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Motivational Interviewing Effects on Hypertensive Patients: A Randomized Controlled Trial Survey

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Abstract

Objectives: the current survey aimed to investigate the motivational interviewing effects as a new technique compared to the usual care among hypertensive Iranian patients.

Methods: A randomized control trial was implemented. Participants of 140 were allocated in the two groups, randomly included motivational interviewing (intervention group) and usual care (control group).

Results: we found that intervention resulted in increase the total score and the mean score for all dimensions of the adherence questionnaire in the motivational interviewing group ($P < 0.001$), results also showed that systolic blood pressure and diastolic blood pressure significantly decreased in the intervention group after six month follow- up ($P < 0.001$).

Conclusion: Motivational interviewing seems likely beneficial to improve medication adherence, quality of life levels and blood pressure control in hypertensive patients.

Key words: Motivational interviewing, Hypertension, Medication adherence, Quality of life.

Introduction

Hypertension is one of the most leading risk factors of cardiovascular diseases (1). The recent status reports that hypertension is the first reason of mortality among non- communicable diseases and it is also the second burden of diseases all around the world which 1.5 billion patients will be affected by hypertension in 2025 year (2). In Eastern Mediterranean countries, hypertension is significantly increasing due to rapid socio-economic changes that reported 10 to 17 % in numerous surveys (3). In Iran, the prevalence of adult hypertension is 25 to 35 %(4). Lifestyle modification is the beneficial strategy to treat or prevent the effects of hypertension(5, 6). According to studies, unhealthy lifestyle likely increases the obesity, hypertension and cardiovascular diseases(7). Hypertension is the most leading cause of stroke and renal failure (8). Appropriate approaches are mandatory to increase patients' adherence to treatment. Previous surveys indicated that the traditional approaches for hypertension patients is not effective to improve patients adherence(6, 9). Miller (1983) developed a new method named motivational interviewing (MI) as an alternative to drinkers(6). MI is described as a client-centered, directive method to stimulate intrinsic motivation to modify behavior by using of exploring and resolving ambivalence (10, 11). The MI process in conductive to make communication between patients and healthcare providers and persuade patients to changes their behaviors (6). MI has broadly been used in health field with effective results (12). MI has recently been used in medical parts to augment the adherence to medication, dietary and physical activity of patients who have diabetes (13, 14). Chronic obstructive pulmonary disorders (15), hypertension (16, 17), HIV (18) and obesity (19). Ogedegbe et al. study showed the proper effects of MI for BP control among hypertensive patients(17). Woollard et al. also described that the MI group made notable decreases in BP patients compared to the control group (16). There is some exploration that showed more efficacies in MI than traditional methods (20-22). With regards to our studies, MI approaches are used in several investigations in Iran regarding a few issues except for hypertension, although its effect on tre-

atment adherence is not studied. Then it is needed to explore the effectiveness of MI in hypertensive patients in Iran.

Material and methods

The outcome measures included BP, treatment adherence, laboratory indicators, self-efficacy and quality of life.

Design and Intervention

Study design

A randomized controlled trial study was done, in total, 140 patients were enlisted in the usual care group (the control group) and the MI group (the intervention group). Patients in the control group provided by the usual care from a health care provider who worked at the health center, whereas those in the intervention group not only received usual care but also received MI from a psychologist. Hypertensive patients were employed from two health centers in the Gorgan city located in North of Iran. This survey was conducted from February 2014 to November 2014. The inclusion criteria were as follows 1) patients diagnosed with hypertension by a physician 2) patients who received one antihypertensive medication at least 3) patients who agreed to participate in the survey and more than 18 years; moreover, excluded criteria were as 1) pregnant women and being pregnant during the study 2) secondary hypertensive patients.

Study procedure

Sample enrollment

All hypertensive patients enrolled in the study that had health records in health centers and diagnosed by a physician. All common care was also provided by a staff who worked at health centers, that was qualified clinically. In total, 151 patients were asked to participate in the study that 11 of them lost, finally, 140 eligible patients agreed to participate.

Randomization

To allocate all of the 140 patients in the both groups (Control and Intervention group), randomly, eligible subjects were asked to select an envelope. The number one on the envelope was assigned to the control group, and the number two on the envelope contributed to the intervention group. All of the samples were blinded.

Outcomes measurement

In patients' enrollment time, baseline data were collected, and the second assessment was implemented in month 6. Identical questionnaires were completed by the two groups in two different times (baseline and 6 months after intervention). Final evaluation was done by health center staff who conducted the MI and usual care. The BP patients were previously selected based on existed health records that measured by health center staff using the same calibrated digital BP monitor in a seated position after 15 minutes of rest. Patients' laboratory values were collected by using of patient medical records after completing the first and second questionnaire.

Intervention

Motivational interviewing group

The counseling intervention was designed according to MI and social cognitive theory (23). MI was done through a psychologist who was authorized, each group ranged from 7 to 10 subjects that trained for 6 sessions over six months (45 to 60 minutes for each session). It focused on the behavior change of patients regarding regular physical activity, healthy dietary habits, smoking cessation, reducing stress and taking medication on time. The psychologist asked the participants to record their daily diary, adherence to medication, smoking, dietary habits, physical activity, illness perception, physical and mental health. MI session was implemented in the health center.

The standard (usual) care group

The content of this group included the recommendations and information in terms of change healthy lifestyle and adherence to treatment that conducted by a health center staff using a lecture and pamphlet about hypertension for six months (each session sized from 7 to 10 samples and was 30 to 45 minutes and1 session per month).

Instrument

Patients' sheet

It was about (1) demographic status (included age, gender, marital status, educational level and diagnosis duration). (2) The laboratory and clinical indices consisted of the systolic blood pressure (SBP), the diastolic blood pressure (DBP) and the triglyceride level and total cholesterol). (3) The symptoms of hypertension (dizziness and headache) and the complications of hypertension (coronary heart disease and diabetic nephropathy).

2.2.6.2. General Self-Efficacy Scale (GSES). Self- efficacy in our survey was assessed by the aforementioned scale. It includes 10 items that indicate to the perceived ability to overcome barriers and altercate with adversity. We used the Iranian version. The reliability and validity of the GSES was approved by Western researchers (24), Cronbach'α for the ten items ranged from 0.76 to 0.90 (6). Higher scores of this scale indicated higher self-efficacy.

2.2.6.3. Treatment Adherence Questionnaire of Patients with Hypertension (TAQPH). This questionnaire employed to evaluate the level of treatment adherence of patients (25). This test employs a 4-point Likert-type scale that consisted of 28 items categorized into six factors described as follows: diet, exercise, medication, weight control, stimulation and reducing stress. Higher scores mean better adherence to treatment. Overall Cronbach's α of the scale was 0.82 for the test-retest reliability.

2.2.6.4. Medical outcomes study 36- item short form (SF-36). This scale included 8 subscales and evaluated 8 fields of health, including general health, physical function, physical role, body pain, vitality, emotional role, mental health and social functioning. SF-36 was validated in previous explorations (26), the internal reliability of the Iranian version of the SF-36 was obtained with Cronbach's α ranged from 0.71 to 0.91 for 8 subscales. Higher scores implied better perceived health or functioning.

2.3. Data analysis

The sample size of our study was based on parameters included a powerful test of 90% (β= 90%) and P-value was taken < 0.05 as significant. According to our pilot study, a difference (3.89 ± 0.98) in the treatment adherence would be occurred in the intervention group compared to the control one. Therefore 120 samples were needed that by considering the attrition rate of 20%, 140 subjects were included in the study (70 samples in the control group and 70 subjects in the intervention group), finally. Collected data were analyzed using SPSS (version 13). To report baseline characteristics of the samples, a descriptive analysis was used. To test the variable's distribution, Skewness and Kurtosis tests were employed. Logarithmical transformation was used to assess variables that were not normal. To evaluate the difference within the subjects in the groups, the paired samples t-test was employed. The independent samples t-test was applied to test the difference between the MI group and the common care group.

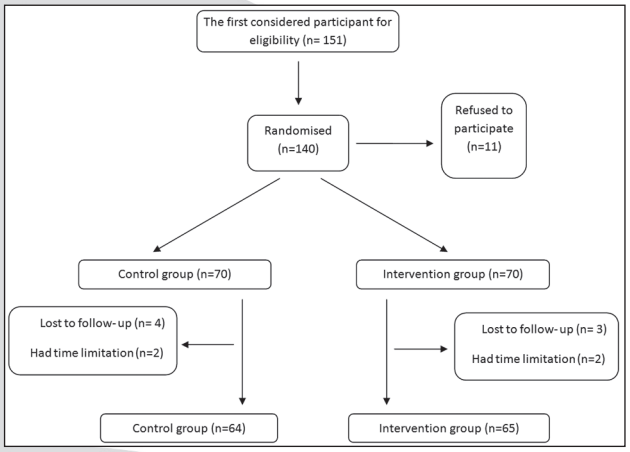

Figure 1. Consort diagram of the study

3. Results

3.1. Patient characteristics

In total, 140 hypertensive patients were explored in the two groups at the baseline. During the study (6 month), 129 subjects participated in total and completed six month follow up, 64 subjects in the control group and 65 participants in the intervention group. We missed 11 participants due to 1) 7 subjects were lost to follow- up 2) 4 of them had time limitation.

Baseline analyses showed that the mean of age of samples was 62 ± 12.43 years. Significant differences were not existed between the two gro-

ups regarding demographic characteristics (table 1). At the baseline, there was also no meaningful difference in the laboratory values and BP between the two groups. The vast majority of patients had no symptoms of hypertension; moreover, 6 patients had problems about hypertension (Table 1).

