Married	19	38%
Total	50	%100

The results of Table 1 showed that 31 respondents out of 50 sample population (=62%) were single, and 19 respondents (=38%) are married.So in the studied sample,the percentage of single respondents(=62%)is higher than the percentage of married respondents.

Describing the studied sample according to theeducation level of respondents:

Table 2. Frequency and percentage of the studied sample according to theeducation level of respondents.

Education level	Frequency	Percentage
B.A.	49	98%
M.A.	0	0
PhD	1	2%
Total	50	%100

The results of Table 2 showed that49 respondents out of 50 sample population (=98%) held B.A. degree, and 1 respondent (=2%) held PhD degree.So in the studied sample,the percentage of respondents who held B.A. degree(=98%)is higher than the percentage of other participants with other educational degrees.

Describing the studied sample according to theage of respondents:

Table 3.Frequency and percentage of the studied sample according to theage of respondents.

Age	Frequency	Percentage
Less than 25 years	0	%0
Between 25 and 30 years	22	%3/18
31 to 40 years	95	%2/79
More than 40 years	0	%0
Total	50	%100

The results of Table 3 showed that22 respondents out of 50 sample population (=18.3%) were between 25-30 years old, and 95 respondents (=79.2%) were between 31 to 40 years old.So in the studied sample,the percentage of 31 to 40 year-old respondents(=79.2%)is higher than the percentage of other respondents; and the percentage of 25 to 30 year-old respondents (=18.3%) is the least.

Describing the studied sample according to thework experience of respondents:

Table 4. Frequency and percentage of the studied sample according to thework experience of respondents.

Work experience	Frequency	Percentage
Less than 5 years	33	%66
Between 6 and 10 years	11	%22
11 to 15 years	3	%6
More than 16 years	2	4%
Total	50	%100

The results of Table 4 showed that 33 respondents out of 50 sample population (=66%) had less than 5 years of work experience, 11 respondents (=22%) had from 6 to 10 years of work experience,3 respondents (=6%) had from 11 to 15 years of work experience, and 2 respondents (=4%) had more than 16 years of work experience.So in the studied sample,the percentage of respondents with less than 5 years of work experience(=66%)is higher than the percentage of other respondents with other amounts of work experience; and the percentage of respondents with more than 16 years of work experience (=4%) is less than the percentage of other respondents with other amounts of work experience.

The results of each of the four levels of Kirkpatrick model were as follows:

Describing the studied sample according to thelevels of study:

Describing the studied sample according to the"evaluation of the course content in the first level of study (reaction)":

Table 5.Frequency and percentage of the studied sample according to the"evaluation of the course content in the first level of study (reaction)".

The mean of "evaluating the course content in the first level of study (reaction)" (=4.56)									The standard deviation of "evaluating the course content in the first level of study (reaction)" (=1.44)					
Items	Strongly disagree		Disagree		Neither agree nor disagree		agree		Strongly agree		Total		Mean	Standard deviation
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent		
Item 1	0	%0	0	%0	0	%0	20	%40	29	%58	50	%100	1.46	0.61
Item 2	0	%0	0	0%	2	%4	28	%56	20	%40	50	%100	1.64	0.56
Item 3	0	%0	0	%0	2	%4	19	%38	29	%58	50	%100	1.46	0.57

1. The applicability of the content related to neonatal resuscitation.
2. Variety, freshness and novelty of the content.
3. Conformity of presented content with course outlines.

The results of Table 5 showed thatparticipants of "neonatal resuscitation"training course have been most agreed with item 2 that is "variety, freshness and novelty of the content"(1.64±0.56), item 3 that is "conformity of presented content with course outlines" (1.64±0.57), and item 1 that is "the applicability of the content related to neonatal resuscitation" (1.46±0.61), respectively.

Describing the studied sample according to the"evaluation of the instructor of the course in the first level of study (reaction)":

Table 6.Frequency and percentage of the studied sample according to the"evaluation of the instructors of the course in the first level of study (reaction)".

The mean of "evaluating the instructor of the course in the first level of study (reaction)" (=10.22)									The standard deviation of "evaluating the instructor of the course in the first level of study (reaction)" (=1.44)					
Items	Strongly disagree		Disagree		Neither agree nor disagree		agree		Strongly agree		Total		Mean	Standard deviation
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent		
Item 1	0	%0	0	%0	2	%4	18	%36	30	%60	50	%100	1.44	0.57
Item 2	0	%0	0	%0	3	%6	18	%36	29	%58	50	%100	1.48	0.61
Item 3	0	%0	0	%0	2	%4	17	%34	31	%62	50	%100	1.42	0.57
Item 4	0	%0	0	%0	2	%4	19	%38	29	%58	50	%100	1.46	0.57
Item 5	0	%0	0	%0	3	%6	16	%32	31	%62	50	%100	1.44	0.61
Item 6	0	%0	1	%2	4	%8	16	%32	29	%58	50	%100	1.54	0.73
Item 7	0	%0	0	%0	2	%4	18	%36	30	%60	50	%100	1.44	0.57

1. The power to express the contents and make it understandable.
2. Fluency and proficiency of the instructor on the course content.
3. The ability to find best appropriate responds to relevant questions.
4. Proper appearance.
5. The timely attendance in class and efficient use of time for presentingthe content.
6. The manner of interaction with students and seeking their participation.
7. Motivating and encouraging learnersto learn and carry out more research activities.

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The mean of "evaluating the course organizing in the first level of study (reaction)" (=4.72)									The standard deviation of "evaluating the course organizing in the first level of study (reaction)" (=1.81)					
Items	Strongly disagree		Disagree		Neither agree nor disagree		agree		Strongly agree		Total		Mean	Standard deviation
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent		
Item 1	0	%0	0	%0	4	%8	21	%42	25	%50	50	%100	1.58	0.64
Item 2	0	%0	0	0%	3	%6	21	%42	26	%52	50	%100	1.54	0.61
Item 3	0	%0	0	%0	1	%2	19	%38	26	%52	50	%100	1.60	0.73

1. The availability of educational resources such as books, CDs, papers, slides and the quality of these resources.
2. Disciplineduring the course.
3. Classroom facilities (lighting, sound, and ventilation system).

The results of Table 7 showed that participants of "neonatal resuscitation"training course have been most agreed with item 3 that is "classroom facilities (lighting, sound, and ventilation system)"(1.60±0.73), item 1 that is "the availability of educational resources such as books, CDs, papers, slides and the quality of these resources" (1.58±0.64), and item 2 that is "discipline during the course" (1.54±0.61), respectively.

According to the results of tables,three levels of content, instructor, and organization associated with the first level study show the mean of the first level is 19.50 and its standard deviation is 6.40.

Describing the studied sample according to "theevaluation of learning in the second level of study":

Table 8.Describing the studied sample according to "theevaluation of learning in the second level of study".

Standard deviation	Frequency	Mean	
4.26	50	14.56	Pre-test
2.62	50	17.86	Post-test

The results of Table 8 showed that the mean score of50participants indicate that the mean score obtained at post-test stage (=17.89) is greater than the mean score of pre-test which equals 14.56. Moreover, the standard deviation of scores calculated at each stage of test show that the standard deviation equals 2.62 at post-test stage and the degree of dispersion decreases.

Describing the studied sample according to the"evaluation of applying information in the third level of study (behavior) based on learner's idea":

Table 9.Frequency and percentage of the studied sample according to the"evaluation of applying information-learner".

The mean of "evaluating the extent of applying information in the third level of study (behavior) based on the learner's idea" (=40.08)									The standard deviation of "evaluating the extent of applying information in the third level of study (behavior) based on the learner's idea" (=7.16)					
Items	Not very much		To some extent		Neither unable nor completely mastered		Mastered		completelymastered		Total		Mean	Standard deviation
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent		
Item 1	2	%4	4	%8	12	24	24	%48	7	%14	50	%100	3.94	2.51
Item	2	%4	2	%4	013	%26	22	%44	11	%22	50	%100	3.7	0.98

2													6	
Item 3	1	%2	2	%4	7	%14	28	%56	12	%24	50	%100	3.96	0.85
Item 4	1	%2	2	%4	11	%22	23	%46	13	%26	50	%100	3.90	0.90
Item 5	0	%0	1	%2	5	%10	29	%58	15	%30	50	%100	4.16	0.68
Item 6	1	%2	1	%2	5	%10	26	%52	17	%34	50	%100	4.14	0.83
Item 7	1	%2	0	%0	4	%8	29	%58	16	%32	50	%100	4.18	0.74
Item 8	1	%2	0	%0	3	%6	27	%54	19	%38	50	%100	4.26	0.75
Item 9	1	%2	2	%4	9	%18	26	%52	12	%24	50	%100	3.92	0.87
Item 10	1	%2	0	%0	15	%30	24	%48	10	%20	50	%100	3.86	0.75

1. I can tell the history of perinatal.
2. I can check related equipment.
3. I can do a full initial assessment.
4. I can handle the neonatal meconium control (optional).
5. I can takethe first steps of resuscitation.
6. I can assess breathing, heart rate, and saturation.
7. I can adjust the mask and correct the head position.
8. I can carry out nose and mouth suction and clear the mouth.
9. I can do double-sided evaluation of chest and respiratory sounds.
10. I can applyNRP behavioral key skills during the resuscitation to improve teamperformance and communication with people.