Table 1. The comparison of demographic characteristics of participants between the two groups at the baseline

Variables	Intervention group Group (n=64)		Control group Group (n=64)		t/x²
	N	%	n	%	
Age Mean ± SD	62.35 ± 11.67		61.92 ± 13.12		0.73
Sex					1.40
Male	36	49.3	37	50.7	
Female	35	52.2	32	47.8	
Marital status					-3.01
Single	8	36.3	14	63.7	
Married	61	51.7	57	48.3	
Education					2.12
High school and below	34	61.9	21	38.1	
Diploma and higher	45	52.9	40	47.1	
Job					2.43
Employed	41	56.1	32	43.9	
Unemployed	29	43.3	38	56.7	
Duration of diagnosis					-2.01
< 1 year	12	17.4	14	19.7	
1	21	30.4	25	35.3	
3	25	36.2	27	38	
5	11	16	5	7	

Table 2. Differences of treatment adherence between and within the two groups at the baseline and after six months

TAQPH dimension		Baseline mean ± SD	Month 6 mean± SD	Paired samples t test (within samples) P	Independent samples t test (between samples) P
Dietary	1 2	22.76 ± 3.12 22.84± 2.91	24.21± 2.67 26.35± 2.92	0.072 0.032	0.024
Medication	1 2	23.41 ± 3.41 24.11 ± 3.21	26.02 ± 2.85 30.01 ± 3.22	0.063 0.041	0.011
Smoking	1 2	11.11 ± 2.23 12.32 ± 1.47	12.85 ± 2.43 15.29 ± 3.12	0.221 0.025	0.035
Control weight	1 2	6.21 ± 2.07 5.76 ± 1.04	7.12 ± 1.75 7.01 ± 1.21	0.091 0.065	0.062
Physical activity	1 2	3.92 ± 2.01 4.36 ± 2.11	4.65 ± 1.32 5.87 ± 1.67	0.321 0.024	0.014
Reducing stress	1 2	7.43 ± 1.45 6.01 ± 2.33	7.86 ± 3.01 7.94 ± 3.25	0.156 0.263	0.235
Total	1 2	74.84 ± 14.29 75.42 ± 13.07	82.71 ± 14.03 92.47 ± 15.39	0.432 0.002	0.013

1= control group, 2= intervention group.
P < 0.05

3.2. Treatment adherence

The mean scores and total scores of dietary habits, physical activity, smoking and medication treatment in the intervention group were higher than the control group after 6 months. According to Paired t-test, the MI group indicated increased dietary habits, physical activity, smoking and treatment adherence to medication between the baseline and after intervention (table 2).

3.3. Quality of life

The results of the SF-36 questionnaire revealed that total scores of the intervention group were higher than the control group after six months, there was a meaningful difference between the groups (table 4). The scores of general health, mental health, vitality and physical functioning augmented in the MI group, that indicated changes within the subjects in the baseline vs. post- intervention ($P < 0.001$).

3.4. Test values

The systolic blood pressure (SBP) and diastole blood pressure (DBP) decreased in the intervention group compared to the control group due to MI. The results also reported that BP decreased significantly in the intervention group after intervention, and a decrease in BP in the control group between the baseline and post- intervention. Although, laboratory indices were not significantly different between the two groups and within the samples in the groups (table 3).

3.5. Self- efficiency

The total score of this questionnaire in the MI group was higher than the standard group (usual care group), although this difference was not significant between the two groups and within the subjects ($P > 0.05$) (table 4).

Discussion

In our study, MI had positively impact on treatment adherence of hypertensive patients that these adherences (included lifestyle change and medication adherence) were based on previous studies (5, 6). Our findings revealed that the subjects in the MI group were more adhere to healthy lifestyle (such as physical activity and smo-

Table 3. Differences of values for intervention group and control group between and within group at baseline and month 6

Variables		Baseline mean ± SD	Month 6 mean± SD	Paired samples t test (within samples) P	Independent samples t test (between samples) P
SBP (mmHg)	1 2	152.31 ± 18.21 157.26 ± 19.32	147.43 ± 18.65 142.36 ± 20.35	0.052 0.022	0.021
DBP (mmHg)	1 2	81.23 ± 12.47 82.94 ± 12.54	78.83 ± 13.76 75.97 ± 14.25	0.064 0.015	0.032
TC (mmol/L)	1 2	4.21 ± 1.42 4.34 ± 0.84	3.89 ± 1.31 4.01 ± 1.12	0.425 0.671	0.341
TG (mmol/L)	1 2	1.63 ± 0.67 1.65 ± 0.81	1.72 ± 0.74 1.63 ± 1.63	0.564 0.573	0.753
FBG (mmol/L)	1 2	5.98 ± 1.32 6.02 ± 1.56	6.54 ± 1.42 5.87 ± 1.24	0.375 0.352	0.362
PBG (mmol/L)	1 2	8.42 ± 3.54 8.25 ± 2.89	8.53 ± 3.12 8.42 ± 2.51	0.412 0.345	0.646
LDL (mmol/L)	1 2	2.32 ± 1.32 2.30 ± 1.28	2.27 ± 1.37 2.25 ± 1.34	0.546 0.234	0.764
HDL (mmol/L)	1 2	1.34 ± 0.75 1.35 ± 0.56	1.32 ± 0.56 1.33 ± 0.43	0.732 0.327	0.432

1= control group, 2= intervention group. P < 0.05

SBP = systolic blood pressure, DBP = diastolic blood pressure, TC = total cholesterol, TG = triglyceride, LDL= low density lipoprotein, HDL = high density lipoprotein, FBG = fasting blood glucose, FBG = fasting blood glucose.

Table 4. Differences of psychological values for intervention group and control group between and within group at baseline and month 6

Variables		Baseline mean ± SD	Month 6 mean± SD	Paired samples t test (within samples) P	Independent samples t test (between samples) P
General health	1 2	79.45 ± 19.76 78.76 ± 19.37	81.34 ± 18.32 84.35 ± 19.17	0.327 0.035	0.021
Physical functioning	1 2	68.37 ± 13.43 69.23 ± 15.32	70.43 ± 27.21 73.32 ± 25.65	0.035 0.045	0.035
Role physical	1 2	67.32 ± 17.89 66.57 ± 23.43	68.21 ± 32.43 69.54 ± 31.34	0.231 0.414	0.062
Bodily pain	1 2	66.37 ± 20.34 67.65 ± 21.02	67.92 ± 17.32 67.01 ± 18.23	0.323 0.546	0.021
Vitality	1 2	72.02 ± 25.11 71.56 ± 24.76	74.21 ± 31.29 77.32 ± 29.34	0.071 0.032	0.036
Social functioning	1 2	87.21 ± 56.24 87.89 ± 45.32	88.24 ± 47.21 89.77 ± 45.78	0.324 0.065	0.025
Role emotional	1 2	75.23 ± 21.23 73.48 ± 22.65	75.67 ± 20.13 75.47 ± 21.08	0.167 0.683	0.454
Mental health	1 2	78.32 ± 54.12 77.81 ± 46.37	80.20 ± 49.98 83.71 ± 47.21	0.072 0.033	0.018
Self- efficiency	1 2	25.43 ± 4.23 26.51 ± 5.27	26.23 ± 5.76 28.21 ± 4.29	0.482 0.258	0.342
Total	1 2	619.72 ± 232.35 619.46 ± 223.51	632.45 ± 249.65 648.70 ± 242.09	0.632 0.547	0.325

1= control group, 2= intervention group. P < 0.05

king cessation), our results were associated with previous surveys that described positive effects of MI in adopting and implementing healthy behaviors (6, 19, 27) that its causes are that the samples were supported to develop and make their goals during the decision making process and to consider more than one solution, and also psychologist regard to integrate adherence manner into patient's daily routine(28, 29).

In our survey, patients in the MI group were more committed to medication treatment than the control group that is in accordance with Ogedegbe et al and Chunhua et al studies (6, 17). Our findings were in relevance with other surveys, in which patients with psychotic disorders, alcohol dependence, HIV and hypertension reported significant improvement in adherence of medication using MI counseling (6, 11, 12, 21, 29, 30).

MI counseling was also decreased SBP and DBP, it means that participants in the intervention group better controlled their blood pressure than the control group that were in relevance with Woollard et al. (16) and Ogedegbe et al. (17) and Chunhuan et al. (6). There were not significant difference regarding all the laboratory test variables between the groups and within the subjects in the groups that was associated with Chunhuan et al. (6), in which MI was not impact on laboratory variables included SBP, DBP, Scr, TC, TG, LDL, HDL, FBG and PBG.

According to QoL, MI in the intervention group led to better level of QoL than the control group. Four dimension of the SF-36 (general health, physical function, vitality and mental health) augmented in the MI group that is completely in accordance with Chunhuan et al. (6). In Brodiea et al. (31) study, MI had positive effects in promoting general QoL and disease- specific QoL for patients with chronic heart failure. With regards to aforementioned studies, MI can be a beneficial approach to improve the QoL in chronic patients.

According to self-efficacy, our findings are in accordance with Chunhuan et al (6) exploration, in which self-efficacy reveals the minimum changes

after 6 month of MI. Although, Brodiea et al. (31) study showed different results. This difference can be caused by different tools, because we use the general self-efficacy scale that poorly discriminate patient self-efficacy.

Limitation

Our exploration had some limitation as follows: (1) a self- report questionnaire was used rather than an objective tool that can be biased by false patient recall. (2) Psychologist and health center staff who implemented the MI and common care education was not blinded to the sample allocation.

Ethical statement

The study protocol was approved by the Golestan University of Medical Science (project no. 32756), Informed consent was completed by the patients before the study.

Conclusion

According to several studies, MI counseling positive effects have been approved and documented regarding quality of life, BP control and behavior adherence for chronic diseases (6, 11, 17, 31), our study also confirmed all aforementioned surveys. BP is prevalent in Gorgan city (North of Iran) that the current education and usual cares were not able to control that; then, an alternative and efficient behavior changes technique is needed that our investigation provides it in detail by recommending MI as an effective technique.

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Time related effects of streptokinase administration on post-myocardil infarction morbidity

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Abstract

Objectives: Patients with acute myocardial infarction are at high risk of dying within the first hours after onset of coronary ischemia. Therefore, pharmacological intervention should be started as soon as possible. This study investigates the time related effect of the hospital administration of streptokinase on short-term morbidity and mortality in patients with ST-segment-elevation myocardial infarction (STEMI).

Methods: One hundred patients with STEMI treated with streptokinase in the hospital setting were prospectively collected. Streptokinase was given according to the guidelines. The group1 consisted of patients who had intravenous administration of streptokinase with in 2 hours after myocardial infarction and group2 included patients who received streptokinase beyond 2 hours till 6 hours after the primary event. The primary outcome parameter was the incidence of major adverse cardiac events (recurrent chest pain, arrythmias, hypotension, bleeding, pericarditis, fever, anaphylactic reaction and death) within 90 days after the primary event.