The results of Table 9 showed that participants of "neonatal resuscitation"training course have been most agreed with item 8 that is "I can carry out nose and mouth suction and clear the mouth"(4.26±0.75), item 5 that is "I can take the first steps of resuscitation" (4.16±0.68), item 6 that is "I can assess breathing, heart rate, and saturation" (4.14±0.83), item 3 that is "I can do a full initial assessment" (3.96±0.85), and item 1 that is "I can tell the history of perinatal" (4.29±0.782), respectively.

Describing the studied sample according to the"evaluation of the effectiveness of the course in the third level of study (behavior) based on the learner's idea":

Table 10.Frequency and percentage of the studied sample according to the"evaluation of the effectiveness of the course in the third level of study (behavior) based on the learner's idea".

The mean of "evaluating the effectiveness of the course in the third level of study (behavior) based on the learner's idea" (=8.36)									The standard deviation of "evaluating the effectiveness of the course in the third level of study (behavior) based on the learner's idea" (=3.16)					
Items	Strongly disagree		Disagree		Neither agree nor disagree		agree		Strongly agree		Total		Mean	Standard deviation
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent		
Item 1	24	%48	23	%46	1	%2	1	%2	1	2%	50	%100	1.64	0.80
Item 2	22	%44	22	%44	5	%10	1	%2	0	%0	50	%100	1.70	0.73

Item 3	21	%42	22	%42	6	%12	1	%2	0	%0	50	%100	1.74	0.75
Item 4	22	%44	23	%46	4	%8	1	%2	0	%0	50	%100	1.68	0.71
Item 5	24	%48	23	%46	2	%4	1	%2	0	%0	50	%100	1.60	0.67

1. The applicability of presented material.
2. The appropriateness of the course content and duration.
3. The ability to solve career problems.
4. The appropriateness of paper content and educational materials.
5. The appropriateness of presented materialsand course content.

The results of Table 10 showed that participants of "neonatal resuscitation"training course have been most agreed with item 3 that is "the ability to solve career problems"(1.74±0.75), item 2 that is "the appropriateness of the course content and duration" (1.70±0.73), item 4 that is "the appropriateness of paper content and educational materials" (1.68±0.71), item 1 that is "the applicability of presented material" (1.64±0.80), and item 5 that is "the appropriateness of presented materials and course content" (1.60±0.67), respectively.

According to the results of tables,two levels of application and effectiveness (based on the learner's idea)associated with the third level of study (behavior) showthat the mean ofthis level is 48.44 and its standard deviation is 6.85.

Describing the studied sample according to the"evaluation of the effectiveness of the course in the third level of study (behavior) based on supervisor's idea":

Table 11.Frequency and percentage of the studied sample according to the"evaluation of the effectiveness of the course in the third level of study (behavior) based on supervisor's idea".

The mean of "evaluating the effectiveness of the course in the third level of study (behavior) based on supervisor's idea" (=16.98)									The standard deviation of "evaluatingthe effectiveness of the course in the third level of study (behavior) based on supervisor's idea" (=6.68)					
Items	Strongly disagree		Disagree		Neither agree nor disagree		agree		Strongly agree		Total		Mean	Standard deviation
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent		

Item 1	0	%0	1	%2	3	%6	28	%56	18	%36	50	%100	2.02	2.37
Item 2	0	%0	1	%2	2	%4	25	%50	22	%44	50	%100	1.88	2.53
Item 3	0	%0	0	%0	4	%8	23	%46	23	%46	50	%100	1.62	0.63
Item 4	0	%0	1	%2	4	%8	26	%52	19	%38	50	%100	1.74	0.69
Item 5	0	%0	1	%2	2	%4	25	%50	22	%44	50	%100	1.64	0.66
Item 6	0	%0	0	%0	4	%8	22	%44	24	%48	50	%100	1.60	0.63
Item 7	0	%0	0	%0	3	%6	22	%44	25	%50	50	%100	1.56	0.61
Item 8	0	%0	0	%0	2	%4	23	%46	25	%50	50	%100	1.54	0.57
Item 9	0	%0	0	%0	4	%8	26	%52	20	%40	50	%100	1.68	0.62
Item 10	0	%0	0	%0	5	%10	25	%50	20	%40	50	%100	1.70	0.64

1. I can tell the history of perinatal.
2. I can check related equipment.
3. I can do a full initial assessment.
4. I can handle the neonatal meconium control (optional).
5. I can take the first steps.
6. I can assess breathing, heart rate, and saturation.
7. I can adjust the mask and correct the head position.
8. I can carry out nose and mouth suction and clear the mouth.
9. I can do double-sided evaluation of chest and respiratory sounds.
10. I can apply NRP behavioral key skills during the resuscitation to improve teamperformance and communication with people.