Results: The overall rate of mortality was similar in both groups and it was not significant. (5.7% vs 14.5%; *P* = 0.18). The number of recurrent chest pain was significantly higher in the group 2 compared to the group1 (25% vs 62.5%; *P* = .01). The number of pericarditis was significantly higher in the group 2 as compared to the group1 (11.5% vs 37.5%; *P* = .017). The number of hypotesion was significantly higher in the group 1 as compared to the group2 (30.7% vs 6.2%; P = .009).

Conclusions: The early intravenous administration of streptokinase in the hospital setting leads to a reduced rate of major cardiovascular events compared to delayed administration beyond 2 hours. However, mortality rates were not significantly affected in streptokinase administration till 6 hours post-myocardial infarction in the hospital setting for patients with STEMI.

Key words: Streptokinase administration, myocardial infarction, mortality and morbidity.

Introduction

Streptokinase is a bacterial product secreted by STREPTOCOCCI and is protein in nature,because it is bacterial product body has the ability to develop immunity to it.[1] It was a first thrombolytic drug that was used earlier for haemothorax, pleural exudates, tuberculous meningitis treatment and then used for Myocardial infarction, pulmonary embolism and empyema. It is now used only in developing nations due to its low cost, where as, the developed nations are currently using (t-PA) tissue plasminogen activator because the side effects of streptokinase are numerous including pyrogenic reactions associated with malaise, headache, arthralgia and occasionally nausea and febrile responses. It is also known as wonder drug[(2)] because many trials have shown that it has reduced mortality in MI patients when administered within 3-4 hours of symptoms onset like chest pain. It can be administered both intravenously and intra coronary, its over dosage should be treated otherwise can cause fatal bleeding.[(3)]

It has been acknowledged through a cohort study that in acute myocardial infarction, the time between onset of pain and beginning of thrombolytic therapy with Streptokinase strongly influences patency rates by restoring the blood flow to the ischemic myocardium.[(4)]76 patients treated with streptokinase were compared to 76 not treated with it. Patients with streptokinase therapy had lower need for nicomorphine and had less severe shorter duration pain. SK therapy when initiated within first 6 hours of acute myocardial infarction reduces mortality and the therapy is most beneficial for those patients with anterior myocardial infarction and those who can receive therapy within

the first 2-3 hours from the onset of symptoms[5]. Trials conducted to determine whether streptokinase treatment improves long term survival in patients with AMI showed that streptokinase improved early survival but there was little long term survival benefits. This failure to show an improvement in the 3 – 8 years survival rate reflects the need to study a larger group of patients or to initiate treatment earlier after symptoms onset[6].A study carried out to obtain a preliminary data on the relative clinical utility of direct coronary angioplasty compared with that of intravenous streptokinase for myocardial infarction patients showed that SK administration can be preferred over coronary angioplasty for most patients because of shorter time to the treatment[7]. It has also been shown that streptokinase administered less than 1 hour after the onset of symptoms of acute myocardial infarction followed by angioplasty of the infarct artery results in the preservation of the left ventricular function where as therapy given after 2 hours has only a limited effect in patients[8].

Materials and Methods

The research was conducted in Medicine and Cardiology wards of Public sector hospitals in Lahore to investigate the effects of Streptokinase administration on post myocardial infarction patients in relation to its time of administration. Study population comprising of 100 individuals who were recruited according to sample selection criteria. They were included because they were willing to participate in the research study and fulfill the standard criteria laid down for the administration of streptokinase in medical literature. Thus One hundred patients with STEMI treated with streptokinase in the hospital setting were prospectively collected. Streptokinase was given according to the guidelines. Convenient sampling approach was used. Written informed consent was obtained from all selected study subjects and all information was kept confidential. The group1 consisted of patients who had intravenous administration of streptokinase with in 2 hours after myocardial infarction and group2 included patients who received streptokinase beyond 2 hours till 6 hours after the primary event. The primary outcome parameter was defined as below:

The post myocardial complications included recurrent cest pain, pericarditis, hypotension and death. The time of streptokinase administration was measured in hours after onset of chest pain. The demographic variables like age, gender, race, socio-economics status(rich, middle, poor class) were matched in two groups. The blood sugar levels, blood cholesterol levels, and raised cardiac enzymes in both groups of patients with ST elevations on electrocardiogram were also recorded. All the changes were serially monitored and follow up was maintained for 90 days on pretested structured checklists and proforma designed for the research.

The patients who didn't give consent or uncooperative were excluded from the study.

Results

Among MI cases(n=100),52% (mean 0.52± 0.502SD) came within 6 hours after chest pain and 48% within 1 hour after chest pain. In group 1 SK was administered in 52% patients within 2 hours. In group 2, 48% cases received SK after 2 hours. The chest pain was relieved in 87% (mean 0.87± 0.33) patients in 6 to 12 hours. During monitoring after SK administration 7.6% patients of MI in group1 vs 6.2% patients in group2 suffered from arrhythmias,13.4% cases suffered from bleeding in group1 and 10.4% in group2, 11.5% cases had pericarditis in group1 vs 37.5% in group2, and hypotension was recorded in 32% in group1 vs 20% in group2. Moreover, anaphylactic reaction in 3.8% in group1 and 4.1% in group2 , recurrent chest pain in 25% in group1 vs 62.5% in group2, and fever in 30.7% in group1 and 29.1% in group2 were recorded and documented.

Discussion

Streptokinase is secreted by streptococci and is protein in nature. It was first a thrombolytic drug that was used and is now widely used for myocardial infarction.

This research topic was selected because myocardial infarction is the prevailing disease of our society and we wanted to know the curative effects of streptokinase and its complications so that we can avoid mortality and morbidity rates in our society. Its effects may differ from person to person.

Table 1. Comparison between group1 and group2

Variable	Group1 (n=52)	Group2 (n=48)	Chi square value	p value
Mortality	3 (5.7%)	7 (14.5%)	1.76	0.18
Recurrent chest pain	13 (25%)	30 (62.5%)	5.75	0.016
Pericarditis	6 (11.5%)	18 (37.5%)	5.67	0.017
Hypotension	16 (30.7%)	3 (6.2%)	6.76	0.009
Arrythmias	4 (7.6%)	3 (6.2%)	0.07	0.79
Bleeding	7(13.4%)	5 (10.4%)	0.17	0.67
Anaphylactic reaction	2 (3.8%)	2 (4.1%)	0.01	0.9
Fever	16 (30.7%)	14 (29.1%)	0.02	0.89

Table 2. Demographic variables

Variables	Frequencies	Percentages
Age of patient		
a-30 or above but below 60	a-75	a-75.0
b-60 and above	b-25	b-25.0
Gender of patient		
a-male	a-81	a-81.0
b-female	b-19	b-19.0
Education of patient		
a-literate	a-69	a-69.0
b-illiterate	b-31	b-31.0
Religion of patient		
a-Muslim	a-98	a-98.0
b-non-Muslim	b-2	b-2.0
Patient's home address		
a-urban	a-78	a-78.0
b-rural	b-22	b-22.0
Diagnosed MI case		
a-yes	a-99	a-99.0
b-no	b-1	b-1.0
Hospital arrival		
a-within 1 hour after chest pain	a-48	a-48.0
b-within 6 hours after chest pain	b-52	b-52.0
Symptoms relief		
a-yes	a-87	a-87.0
b-no	b-13	b-13.0

We conducted the study on 100 patients. In the study Streptokinase was administered in 52% patients within 2 hours and 48% cases after 2 hours which relieved symptoms in 87% of patients (mean 0.87±0.338SD) while in another study conducted in US showed that 30 patients presented to the hospitals in a mean time of 1.21±1.08 hours and treatment commenced in a mean time of 2.77±1.3 hours after the onset of symptoms, 86.7% patients were reper fused initially and 2 however re-occluded within first 48 hours[9]. The study conducted on 30 patients in Florida, showed re-occlusion in 20 % of patients.[10]

The study 3.8% in group1 vs 4.1% in group2 were diagnosed as cases of anaphylactic reactions after SK administration because it is a bacterial product and act as a foreign body. The similar results were found in research study done in Chicago, USA where cases of IgE mediated cases of anaphylactic reactions were observed.[11]

In this research patients were followed and 11.5% in group1 and 37.5% in group2 developed post myocardial pericarditis, while similar results were observed in study conducted in New York. It was reported that pericarditis was developed in 3 of 38 patients (8%) at day 0,in 2 of 44(5%) at day 1, in 8 of 43(19%) at day 3.[12]

Mortality rate in this study was 5.7% in group1 vs 14.5% in group2, while in another study con-

ducted in Edward Hospital, USA, mortality rate was 3.4% recorded. It was also seen that only one mortality occurred after 2 months of hospital stay and 51 out of 55 patients of MI were back to work after treatment.[13]

Our research showed that reduced complications were significantly associated with timely administration of SK (with in 2 hours).

Conclusion

It is concluded from the research that the early intravenous administration of streptokinase in the hospital setting leads to a reduced rate of major cardiovascular events compared to delayed administration beyond 2 hours. However, mortality rates were not significantly affected in streptokinase administration till 6 hours post-myocardial infarction in the hospital setting for patients with STEMI.

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Relationship between Urinary and Serum Level of Adiponectin with Disease Activity in Patients with Lupus in Comparison with Control Group

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Abstract

Aim: Systemic lupus erythematosus (SLE) is a connective tissue disease with chronic and recurrent and inflammatory progression. Anti inflammatory cytokines such as adiponectin change in this disease like other inflammatory diseases, so this study aimed to evaluate the relationship between urinary and serum level of Adiponectin with disease activity in patients with SLE.

Methods and materials: In this case-control study, 80 women referred to the rheumatology clinic of 5 Azar Hospital in Gorgan, divided to case and control group. Then urinary and serum level of adiponectin measured by ELISA kit and disease activity evaluated by SLE disease activity index were Blood samples were taken from both groups and serum levels of interleukin -2 measured by AviBion human IL-2. Data analysis conducted by SPSS software (version 16) and by using descriptive statistics and statistical tests.

Results: Mean serum level of adiponectin in case group had statistically significant association with control group ($p<0.001$) and mean urinary adiponectin level in case group had statistically significant correlation with control group too ($p<0.035$). Only serum level of adiponectin was significantly associated with SLE disease activity index in case group ($r= 0.63$, $p< 0.0001$) and urinary level of adiponectin was significantly associated with renal involvement ($r=0.59$, $p< 0/0001$).

Discussion and conclusions: Findings of the present study showed the relationship between serum level of Adiponectin with disease activity in patients with SLE. So this biomarker can be used for effective treatment and decrease of complications.

Key words: Systemic lupus erythematosus (SLE), disease activity index (SLEDAI), adiponectin

Introduction

Systemic lupus erythematosus is, a connective tissue disease that is chronic, relapsing, and inflammatory. Involving of various Life support organs, such as kidney, central and peripheral nervous system, psychiatric and cardiovascular diseases in which occurs.(1) Clinical features and mortality in this disease is due to tissue damage caused by the disease or side effects of Cytotoxic drugs that is used for threatment of lupus.(2) Althogh The ethiology of SLE is unknown, But there are many reasons show that, a combination of genetic, immunological, hormonal and probably "environmental factors have role in this disease. (3)

Lupus erythematosus complications such as renal involvement, cardiovascular complications, hypertension and the need for immunosuppressive drugs Consumption, can affect On fertility, course of pregnancy, breast feeding and can be caused irreversible neonatal complications such as heart block. Thus, with regard to this entry, Importance of detecting markers of disease activity and its diagnosis become clear. Renal involvement in patients with SLE is one of the most common and dangerous complication of disease. that it has poor prognosis in majority of cases. The use of immunosuppressive drugs is an effective method in the management and improvement of it .Unfortunately, the use of these drugs increases the risk of morbidity (Infections, malignancies, metabolic disorders, infertility) and mortality in patients (4)

Adiponectin is a 30 kDa protein almost exclusively is constructed by adipose tissue (adipocytes). (5)

It has anti-inflammatory properties, and it increases sensitivity to insulin (6). It is similar to one of the components of the complement system (c1q) (7). This substance impact on inhibition phagocytic activity of macrophages and reduces production of TNFa. Also, it inhibits Monocyte production in the bone marrow and cell proliferation by inducing apoptosis (8, 9). Adiponectin, with a direct effect on endothelial cells increases production of nitrous oxide, So probably it has a vasodilatory role (10)

Its Specified that in those People who have low adiponectin level vasodilatory mechanism of endothelial acts defective .(11) This substance by reducing levels of gene expression like: (VCAM-1 (vascular cellular adhesion molecule, ICAM-1 (intra cellular adhesion molecule-1) and E-selectin, Block TNFa effects. (12) recently, in the SLE patient monitoring of Changes in serum and urinary biomarkers, has been considered As a method, for diagnosis of renal involvement and severity of disease. Nevertheless, up to now valid and reliable biokmaker for this disease has not been determined. We, do this research on urinary and serum adiponectin levels in patients with SLE disease.

Method and material

This Case control study was conducted on patients with SLE Patients that referred to Rheumatology clinics in the city of Gorgan per year by 2011-2012.

Patient Selection has been equally a non-randomized and available manner and among patient with definite SLE, according to the (ACR: American College of Rheumatolog criteria.

Based on M-Otero Study, the reference numbers 18, Volume of the samples were calculated 40 subjects In each group so (40 cases and 40 controls) were chosen.

The study group consisted of 40 women with SLE disease, and control group was made up of 40 women who were healthy, based on clinical examination, and results of tests as ANA, Anti DNA, UA, CBC, FBS and SLE disease was ruled out in them also they were similar to patients In term of age and weight.

Patients with END-stage renal disease (ESRD), pregnant adult females, patients with fasting glucose more than 90, patients with concurrent disease or other malignancies, and patients with other Rheumatologic diseases (syndromes Overlap) were excluded. (From the field)

Sampling, was done from 9 am to 12 am With observance, of fasting. The Time performing of this study, was since the beginning of September in 2011, until the beginning of February, in 2012 year. Data collection, was Through interviews, examination and performing the necessary tests.

Serum and urine adiponectin tests, was conveyed by high sensitivity ELISA kit (High sensitive ELISA) for both the patients and control groups. Serologic tests, including C3, C4, and a collection of 24-hour urine, just performed in cases group, but ANA and Anti DNA test was done for both groups. After centrifugation of patient's blood, their serum, was held at a temperature of -20 °C. After touching the samples to the required level, they were transported to laboratories outside the hospital for testing.

Urine samples (UA), was conducted in both groups in order to measure urinary adiponectin. Urine samples also kept at- 20 degree up to achieve the required level.

Inclusion to study was totally voluntary and They could be omitted from the study at any time they want. All The obtained data were confidential. The identity of individuals not mentioned At the time of reporting Project. data, imported into, computer and were analyzed by using software SPSS16. To see the relationship between the variables, statistical test, including t-test, chi-square, and Spearman's correlation coefficient and linear regression with 95% confidence intervals at a significance level of 5% was used.

Result

This study was performed on 40 female patients with SLE disease and 40 healthy women who had been related Lupus to them. The control group was matched with patient group for age and body mass index.

The mean age of both cases and control groups was, respectively, 31/98±10/4 and 31/75±9/9 also average of body mass index (BMI) in patients

and control groups, was originally, 27/5± 6/8 and 27/7±7/8. According to The independent t-test, these averages, was not associated with significant differences.

Comparison of serum and urinary adiponectin in both groups showed that, the mean and standard deviation of serum adiponectin levels was originally 43/67±14/9 vs 28/92±18/9 in the patient and control group that was higher than in the patient group in comparison to control group. And the estimated average rating was respectively equivalent to 53 and 28 in these two groups that was associated with a significant difference (p<0/0001).

The results showed that the average and standard deviation of urinary adiponectin in both cases and the control group, was respectively13/5± 06/2 and 38/1± 54/0 And the Average of rating in two groups was originally estimated 45 and 36 that was (associated) with statistically significant difference/ (p<0/035).

The average of ANA plasma levels of patients and the control group was, respectively 116/2504/67± and (3/15 ±2/28) also AntiDNA plasma levels in patients and control group, calculated ordinaly, as3/146± 80/135 and 9/90±11/54. And According to. T test, there have been, a statistically significant difference between the averages of both groups. (p<0/0001).

Among patients group, have been identified that 4 patients (10%) have active disease (SLEDAI> = 10) and 36 patients have inactive disease.

In evaluating the relationship of disease activity with urinary and serum adiponectin levels, it was determined that there was no significant linear correlation between urinary adiponectin. and severity activity of disease. However, a significant linear relationship existed between serum adiponectin with the severity of disease activity (p< 0. 0001) and (r=0/63) .

An evaluation of, the relationship between the severity of renal involvement (24-hour urinary protein) with serum and urinary adiponectin it was determined (identified) that there was no significant linear relationship between Adiponectin levels and the severity of renal involvement, However, a significant linear relationship between urinary adiponectin with the severity of renal involvement, Existed (p<0/0001 and r=0 59/)

A Survey of the relationship between severity of renal involvement (24-hour urine protein) with disease activity based on The estimated Spearman correlation coefficient showed that there was no significant linear correlation between these two characteristics (p>0. 09) and (r= 05/0)

Discussion

Adipocytokines, which include leptin, Resistin, Visfatin and adiponectin is mostly produced by Adipose tissue via its endocrine functions.

With a wide variety effects on, angiogenesis, hemostasis, and immunity. Adipose tissue consists of adipocytes and macrophages, which constitute a lower percentage of that. These macrophages can produceuce several cytokines, such as TNFα and IL-6.

Obese patients, compared to lean subjects have a low-grade systemic inflammation that was accompanied by [1], increased CRP and IL-6 levels.

The link between systemic inflammation and adipose tissue represents a potential contribution with regard to the inflammatory response, which may be partly explained by the production of inflammatory cytokines.

Table 1. Distribution of numerical variables in two groups

Variables	Control group Mean±SD	Patients group Mean±SD
Age	75/31 ±9/99	98/31 ± 10/45
weight	78/68 ±15/9	51/6±17
hight	08/158 ±7/67	90/157 ±8/88
ANA	15/3 ±2/58	14/116 ±67/04
Anti ds DNA	9/9 ±11/54	79/135 ± 146/3
Serum Adiponectin	92/28 ±18/92	67/43 ±14/93
Urine Adiponectin	54/0 ±1/38	06/2 ±5/13
BMI	77/27 ±7/8	27/54 ±6/89

Actually up to 30% of circulating IL-6 produce by macrophages of adipose tissue, (2adiposese tissue is a major source of circulating proinflammatory cytokines. (13)

Adipokines effects on immunity and inflammation has been demonstrated. Patients with SLE, have high levels of circulating adiponectin and patients with high plasma adiponectin had a poor prognosis in lupus nephritis.

It has been evidenced that patients with classic chronic/autoimmune inflammatory diseases, have high level of serum adiponectin and it has pro-inflammatory action.

However Adiponectin act as anti-inflammatory substance by increasing IL-6 or TNFα production, decreasing T-cell function, inhibiting phagocytosis.

Although high adiponectin levels could be a compensatory response of the organism against inflammation, but Some scholars consider that this explanation is most irrational and point to the activation role of adiponectin in NFκB .

It has been proven that LMW adiponectin has an inhibitory role of endotoxin-induced secretion of IL-6 and to induce IL-10 production.

While MMW and HMW adiponectin has been shown that promute IL-8 synthesis and monocyte chemoattractant protein-1(MCP-1) (14)

Our results showed that plasma levels of adiponectin were higher in patients with SLE disease in comparison to control group, and this difference was statistically significant.