The results of Table 11 showed thatsupervisors participating in "neonatal resuscitation"training course have been most agreed with item 1 that is "I can tell the history of perinatal"(2.02±2.37), item 2 that is "I can check related equipment" (2.53±1.88), item 4 that is "I can handle the neonatal meconium control (optional)" (1.74±0.69), item 10 that is "I can apply NRP behavioral key skills during the resuscitation to improve team performance and communication with people" (1.70±0.69), item 9 that is " I can do double-sided evaluation of chest and respiratory sounds" (1.68±0.62),item 3 that is " I can do a full initial assessment" (1.62±0.63),item 6 that is "I can assess breathing, heart rate, and saturation" (1.60±0.63),item 7 that is "I can adjust the mask and correct the head position" (1.56±0.61),and item 8 that is "I can carry out nose and mouth suction and clear the mouth" (1.54±0.57), respectively.

Describing the studied sample according to the"evaluation of the effectiveness of the course in the third level of study (behavior) based on the supervisor's idea":

Table 12.Frequency and percentage of the studied sample according to the"evaluation of the effectiveness of the course-learner".

The mean of "evaluating the effectiveness of the course in the third level of study (behavior) based on the learner's idea" (=7.70)									The standard deviation of "evaluating the effectiveness of the course in the third level of study (behavior) based on the learner's idea" (=2.47)					
Items	Strongly disagree		Disagree		Neither agree nor disagree		agree		Strongly agree		Total		Mean	Standard deviation
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent		
Item	0	%0	0	%0	2	%4	24	%48	24	%48	50	%100	1.5	0.57

1													6	
Item 2	0	%0	0	%0	2	%4	24	%48	24	%48	50	%100	1.56	0.57
Item 3	0	%0	0	%0	0	%0	25	%50	25	%50+	50	%100	1.50	0.50
Item 4	0	%0	0	%0	0	%0	26	%56	24	%48	50	%100	1.52	0.50
Item 5	0	%0	0	%0	0	%0	28	%56	22	%44	50	%100	1.56	0.50

1. Solving career problems of the learner.
2. Satisfaction of learner's function.
3. Increasinglearner's skills.
4. The extent of rework reduction.
5. The extent of cost reduction.

The results of Table 12 showed that participants of "neonatal resuscitation"training course have been most agreed with item 1 that is "solving career problems of the learner"(1.56±0.57), item 2 that is "satisfaction of learner's function" (1.56±0.50), item 5 that is "the extent of cost reduction" (1.56±0.50), item 4 that is "the extent of rework reduction" (1.52±0.50), and item 3 that is "increasing learner's skills" (1.50±0.50), respectively.

According to the results of two tables showing both application and effectiveness levels (based on the supervisor's idea) associated with the third level of study (behavior),the mean of this level equals 24.68 and its standard deviation equals 7.94.

Describing the studied sample in the fourth level of study (course results):

Table 13.Describing the variable of"successful and unsuccessful CPR" before and after Neonatal Resuscitation Training.

The fourth level of Kirkpatrick model (results)								
No	Month	Months before holding the course	Month	Months after holding the course			ماه	رديف
		Unsuccessful	Successful	Percentage		Unsuccessful	Successful	Percentage
1	September	9	28	75	March	3	5	62
2	October	9	26	74	April	9	10	52
3	November	13	26	66	May	8	14	63
4	December	15	29	65	June	1	5	83
5	January	7	19	73	July	2	7	77
6	February	8	31	79	August	4	6	60

well as qualitative and quantitative indicators. At this level, evaluators determine the effectiveness of educational programs on organizational indicators such as death toll of neonatal, and enhanced neonatal health.However, increases or decreases in neonatal mortality are not merely attributed to the neonatal resuscitation skills of nurses because other factors such as prematurity of neonatal also play role in neonatal mortality.

In the fourth level, the course was to improve the performance of nurses who are dealing with neonatal.The results showed that the death toll decreased indicating that course objectives have been realized and the performance has been favorable. The results of empowering and improving the performance of nurses involved with neonatal is considered as the ultimate objective of neonatal resuscitation training course. An effective training can improve organizational productivity as

Discussion:

working with electroshock machine and concluded that the training course was effective and found that learners generally showed positive reaction to the mentioned training course. also stated that the reaction stage is the most common type of evaluation in the organizationthat evaluates the reaction of learners immediately after the completion of the measurementand provides immediate feedback to the teacher performance and training program.Hojjati et al. (2014)also reported a large desirabilityfor this level of the course.Abbasianet al. (2008) also reported that the changes in post-test scores are significant.

It is also observed that at the second level of Kirkpatrick evaluation model (learning), pre-test and post-test scoreshave significant difference. Various studies have indicated that the most level of efficacy is for the second level (learning) in which the post-test scores of nurses were better than their pre-test scores which indicates the desirable condition of education level.Hojjati et al. (2014) stated that the second level (learning) of in-service training course shows the most effectiveness.

And in the evaluation of the fourth level, indices obtained from the reduction of neonatal mortality reported by hospital educational supervisors indicate the effectiveness of the mentioned training course and confirm that holding neonatal resuscitation training course for nurses who have not yet started to work at neonatal wars and even at delivery rooms leads to reduction in the death of neonatals.

The findings of this study showed that nurses participated in neonatal resuscitation training coursereported good effectiveness of thecourse. And according to the results obtained from the evaluation of the course, it can be said that the mentioned course has been effective and the greatest satisfaction and the effectiveness of the course come from the third-level of study (behavior) which includes effectiveness of learner and effectiveness of supervisor. And as various studies have confirmed, learner has a higher score at this level.NezamianPourjahromi et al. (2011)stated that the mean score of participants' skills at the third level (behavior) has significantly increased. (9) expressed that at the third level (behavior), desired changes have been observed in learners.Hojjati et al. (2014) conveyed that the evaluation of the third level reflects the effectiveness of in-service training; they also stated that in-service training leads to an increase in professional knowledge of manpower and transfer of learning to the workplace.(10)stated that these courses are appropriate as they may cause behavioral changes in expertsand their view about applying the skills learned from courses trained during the employment is conducive and positive.

Nurses evaluated the condition of training course of the first level (reactions) that include: content, instructor, and organization as desired and some studies have also been conducted on this area.NezamianPourjahromi (2011) evaluated the reaction of learners to the factors of training course, including instructor, content, and facilities,on

CONCLUSION

of training courses which leads to a complete and comprehensive assessment of the training course andprovides a quick and without concernaccess for related authoritiestodiscover the strengths and weaknesses of the course and to propose their solutions; it alsorefines the performance and

The results of this study showed that neonatal resuscitation training course for nurses led to enhanced job skills and knowledge of nurses, an increase in the efficiency and a reduction in the neonatal mortality.Kirkpatrick model is ameasurementsystem to evaluate the effectiveness

training courses and it alsocontributes to the knowledge of the authorities of the desirability of training coursesand gives them proper feedback.

upgrades efficiency andraises the level of satisfaction.Finally, this study provides the conditions necessary for improving the quality of

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A Cross-sectional Survey on the Knowledge and Attitudes towards E-waste and its Impact on Public Health among IIUM Students-Kuantan Campus

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Abstract

Background: E-waste is a subset of solid waste and is defined as any solid waste which is generated by individual, educational institution, general institution, industry, housing area or as a household and so many other sources. This survey has led to an enhanced national or local and international awareness of the potential detrimental effects on the environment and public health. **Objective:** The main objective of this survey is to develop of public awareness about dangerous effect of e-waste on public health and environment. **Methods:** From the calculated sample size (341), a total of 296 surveys were included in the final analysis. This was a descriptive cross-sectional survey involving with individual users based on a structured questionnaire format with answer sets. Data were analysed using SPSS version 21.0 and excel. **Results:** The most significant number of respondents came to know about e-waste through internet and friend 36% and 22% while government awareness program and newspapers cover only 16% and 8% of them respectively. Almost all (99.66%) respondents do not know how to dispose e-waste. 86.49 percent of the total respondents agree that as an emerging industrial country Malaysia is at high risk for generating electrical waste where 82.77% are concerned of its related health problem caused. More than 95% of the respondents thinks that individual effort would the effective to reduce e-waste volume by practicing 3R. However, 93.24% of the respondents never got a chance to attend such awareness program because they never knew that there is e-waste awareness programme being conducted by university or community. **Conclusion:** Based on this survey report, all the respondents think that awareness programme on e-waste should be conducted by the institution to spread negative impact of e-waste on environment and public health.

Key Messages: The aim of this study is to make aware about the E-Waste and its impact on Public Health In Malaysia. People in Malaysia should more concern about e-waste due to its huge generation and not proper disposing or lack of disposal system.

Key-words: knowledge, attitude, e-waste, public health, environment

Introduction

The main purpose of the study is to ascertain the level of knowledge on electric waste (E-waste). It is currently conducting a study on sustainable electronic waste management among IIUM students, Kuantan Campus, Malaysia.