In Sada and colleagues' study at the Okayama that was performed on 37 patients with SLE and 80 control group, serum adiponectin levels in patients were significantly higher than the control group. (P< 0/01). (15)

Chang et al's study in Atlanta on 109 patients with SLE and 78 healthy subjects, indicated that the plasma adiponectin levels were originally 22 ±15/3 and 17/9 ±28/7 in patients and healthy area of subjects. That was higher in the patient group with significant differences. P<0/003. (16) Also, the study of Rovin et al (2005) showed That there was a statistically significant difference between the average of serum adiponectin level, in SLE patients and control group (p= (0005/0 (12).

However, the Al M, et al study in 2009 that was conducted on 105 children with SLE disease and 77 healthy control groups. Results showed that the mean serum adiponectin level was15/6± 7/3 in patients and 15/4±8/2in healthy subjects, which indicates The lack of significant association between serum adiponectin and the lupus disease. (17)

The reason for this lack of correlation can be explained by, Effects of medications used to treat lupus disease and Patient selection in silent stage or with mild disease activity.

Due to the autoimmune and inflammatory nature of rheumatoid arthritis disease, related studies performed on these patients were reviewed. This way in M. Otero study the plasma levels of hormones produced by fat tissue (adiponectin, leptin, Resistin, Vysfdyn) were measured in both cases and control group. (18) The results of this study showed that in cases group which included 31 patients with rheumatoid arthritis the mean plasma adiponectin levels were higher than the control group with significant differences. Also In the Senolt et al study, at 2006 (19) and Laurberg et al study at 2009 (20), that both of them (which) were performed, on patients with rheumatoid arthritis, similar results were obtained.

In Rovin and colleagues' study that longitudinally designed, patient with lupus disease were divided in two group the first one include patient with renal involvement and relapse of lupus.

The second group revealed patient with relapse of disease without renal involvement the result of this study showed that serum level of adiponectin in patient with renal failure was higher than patient without renal flair that was associated with statistically significant difference. (p<0. 01). Also Urinary adiponectin in patients, either before or after relapse of disease, was significantly higher than the control group. (12)

In our study, as well as Rovin and colleagues' study, urinary adiponectin in the patient group was significantly higher than the control group. Also, In our study (research), urinary adiponectin, had significant correlation with 24 hour urine protein that was a marker for severity of renal involvement during of disease and This result, were similar to the results of the (Rovin) study.

On The other hand, in our study, there was no important association between serum adiponectin, and 24-hour urine protein. Also in Rovin study, serum adiponectin, had no significant difference in both groups that was similar to our study. (p=0. 09) (12)

Yshen Studies and colleagues showed that in patients with proteinuria more than 150 mg per day, urinary adiponectin levels are more than patients with proteinuria less than 150 mg. that are associated with significant differences. (21) Studies on patients with diabetic nephropathy also have shown a significant correlation between urinary adiponectin and severity of proteinuria. (19. 20)

About The correlation between the severity of disease activity (score) (that was determined by SLEDAI forms) with urinary and serum levels of adiponectin, results of our study, showed the mean severity of disease activity. Were estimated (5/75±2/88) and only serum adiponectin had a significant linear relationship with disease activity score.

In Chung and colleagues studied on 109 patients with systemic lupus the mean of disease activity were estimated (4/1 ± 4)That there were no significant associated with Serum adiponectin levels. (14)Al M, et al's study (2009) on the severity of lupus disease activity, in 105 pediatric patients indicated that the severity of disease activity was not significantly associated with serum adiponectin levels.(15). The outcomes of these studies, about the relationship between the severity of disease activity with serum adiponectin was contrary to the results of our work.

Among the reasons for this difference can be pointed to the following: 1- There was probably of affect the dependent variables and environmental factors that their influences cannot be omitted such as: Patient race, geographic conditions and climate of the region where the sampling is done.

2-Being different of laboratory kits that are used to measure serum and urinary adiponectin levels Have an important role. (Is especially important)

Conclusion

Our study showed that urinary adiponectin, has a direct correlation with 24 hour urine protein levels. Considering that kidney, is a vital organ, and commonly be involved during of disease. And increase Mortality and morbidity rate of patients. Urinary adiponectin can be used as a marker to determine the severity of renal involvement For ... More aggressive treatment, in order to preserve renal function. On The other hand our study showed that serum levels of adiponectin are significantly associated with the severity of lupus disease activity. While this is not true in regard to urinary adiponectin. So serum levels of adiponectin can be used as a biomarker for effective treatments, in order to cut off the disease and reducing its complication in other organs. However, due to conflicting results exist in different studies on the relation of adiponectin with lupus disease activity score. The need for further studies in different countries and on different patient race require.

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Epileptogenesis of benign tumors compared with malignant tumors

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Abstract

Introduction: Brain tumors are quite frequent cause of symptomatic epilepsy. This study aims to investigate:

1. The frequency of the appearance of epilepsy in patients with brain tumors.
2. Comparison of the frequency of occurrence of epilepsy as a result of malignant tumors and benign tumors.
3. Role of gliosis in the appearance of epileptic seizures

Methodology: It is analyzed documentation of 6846 patients with various neurological diseases, which are examined during the period January 2012 - December 2013, of whom 4952 (72%) were examined at the Neurology Clinic of the University Clinical Centre of Kosova, while 1894 (28%) were examined at the Diagnostic Center "Medica". From the total of 6846 patinets, 805(11.8%) were with epilepsy. The number of patients included in the study is 110 patients, all of them with partial epilepsy. These patients have fulfilled criteria for inclusion in the study (regular specialistic visits, realization of EEG and brain imaging CT ore/and MRI).

The diagnosis of brain tumors is made by clinical neurological examination as well as imaging (*CT scan and/or* MRI). The diagnosis of epilepsy is established according to the criteria of ILAE (International League against Epilepsy) in 1989, while epileptic Seizures are classified according to the classification of ILAE, in 2010.

Results: Out of 805 (11.8%) with epilepsy in the study we have included 110 (13.7%) who were with partial epilepsy and fullfiled the forseen inclusion criteria. From 110 patients included, tumors were the cause of epilepsy in 17 (15.5%) patients. Of these patients, 12 (70.6%) patients had epilepsy due to benign tumors, and other five (29.4%) patients had epilepsy as a result of malignant tumors. In cases with benign tumors, gliosis around epileptic focus was present in 9 (75%) patients, while in 3 (25%) patients gliosis was not present. In all 5 (100%) cases with malignant tumors, gliosis around epileptic focus was not present.

Conclusion: Tumors represent frequent cause of symptomatic epilepsies, with about 15.5% of cases from the total number of epilepsies. The benign tumors were more epileptogenic compared with malignant tumors. The presence of gliosis around the tumor or epileptigenic foci is responsible for the generation of epileptic seizures and is seen in 75% of cases with slow-growing tumors.

Kay words: Epilepsy, brain tumors, *CT scan*, MRI

Introduction

Epilepsy due to tumors is a frequent cause of morbidity in patients with brain tumors, especially of those with glioma (1). When the tumor grows on the surface of the brain, it may hinder the activity of neurons and cause epileptic seizures.

Despite the importance of this topic in the field of Neurology, Neurosurgery and Neurooncology, tumor pathogenesis connection with epilepsy remains poorly understood (2).

Approximately 30-50% of patients with brain tumors as the initial symptom have epileptic seizures (3, 4). Crises play a very important role in quality of life, particularly in patients with brain tumors with slow growth, for which the incidence of crises reaches 80-90% (4, 5).

Epileptic seizures are more common in slow-growing tumors, such as oligodendroglioma, meningioma, ganglioglioma and dysembryoblastic neuroepithelial tumour (6).

In non-glial tumors of the brain, the incidence of tumors associated with epilepsy reported to be up to 60% of patients with meningioma, the 35%

of patients with secondary metastasis and 10% of patients with cerebral lymphoma (Table 1), (4).

Table 1. Connectivity between tumor type and frequency of crises

Tumour type	Seizure frequency
Dysembryoblastic neuroepithelial tumour	100%
Ganglioglioma	80–90%
Low-grade astrocytoma	75%
Meningioma	29–60%
Glioblastoma multiforme	29–49%
Metastasis	20–35%
Leptomeningeal tumour	10–15%
Primary CNS lymphoma	10%

Epileptic seizures in patients with meningioma are likely to be less refractory in treatment with antiepileptic drugs, than those of other types of tumors (7).

In the study where were included 222 patients with meningioma a significant correlation is found between peri-tumor edema and preoperative epilepsy (8). There was no correlation between the histological degree of meningiomas and preoperative epilepsy (8).

The phenomenon of selective neuronal loss leads to morphological changes such as:

- glial reaction of inflammatory type, that modifies intercellular contact and favors hyper synchrony,
- Creation of neo-synapses and obstruction of collaterals axons, which create abnormal self-exciting regions, further exacerbating hyper excitability and hyper synchrony (9).

Methodology

It is analyzed documentation of 6846 patients with various neurological diseases, which are examined during the period January 2012 - December 2013, of whom 4952 (72%) were examined at the Neurology Clinic of the University Clinical Centre of Kosova, while 1894 (28%) were examined at the Diagnostic Center "Medica". Out of 6846 patients with neurological diseases, from both centers, 805 (11.8%) have been with epilepsy and 6041 (88.2%) have been with other neurological pathologies. The number of patients included in the study is 110 patients, all of them with partial epilepsy. These patients have fulfilled criteria for inclusion in the study, which have been:

- regular specialistic visits,
- realization of EEG and brain imaging CT ore/and MRI

Specialistic visits was the main crieria for inclusion in the study, because through visists we were able to monitor continuously the frequency of crises, their nature and effect of treatment with anti-epileptic drags.

With the EEG and imaging examination is made diagnosis of brain tumors as a causes of epileptic seizures, is defined localization of epileptic focus and is followed the appearance of the gliosis surrounding the foci. Through EEG and imging examination we were able to estblish correlation between these gliosis and and frequency of epileptic seizures.

Performed imaging methods have provided us with important information regarding the nature of the tumor (benign or malignant).

The diagnosis of epilepsy is determined according to the criteria of ILAE (International League against Epilepsy) in 1989, while epileptic Seizures are classified according to the classification of ILAE, in 2010.