E-products might be characterized as all optional electronic products including PCs, stimulation gadget hardware, telephone sets/cell phones, and different things, for example, TVs and coolers, regardless of whether sold, gave, or disposed of by their unique proprietors. [1] Electronic waste recount loosely discards, obsolete, surplus or broken electrical or electronic appliances. Casual handling of electronic waste in creating nations causes genuine wellbeing and contamination issues. [2] Some electronic flinders materials contain contaminants like plastics, lead, cadmium, mercury, beryllium silica, and brominated blaze retardants which can impact health negatively if not properly handled. [3-5]

There has been a growing interest in the public health and environmental effects of e-waste globally. [2,5-6] This interest is largely due to the realization of the harmful effects of e-waste on the environment and health of the population. [7]

A few studies, led for the most part in Asia, have demonstrated that the inappropriate disposal of e-waste represents a significant ecological and wellbeing peril, to a great extent in light of the fact that a considerable lot of the items contain overwhelming metals and organic aggravates that harm the earth as well as mischief human wellbeing. [4,8] To this point, relatively few studies of this issue have been conducted in Malaysian settings as compared to other developed countries. Yet, concern about the health and environmental effect of the crude e-waste recycling practices has been the hallmark of many environmental

To determine the potential public health and environmental impact of inappropriately disposed of e-waste, it is important to ascertain the volume of unemployed electrical appliances which are not at presently returned to any agencies and predisposed of via the water systems or landfill generally. Furthermore, if the causes for why there are undesirable or unused e-waste' households can be recognized; it may be conceivable to target approaches to limit wastage and empower sheltered and suitable disposal of these e-waste.

The current study is reporting the findings of questionnaire respondent to IIUM students at Kuantan Campus, Malaysia. It is very important to raise this issue national wide and among the people immediately due to its intensity and wide negative impact on environment and public health. To justify the level of knowledge and their attitude; this research tool was very easy and fruitful. This study has revealed respondents' knowledge and attitude of the public health and environmental impacts of current e-waste practices among young graduates who are consider as future caregiver of environment and public health.

Materials and Methods

Study Design

This study designed as a descriptive cross-sectional survey concerning with student constructed on a structured questionnaire set-up. This survey performed in the Kuantan campus, IIUM, Pahang, Malaysia.

Study Population

This survey data was collected from May 2017 to July 2017. The population size (3000) was calculated with 95% confidence level and the final sample size came out with 341 respondents.

Inclusion Criteria

Adults students of more than eighteen years of old; presently using or had formerly used any kind of electrical appliances within the past 8 to 12 months and have experienced with partially damaged, fully damaged, reusing or unused electrical equipment.

Exclusion Criteria

Respondents had no experience previously within past 8 to 12 months.

Survey Instrument

The revised questionnaire was given by the questioner to the single respondents and together question-sheet with their responses. [9-10] The survey questionnaire was distributed into four sections. The demographic data including age, gender, ethnic group, residential status and educational level was placed in the first section. Then, questions about respondent's source of information was the second section. The third section contained 10 questions designed to assess the general knowledge of the participants regarding e-waste and its components. The knowledge items had Yes/No response categories. The fourth section of the questionnaire aimed to assess the attitudes of the participants based on 13 questions. Respondents were asked to answer in Yes/No formats as well. The request in which the predefined answer sets were shown was changed for each inquiry to guarantee that the respondent read all answers and to limit choice inclination of the showed reply.

Results

The sample size (341) was calculated with the population of 3000. Among the 341 students approached, 308 responded to the survey giving at a response rate of 90.32%. However, 12 forms were discarded because of non-adherence to the instructions for completing the survey. A total of 296 surveys were included in the final analysis. Table 1 presents the demographic information.

Demographic information of respondents

We have divided the respondents into 4 age groups as in table 1. Of all respondents, the maximum numbers of students are from the age group of 18-22 years where 139 people have attended the survey that covers 46.96% of all respondents. In contrast, only 17 respondents are above 33 years of old which is the least number of respondents group. The age group of 23-27 years old and 28-32 years old has 111 and 29 respondents respectively. 61.82% of the total survey givers were females and the rest are male respondents. 34 international students have taken part in the survey which could be considered as a significant amount, but 86.82% of total are Malay, 5 Indians have also attended. Most of

the respondents (207 respondents) have their hometown in urban area while only 30.07% are rural. Although a very few PhD students gave their opinion for this study, but 209 undergraduate students shared their view on e-waste. There were 70 master's students and 5 pre-university students of all respondents.

Table 1. Representing the demographic information of respondents.

Characteristics	N	%
18-22	139	46.96
23-27	111	37.5
28-32	29	9.80
33-above	17	5.74
Gender		
Male	113	38.17
Female	183	61.82
Ethnicity		
Malay	257	86.82
Indian	5	1.69
Chinese	0	0
International	34	11.49
Residential background		
Rural	89	30.07
Urban	207	69.93
Educational qualification		
Undergraduate	209	70.60
Masters	70	23.64
Ph.D	12	4.05

Pre-university	5	1.69

Respondents source of information about e-waste

Overall, among all the sources that we have provided in the questionnaire, the most significant source is internet where about 36% of the respondents learned e-waste. Interestingly 22% of respondent students came to know e-waste from their friend while government awareness program and newspapers cover only 16% and 8% of them respectively.

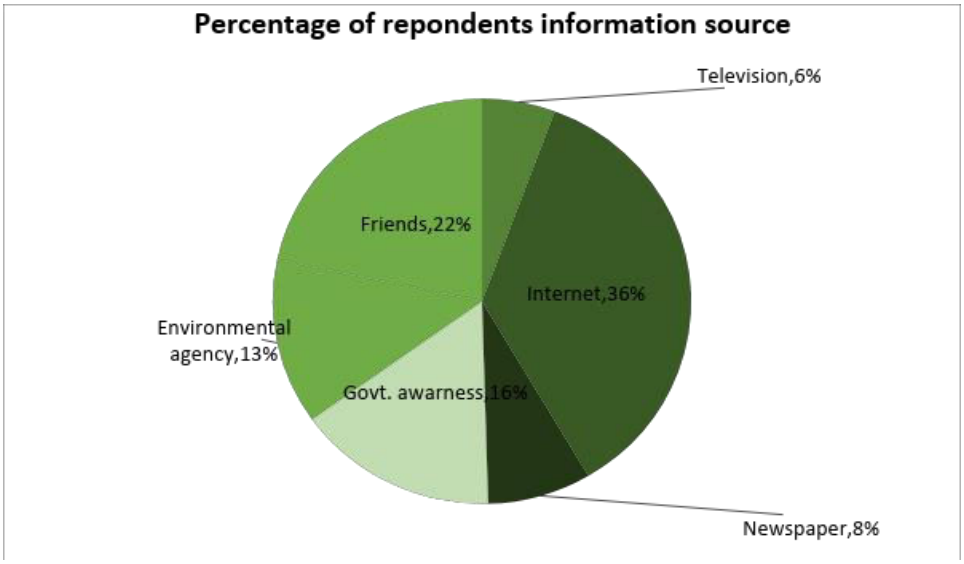

Figure 1. Respondents source of information about e-waste

However, only 13% of the respondents have got information from the most concerned authority, environmental agency. There are few students (6%) who watched programme or advertisement regarding e-waste broadcast by television. Unfortunately, there is no respondent have attended any such special awareness programme or lectures on e-waste conducted by any NGOs, university lecturers or healthcare professionals. The result also delineates that there is no organizational training, radio programmes, pamphlets or posters on this (Figure 1).

Knowledge of respondents towards e-waste and its impact on public health

Although most of the respondents have informed about e-waste but only 32% of them think that e-waste is harmful for the environment, but 220 of the total respondents are aware about the hazardous chemical contents of e-waste. Majority of the respondents disagree about the negative impacts of unused electrical appliances on public health, river and marine ecosystems. Only 26.35% of the respondents know the consequences of fatal heath conditions such are cancer, lungs problems etc by e-waste.

Interestingly almost all (99.66%) respondents do not know how to dispose e-waste and all the students agree that every citizen of the country should have proper knowledge on e-waste (Table 2).

Table 2. Knowledge of respondents towards e-waste and its impact on public health

Knowledge Items/Question asked	N	%
Have you ever heard about e-waste?		
Yes	212	71.62
No	84	28.38
Do you know about the serious negative impact of e-waste on environment?		
Yes	97	32.77
No	199	67.22
Do you know that excess supplies of electrical appliances lead to raise the volume of e-waste?		
Yes	220	74.32
No	76	25.67
Do you know that e-waste contains a lot of hazardous chemicals?		
Yes	212	71.62
No	84	28.38
Unused electrical appliances can lead to serious public health problem.		
Yes	118	39.86
No	178	60.13
Unused electrical appliances and their toxic chemicals can directly affect river and marine ecosystem.		
Yes	85	28.72

No	211	71.28
E-waste leads to infertile land, cancer, lung diseases and so many others alike.		
Yes	78	26.35
No	218	73.65
I don't have proper knowledge about the serious bad impact of unused electrical appliances on public health.		
Yes	290	97.97
No	6	2.03
Do you know how to dispose e-waste?		
Yes	1	0.34
No	295	99.66
Do you think every citizen should have knowledge on e-waste?		
Yes	296	100
No	0	0