Results

The frequency of the appearance of epilepsy which had tumors as etiological factor, has been dependent on the histological nature of the tumors (benign or malignant). Of the total of 110 patients included in our study, as an etiological factor tumors have been causing epilepsies in 17 (15.5%) patients, of whom 12 (10.9%) had benign tumors, and 5 (4.5%) had malignant tumors. While, other etiological factors were the cause of epilepsy in 93 (84.5%) of cases (Table 2).

Table 2. Partial epilepsies according to etiology

Etiology	N	%
Benign tumors	12	10.9
Malignant tumors	5	4.5
Total tumors	**17**	**15.5**
Other factors	93	84.5
TOTAL	**110**	**100.0**

Out of 17 patients with tumors, epilepsy due to benign tumors had 12 patients (70.6%), and with epilepsy as a result of malignant tumors have been in 5 (29.4%) of them (see Figure 1).

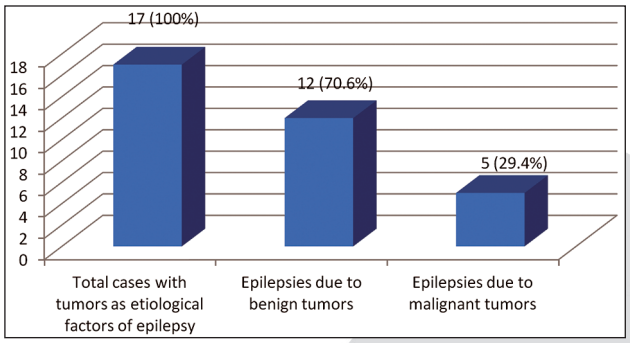

Figure 1. Relation between benign and malignant tumors as etiological factor of epilepsy

From 12 patients with slow-growing tumors (benign tumors), gliosis around the tumor or epileptic focus was present in 9 (75%) cases, while in 3 (25%) patients gliosis was not present. In 5 cases with rapidly growing tumors (malignant tumors), in non of them is observed gliosis around the tumor or epileptic focus (Figure 2).

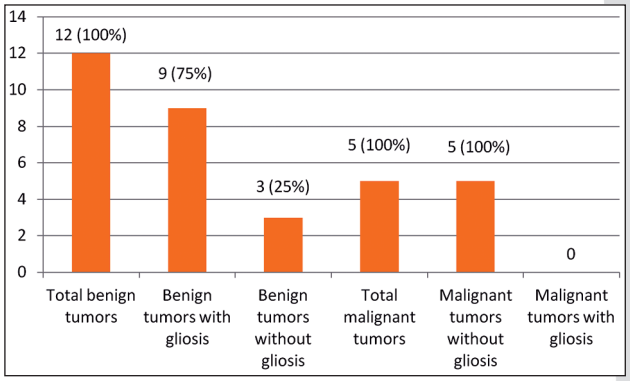

Figure 2. Graphical representation of the number and percentage of presence of gliosis around the tumor lesion

Discussion

Crises play a very important role in quality of life, particularly in patients with slow growth brain tumors, for which the incidence of crises reaches 80-90% (4, 5). Epileptic seizures are more common in slow-growing tumors, such as oligodendroglioma, meningioma, ganglioglioma and dysembryoblastic neuroepithelial tumour (6). In our study out of 17 patients with epilepsy due to tumors, the slow-growing tumors were etiological factor in 12 (70.6%) cases compared with 5 (29.4%) cases where malignant tumors were etiological factor of epilepsy. The results obtained in our study are approximately the same as the results of the studies mentioned above.

An important factor that determines the appearance of epileptic seizures is the pronounced presence of gliosis around lesion detected with imaging (MRI, CT scan). It was observed that the more pronounced is gliosis, the greater is epileptogenesis of lesions, especially when the localization of the lesion is in the cortical structures and in the key subcortical structures, ones that are involved in generating a crisis (10). Gliosis as an important factor that determains appearance of epileptic seizures in casese with slow-growing tumors, is observed in our study as well. The presence of gliosis around the tumor or epileptic focus in our study was present in 75% cases, while in other 25% of patients gliosis was not present. In non (100%) of the of patinets with rapidly growing tumors (malignant tumors), the gliosis around the tumor or epileptic focus is not observed. Approximate data were obtained from studies of other authors (9, 11).

Coclusion

Tumors represent frequent cause of symptomatic epilepsies, with about 15.5% of cases from the total number of epilepsies. The slow-growing (benign) tumors were more epileptogenic compared with malignant tumors (70.6% to 29.4% respectively). Even in our study is observed that increased epileptogenesis of benign tumors is due to the slow growth rate of benign tumor that gives enough time neuronal destruction and creation of gliosis around the tumor lesion. The presence of gliosis around the tumor or epileptigenic foci is responsible for the generation of epileptic seizures and is seen in 75% of cases with slow-growing tumors.

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Clinical symptoms analysis for diagnosis of spontaneous bacterial peritonitis

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Abstract

Background: Spontaneous bacterial peritonitis (SBP) is a severe result of decompensated cirrhosis. In the current study the diagnostic values of clinical symptoms were evaluated to discover SBP.

Materials and methods: In this study, 80 cirrhotic patients 32 of whom have Spontaneous bacterial peritonitis and 48 patients who do not have Spontaneous bacterial peritonitis referred for aspiration of ascites fluid from February 2012 to January 2014 were evaluated.

Results: Consciousness had the highest sensitivity 93.75 % and the lowest specificity 2.08% in the diagnosis of Spontaneous bacterial peritonitis. Bleeding had the lowest sensitivity18.75% and highest specificity 93.75% and also highest Positive predictive values 66.6%.

Conclusion: these outcomes indicated that although clinical symptoms had high diagnostic value but they should be used beside the ascetic fluid lab tests to confirm the diagnosis of SBP.

Key words: Spontaneous Bacterial Peritonitis, Cirrhosis

Introduction

Spontaneous bacterial peritonitis (SBP) is a frequent and severe complication and result of decompensated cirrhosis. In recent investigations the mortality rate was reported to be around 20% [1–3].

The percentage of SBP in hospitalized cirrhotic individuals with ascites ranges between 10% and 30% in various studies [4–9], whereas the prevalence of SBP among outpatients with cirrhosis is nearby 3.5% [10]. Four practical guidelines and experts' consensus reports on the diagnosis and management of SBP are now available which physician uses them.(11-14)

In the current investigation we used the diagnostic values of clinical symptoms to discover SBP.

Material & Methods

The ethic committee of the Mazandaran University of Medical Sciences, Sari, IRAN approved this study. All authors read the manuscript as written and approved its integrity.

Patients with liver cirrhosis who referred to emergency medicine department of Imam Khomeini hospital (Mazandaran University of Medical Sciences, Sari, Iran.) for aspiration of ascites fluid from January 2014 to June 2014. The ethics committee of Mazandaran University of Medical Sciences, Sari, IRAN has approved this study.

Exclusion criteria

Exclusion criteria included other etiology of ascites and participants who were not ready to participate in this study.

Samples

Paracentesis was done under aseptic conditions with the patient in the supine position and the puncture site in the left or right lower quadrant. Prior to needle insertion, ultrasound was done to show the site of paracentesis. The patients were divided into two groups: patients considered as positive with bacterial peritonitis Spontaneous (PMN more than 250 or WBC above 500 per cubic millimeter ascites fluid) and negative in those without bacterial peritonitis (PMN less than 250 or WBC less than 500 per cubic millimeter ascites fluid) (12). Presence of more than 250 polymorph nuclear (PMN) or more than 500 white blood cells (WBC) per cubic millimeter ascites fluid is the standard diagnostic test for the diagnosis of Spontaneous bacterial peritonitis (13, 12). Sample size for 32 positive patients and 48 negative patients was considered. All laboratory analyses were performed in the same center meaning hospital lab.

Statistical analysis

Primary data were analyzed and the sensitivity, specificity and positive and negative predic-

tive value of clinical symptoms (95% confidence interval) in the diagnosis of spontaneous bacterial peritonitis was measured.

Results

The study population included 80 patients with ascites who referred to Imam Khomeini hospital. Mean±SD of patients' age was 56.25 ± 12.21. Mean age of patients with spontaneous bacterial peritonitis was 57.09 and mean age of healthy participants was 55.68. Among 80 patients with cirrhosis, 32 had SBP but the other 48 did not have SBP.

Consciousness had the highest sensitivity 93.75 %(95%CI:79.85-98.27) in the diagnosis of Spontaneous bacterial peritonitis (Table 1). On the other hand, The lowest specificity 2.08%(CI:0.37-10.9) was related to Consciousness. Bleeding had the lowest sensitivity 18.75% (95%CI:8.8-35.3) and highest specificity 93.75% (95%CI:83.1-97.5) and also highest Positive predictive values 66.6% (95%CI:35.4-85.9) (see table 1 and 2).

The Sensitivity, Specificity, accuracy, Positive predictive values, Negative predictive values, of icterus and Nausea and Vomiting, Likelihood ratio+, Likelihood ratio- were summarized in table 1 and 2.

Discussion

Liver cirrhosis is the clinical end-stage of different entities of chronic liver disease which leads to substantial mortality and morbidity [14,15]. Based on the current information Ascites is the most common complication, and around 60% of patients with compensated cirrhosis went to ascites within 10 years after start of the disease[16]. Spontaneous bacterial peritonitis (SBP) is an crucial reason of morbidity and mortality in cirrhotic patients with ascites. SBP influence 10%-30% of cirrhotic patients in hospital with ascites, and mortality in this group reaches 30%[17,18].

The rapid diagnosis of SBP and immediate start of antibiotic therapy is very crucial as mortality is high. Therefore in this study we evaluate the diagnostic values of clinical symptoms in cirrhotic patient to identify SBP.

Our study results revealed that Consciousness had the highest sensitivity 93.75 % and the lowest specificity 2.08% in the diagnosis of Spontaneous bacterial peritonitis. Bleeding had the lowest sensitivity18.75% and highest specificity 93.75% and also highest Positive predictive values 66.6%.

Some articles including Bandy SM et al study and Such G et al report indicated that icterus is the main symptom of SPB (19, 20). In this study icterus had lower sensitivity in comparison to consciousness but higher specificity.

There were several limitations in this study. First, it was a single center study. Second, the number of patients included in this study was relatively small. Third, we evaluated the clinical symptoms lonely not with lab tests together.