Respondents' attitudes towards e-waste and its impact on public health

86.49 percent of the total respondents who are students of IIUM agree that as an emerging industrial country Malaysia is at high risk for generating electrical waste where 82.77% are concerned of its related health problem caused. More than 95% of the respondents thinks that individual effort would the effective to reduce e-waste volume by practicing 3R (reduce, reuse and recycle) though the sources of this are institutions and industries, based on majority's agreement, but only 4 respondents said that they practice 3R. Unfortunately no students stated that there is specific place to collect e-waste, but they are willing to practice 3R if the university would arrange it. Due to the less number of programme arranged by institutions, government or NGOs, only 4.39% of total respondents attended programme on e-waste. However, 93.24% of the respondents never got a chance to attend such awareness program because they never knew that there is e-waste awareness programme being conducted by university or community. That is why, all the respondents think that awareness programme on e-waste should be conducted by the institution to spread negative impact of e-waste on environment and public health (Table 3).

Table 3. Respondents' attitudes towards e-waste and its impact on public health.

5	N	%
Are you aware about the e-waste and its associated problems on environment?		
Yes	245	82.77
No	51	17.23
Do you think Malaysia (as an emerging industrializing country) is at high risk for generating e-waste?		
Yes	256	86.49
No	40	13.51
Do you think e-waste is responsible for major public health problem in Malaysia?		
Yes	78	26.35
No	218	73.65
Do you think institutes and electrical industries are the main source of e-waste in Malaysia?		
Yes	278	93.92
No	18	6.08
Do you think people/individual effort can reduce the volume of e-waste by practicing 3R (Reduce, Reuse and Recycle?		
Yes	290	97.97
No	6	2.03
Are you practicing 3R personally?		

Yes	4	1.35
No	292	98.65
What did you do with your e-waste previously?		
Yes		
No		
Have any specific place or collector for e-waste collection in your University currently?		
Yes	0	0
No	296	100
Will you practice if your University will arrange for e-waste collection?		
Yes	296	100
No	0	0
Have you ever attained any e-waste awareness programme organised by your institution/by other organizations?		
Yes	13	4.39
No	283	95.61
You never attained any e-waste awareness programme before because your Community and University never organize any programme regarding e-waste.		
Yes	276	93.24
No	20	6.76
Do you think your institution should organize an awareness programme about the serious effect of e-waste on environment and public health in Malaysia?		
Yes	296	100
No	0	0
Do you think that the output of this survey will bring a positive feedback which will help the authority to take necessary steps to minimise the negative effects of		

e-waste on environment.		
Yes	296	100
No	0	0

Precaution of data collection and ethical issues

Ethical considerations are essential to any form of data collection in a humanitarian operation. Collecting information for any purpose, including monitoring, assessments or surveys, can put people at risk not only because of the sensitive nature of the information collected, but also because simply participating in the process may cause people to be targeted. The risks can range from physical violence to social marginalization and are often unknown to the individual soliciting the information. Therefore, participants were treated fairly and with dignity. Because the research involved an intrusion into the private lives of the participants, the researcher and Field Investigators (FIs) were always respectful, polite and reliable to the respondents. This helped to build rapport between interviewer and respondents. Proper training of field personnel represents a critical aspect of quality control. Before conducting the study, ten FIs were recruited from different universities based upon their previous experience regarding the field level data collection. It was noted that almost all of the FIs had already received training on the use of standardized protocols to ensure safe and ethical collection of data, and to ensure compatibility among different.

DISCUSSION

The present study provides an illustration of the urgent need to make awareness, level of knowledge and attitude of the people regarding e-waste and its serious environmental and health impact. As a key impact towards tending to these issues, makers should create and plan cleaner items with longer life expectancy that are sheltered and simple to repair, overhaul and reuse and won't uncover specialists and the earth to unsafe chemicals. [11-12] To counter these threats, it is important to raise people awareness about the serious effects of exposure to lead and other substances from e-waste as well as local administrations' attention in public health and personnel safety, so that an organization for safe management of e-waste can be established properly. More significantly, responsible management strategies should be undertaken to reduce e-waste generation and make e-waste constituents more simply reused and recycled. The findings have highlighted the scientific (expert)–lay divide in perception of health and environmental impacts of e-waste. Admittedly, even though not likely to inhibit or without difficulty resolve these misconceptions, this study documents the mightily held opinions about a potential health and environmental hazard in the study area. This will enable the authorities to fashion appropriate policy intervention(s) to increase public acceptability and willful participation, knowledge and attitudes towards e-waste. This calls for a multi-sectoral approach involving the Ministry of Local Administration and Rural Development; Ministry of Environment, Science and Technology and the Malaysian Health Service to

raise the awareness and consciousness of the populace about the harmful effects of e-waste

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CONFLICTS OF INTEREST

All authors declared no conflict of interest.

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