Conclusion

These results showed that clinical symptoms as well as lab tests can predict SBP with high validity.

Table 1. Sensitivity, Specificity and accuracy of clinical symptom in spontaneous bacterial peritonitis

	(Sensitivity) (CI: 95%)	(Specificity) (CI: 95%)	(Accuracy) (CI: 95%)
Consciousness	93.75%(95%CI:79.85-98.27)	2.08%(CI:0.37-10.9)	38.75%(95%CI:28.8-49.7)
Icterus	59.38%(95%CI:42.2-74.4)	66.6%(95%CI:52.5-78.3)	63.75%(95%CI:52.8-73.4)
Nausea And Vomiting	%(95%CI:36.4-69.1)53.1	68.75%(95%CI:54.6-80)	62.5%(95%CI:51.5-72.3)
Bleeding	18.75%(95%CI:8.8-35.3)	93.75%(95%CI:83.1-97.5)	63.7%(95%CI:52.8-73.4)

Table 2. Positive and negative predictive values and LR + and LR-clinical symptom in diagnosis of spontaneous bacterial peritonitis

	Positive predictive values (CI: 95%)	Negative predictive values (CI: 95%)	LR+ (CI: 95%) Liklihood ratio^{+}	LR-(CI: 95%) Liklihood ratio-
Consciousness	38.96% (95%CI:28.8-50.1)	33.3%(95%CI:6.1-79.2)	0.9 (95%CI:0.8-1.0)	3 (95%CI: 0.2-31)
Icterus	54.2%(95%CI:38.1-69.5)	71.1%(CI:56.6-82.2)	1.7(95%CI:1.08-2.9)	0.6 (95%CI:0.3-0.9)
Nausea And Vomiting	53.1%(95%CI:36.4-69.1)	68.7%(95%CI:54.6-80)	1.7 (95%CI:1-2.8)	0.6 (95%CI:0.4-1)
Bleeding	66.6%(95%CI:35.4-85.9)	63.3%(95%CI:51.7-73.6)	3 (95%CI:0.8-11.1)	0.8 (95%CI:0.7-1.3)

Further investigations on different patient in various centers are needed to confirm the outcomes.

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Peer review

This article discusses a new method for the diagnosis of SBP.

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The comparison of the heart structural and functional in the aerobic and anaerobic athletic with sedentary young men of Bebahan city

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Abstract

Introduction: The aim of this study was to compare the heart structural and functional in the aerobic and anaerobic athletic with sedentary men of Bebahan city

Methods: This research is conducted with the use of past researchers, With the use of special method and help of instruments and standard medical measuring tools this matter will be analyzed, one way ANOVA test has been used for determination of difference between groups The one way ANova will be used at the level of $P \leq 0/05$.

Results: considering the results obtained from the "LVEDV, EF, MGMV, LVM, LVEDD, LVSV, IVS, TIVS, LVEV, and RHR tests in the studied groups showed meaningful differences between swimmer and body building and sedentary grope ($p<0.05$).

Conclusion: According to the findings of this research the swimmers and body building groups have higher "LVESV, IVST LVEDV, EF, MGMV and RHR" than control groups And also there isn't meaningful differences between swimmers and body builder in PWT, MGAV, LVESD and this research also showed that the aerobic exercises and resistance exercises have effect on the LVM, LVEDD.

Abbreviations: IVST: Inter ventricular septum thickness, **PWT:** Posterior wall thickness, **LVM**: Left ventricular mass, **LVEDD**: Left ventricular end diastolic Diagonal, **LVESD**: Left ventricular end systolic Diagonal, **LVESV**: Left ventricular end systolic volume, **LVEDV**: Left ventricular end diastolic volume, **EF**: Ejection fraction, **MGAV**: Mean gradient of Aortic valve, **MGMV**: Mean gradient of mitral valve, **RHR**: Resting heart rate.

Key words: heart structural and functional, aerobic and anaerobic athletic, sedentary

Introduction

Today considering the fast and machine like life and not moving much therefore the percentage of hearth patients are increasing rapidly (20) and the age for getting hearth diseases decreasing. (13). One of the sicknesses is hearth enlargement which can be due to different hearth difficulties during the young age. And needs careful analysis and complete information. Of course enlargement of the hearth and increase in the thickness of heart muscle is also due to other factors and one of them is due to excess exercises (31-30). Also with according to the scientific findings it can be mentioned that due to excess exercises the free ventricle walls between two ventricles become thicker than usual and some of the doctors believe that thickening of the ventricle walls cause the cavity volumes to become smaller and therefore there will be differences in the systolic and diastolic of the heart's functioning while this has no scientific background and increase in the left ventricle (LV) is in fact a kind of coordination with the different exercises a sport person does and it is not specially due to pathological effects. But it has positive effects on the functioning and efficiency of the heart (15-26-27). Participation in any kinds of static types of exercises such as weight lifting, power lifting, body building, throws, wrestling Etc, and dynamic such as endurance and also a mixture of both static and dynamic sports such as cycling and yachting Etc have different effects on the heart functioning (30). Which is necessary to monitor these changes continually and in different ages to be able to find different results? These actions make the importance of this research more and more.

Methods

This research is conducted with the use of past researchers. In this research we try to find out the reaction of the heart of the athletes according to The comparison of the heart structural and functional in the aerobic and anaerobic athletic in the sports such as swimming and body building with none athletes in the city of Behbahan (aged 20-25 years). 39 persons were randomly selected (15 swimmer and 10 bodybuilder and the rest 14 none athletes) With the use of special method and help of instruments and standard medical measuring tools this matter will be analyzed. Then the tests will be analyzed and the echocardiogram measurements will be done. To analyze data the description and illative statics methods have been used as follows. The illative statistics has been used as follows. one way ANOVA test has been used for determination of difference between groups and finally if ANOVA tests are meaningful. The one way ANova will be used at the level of P<0/05. To calculate data SPSS software number (15) for drawing of diagrams the Excel software was used.

Results

Considering the tests "LVEV" and IVST" in studied group there were meaningful differences, but there wasn't meaningful differences between swimmer and body building and this show that these two exercises effect "LVSV and IVST" and causes increase in them.

And also considering the results obtained from the "LVEDV, EF, MGMV, and RHR tests in the studied groups they showed meaningful differences and also there were meaningful differences between swimmer and body building and this show that aerobic exercises has effect compare to resistance exercises on the " LVEDV, EF, MGMV and RHR and cause increase in them.

Considering the results of tests "LVM, LVEDD in the mentioned groups show meaningful differences between control group and body building group but these differences were not meaningful in control and swimmer groups. In the other words hypothesis findings show relationship between resistance exercises effects on reduction of "LVM, LVEDD.

Considering the results obtained from "PWT, MGAV, LVESD" in studied groups they did not show meaningful differences, in the other words hypothesis findings do not conform that there is relation between aerobic and resistance exercises on the "PWT, MGAV, and LVESD.

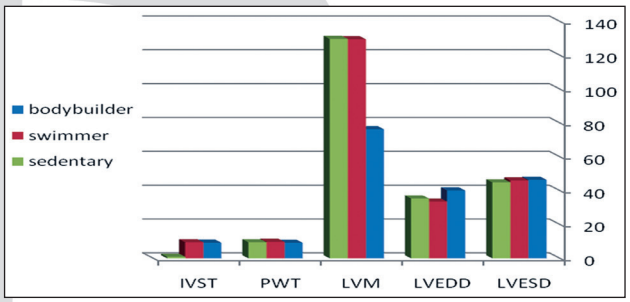

Chart 1. The heart structural in each of the three groups is shown

Table 1. The heart structural in each of the three groups is shown

Index / Gropes	Bodybuilder	Swimmer	Sedentary
IVST	9/26±1/22	9/52±/92	/92±/19
PWT	9/22±/98	9/76±1/03	9/52±1/61
LVM	76/33±9/49	129/50±15/65	129/70±13/17
LVEDD	40/13±3/37	33/57±1/82	35/4±2/91
LVESD	46/44±3/97	46/07±2/20	44/90±2/72

Table 2. The heart functional in each of the three groups is shown

Index / Gropes	Bodybuilder	Swimmer	Sedentary
LVESV	65±4/48	63/78±3/37	43±1/76
LVEDV	119/26±11/33	141/92±4/71	102/30±7/73
EF	/57±/03	/61±/03	/54±/04
MGAV	1/61±/64	2±/42	1/90±/33
MGMV	1/18±/29	1/82±/50	1/16±/29
RHR	74/86±5/4	67/57±5/70	78/30±4/19

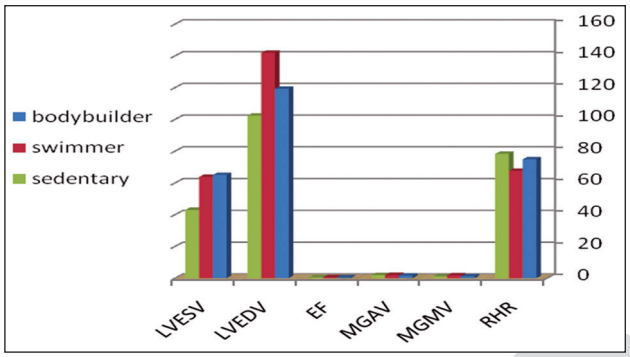

Chart 2. The heart functional in each of the three groups is shown

Discussion

In this section primarily we compare the results obtained from this research with the researchers conducted previously and then the results obtained will be discussed. In the present analysis of effects of different kinds of aerobic and none aerobic exercises on the construction and functioning of the heart of athletes in swimming and body building will be compared with other none sport movements and they will be studied. According to the findings of this research the swimmers and body building groups have higher "LVESV and IVST" than control groups but there is a meaningful differences between swimmers and body building groups and these results consistence with the results obtained by Sanjay Sharma 2002, Hicoski and colleagues 2005, Barry J. Maron and colleagues2009, Antonio Pilikeya and colleagues2002, Ardem and Hoyolia 2008.

According to the findings in this research swimmers and body building groups were higher in " LVEDV, EF, MGMV and RHR compare to control group and also there was a meaningful differences between swimmer and body building groups which it shows more effects of aerobic exercises on the end capacity of diasystol of LV (LVEDV, EF, MGMV, RHR) and these results are consistence with the results obtained by Antonio Pelliccia and colleagues1999, Ardem and Hyoleya 2008, wiliams and colleagues 2007 studies by Makan and colleagues 2009, Barry and colleagues 2009 Ross and colleagues 2010.

In this research the swimmer groups and body building have higher thicker of posterior ventricle (PWT, MGAV, LVESD) compare to control group. And also there isn't meaningful differences between swimmers and body building and these findings are consistence with Jouko Karjalainen and colleagues 1997 and the results obtained from Barry Maron 1998, Babette M and colleagues 2000, Gourge Bilman 2002, vinereann and colleagues 2002.

The results obtained from this research show the aerobic exercises and resistance exercises effects on the (LVM, LVEDD) and there is meaningful differences between control groups and body building but these differences are not meaningful between control and swimmer groups and also there aren't meaningful differences between swimmer and body building groups and these findings are consistence with the results obtained by Paul D.Thompson 2006, Wialiam and colleagues 2007, Makan and colleagues 2009. According to the researchers findings constructive compatibility and functioning of LV with regard to the kind of exercise and sportsman are different and therefore thickening of wall between two ventricles and free ventricle wall, increase in the LV mass, changes in the heart beat and blood pressure at the time of resting compare to the time of resistance exercising is due to excess pressure and the increase in the holes of the heart specially increase in the LV mass, small increase in the ventricle wall, increase in the return of the blood from vein and heart output, reduction in the heart beat during rest and increase in the LV contrasting flexibility which cause excess in the beat in the resistance exercises which depend on the kind of exercise conducted and their effects on the heart morphology. Of course with participation of athletes in different kinds of exercises such as static, dynamic and mixed there are different effects on the construction of and functioning of the heart and therefore participants in the dynamic exercises cause increase in the volume of resistance which is due to hemodynamic changes which in return cause increase in the holes volume together with increase in the thickness of the walls which is known as hypertrophy strict, while the static athletes and resistance athlete have distinct increase in the thickness of the heart walls, therefore these constructive changes and the heart functioning in the different athletes are very complicated and wide because different kinds of exercises have different kinds of pressure which are due to increase

in the blood pressure while exercising and excess volume load due to increase in the hemodynamic load on the heart.

Acknowledgement

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Evaluation of Effectiveness of the 3A3R Educational Intervention Program for Betel Nut Addicts

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Abstract

The study has assessed the effectiveness of the 3A3R educational intervention program for betel nut addicts. Effectiveness was measured on improvements in the following indicators: awareness of risks of betel nut use, perceived susceptibility to oral disease, perceived severity of oral cancer, betel-nut related behavioral changes, and frequency of betel nut use. Subjects were composed of the patients of 23 dental clinics. We employed the 3A3R (Ask, Advise, Assess, Relevance, Risk, Rewards) methodology to visiting patients as a way to educate them on the risks of betel nut use. Analysis included paired t-tests and ANOVA on the pre-test and post-test on the relevant variables. Patients displayed an increase in awareness of risks, perceived susceptibility, and perceived severity. More than 32% patients moved one stage forward in quitting betel nut use in one week. Betel nut use also fell by an average of 7.77 nuts. The 3A3R intervention program is effective for improving patients' awareness; perceived susceptibility to oral disease; perceived severity of oral cancer; helping patients for the quitting process and reducing the betel nut intake. We recommend the standardization and implementation of the 3A3R intervention in hospitals for the purpose of helping betel nut addicts.

Key words: Betel nut, oral cancer, addiction, prevention, awareness, Taiwan.

1. Introduction

Cancer is one of the most killer diseases in the world. Chronic diseases such as cardiovascular disease, cancer, chronic respiratory diseases and diabetes, constitute more than 2/3rd of all deaths in the world [1]. Oral cancer is one of the most prevalent cancers especially among the alcohol, tobacco and betel nut abusers [2, 3]. The major risk of long-term betel nut use is the increased risk of oral cancer. The International Agency for Research on Cancer has employed epidemiology and animal studies to confirm that the betel nut is a type-1 carcinogen for humans [4]. A recent study has indicated that betel nut consumers have 123 folds augmented risk of oral cancer than non users [5]. Betel nut abuse is significantly associated with several adverse health effects, such as gum disease, metabolic syndrome, sub-mucosal fibrosis, hypertension and cardiovascular mortality, oral and pharyngeal cancer [6 – 8].

Betel nut consumption (chewing) is highly prevalent in South Asia (India, Pakistan and Nepal), Southeast Asia (e.g. Cambodia, Vietnam, Taiwan, Malaysia, Indonesia, Papua New Guinea, and the Philippines) and the Western Pacific islands [9]. According to the Department of Health, the major cause of death in Taiwan in 2011 was malignant tumors. In terms of individual cancers, oral cancer stands as fifth most prevalent. Oral cancer was the fourth major cause of cancer-related deaths among males in Taiwan. Standardization procedures based on the ten most prevalent cancers in Taiwan show that oral cancer was more prevalent in 2011 than it was in 2010. Oral cancer is a rising public health problem that Taiwan cannot ignore. 2011 statistics show that the median in age of those who have died due to oral cancer is under 60, which is 10 to 20 years earlier than the median for other cancers. In 2011, Taiwan has 6,000 new oral cancer cases. Of those 6,000 new oral cancer cases, 2,400 led to death, with 90% of the cases being associated with betel nut use [10]. Helping betel nut users to quit their use will lead to a reduction in the oral cancer rate.

Research has shown that health education and consulting has effectiveness in helping smokers quit smoking [1]. Taiwan does not have a similar clinic for helping citizens to quit betel nut use. Due to the lack of such resource, this study gained the cooperation of dentists in performing oral cancer screenings and intervention employing the 3A3R structure, which stands for Ask, Advise, Assess, Relevance, Risk, and Rewards, to encourage quitting betel nut chewing. The study tried to assess the effectiveness of the 3A3R educational intervention program for betel nut addicts. Effectiveness was measured on improvements in the following indicators: awareness of risks of betel nut use, perceived susceptibility to oral disease, perceived severity of oral cancer, betel-nut related behavioral changes, and frequency of betel nut use.

2. Materials and Methods

2.1 Study place and population

The study was conducted in Hualien Province, Taiwan during the 2009 calendar year. Twenty-three dental clinics administered the study. All targeted patients were being approached for the study explaining the objective and intervention procedure. However participation in the study was exclusively voluntary and no further emphasize was made in this regard to participate. A total of 288 persons participated at the beginning. However, finally 221 participants (76.7%) completed. The rest (67 respondents) was discarded due to incomplete questionnaires.

2.2 Instrument

The 3A3R structure is an edited version of the 5A5R structure used to help people quit smoking. The original 5A5R structure stood for the following tasks: Ask about tobacco use, Advise to quit, Assess willingness to make an attempt to quit, Assist in an attempt to quit, Arrange a follow up; Relevance, Risks, Rewards, Roadblocks, Repetition. Research has shown the 5A5R structure to be effective in interventions with addicted smokers [11]. The current research references the use of 5A5R in intervention programs as its model as it is already proved to be convenient for international community familiar with the 5A5R structure. The simplified 3A3R version includes in the current study for quitting betel nut is the following.

1. Ask
2. Advise (educate and encourage quitting): This section includes the 3R portion: Risk (the dangers of using betel nut), Relevance (making the situation personal), and Reward (the benefits of quitting betel nut).
3. Assess (strengthen motivation and evaluate willingness to quit)

More details are depicted in table 1.

This research took place in Hualian dental clinics. To confirm the results of the study, we have chosen multiple indicators: awareness of the risks of betel nut, perceived susceptibility to illness through betel nut use, perceived severity of oral cancer, changes in betel nut use, and the progress through the stages of quitting betel nut.

After necessary piloting, questionnaires were developed to obtain the relevant information pertinent to the research purpose. Included in the questionnaire were five main indicators: demographic factors, self-reported oral cavity problems, perceived susceptibility to oral cavity illness, perceived severity of oral cancer, changes in betel nut use, and the progress through the stages of quitting betel nut. The follow-up questionnaire contained the same indicators as the baseline, except the demographic factors as same participants answered the questionnaires. A nurse at the clinic administered the follow up questionnaire via phone.

The design of the questions for the indicators of perceived susceptibility and perceived severity follow those of Health Belief Model (HBM) by Becker & Rosenstock's [12]. HBM posits that an individual's health-related behavior stems from beliefs about the connections between certain behaviors and the possibility of health problems or benefits. In this case, we applied HBM to the behavior of quitting betel nut use.

For the indicator that specifying the changes through the stages of quitting betel nut, we drew from Prochaska and Diclemente's Transtheoretical Model [13]. This model posits that changes in human behavior takes place in a dynamic process that consists of five stages as follow.

Table 1. 3A3R Quitting Betel Nut Clinic Educational Content

[Risk]
- Your teeth are not in good shape. You have gum disorder. If you don't quit betel nut now, all your teeth will fall out.
- Experts in Taiwan and around the world have proved: Betel nuts themselves can cause cancer.
- Our government's statistics show that 9 out of 10 oral cancer patients have a habit of chewing betel nut.
- Eating betel nut can cause cystic fibrosis, which will make it impossible to open your mouth. People with cystic fibrosis can only eat from a straw.

[Relevance]
- Chewing betel nut not only makes your mouth blood red but also gives you bad breath. If you quit chewing betel nuts, your kids will be more willing to kiss you.
- You need to be considerate of your family's feelings. If you get sick, your family will certainly be upset.
- You're the economic basis of your family. If you're gone, who will take care of your family?

[Reward]
- After you quit chewing betel nuts, your health will improve.
- How much do you spend on betel nuts every day? If you quit chewing betel nuts, you can save XX every month. Per year, that's YY you've saved.
- The image most people have toward chewing betel nuts is not a good one. If you quit chewing betel nuts, your image will improve.
- After you quit chewing betel nuts, you can eat the sour and spicy food you couldn't eat before.

[Assess]
- This health care center is running a program to help people quit betel nut. If you successfully quit, you will get a reward. Would you like to participate?
- Our health center's phone number is as follows: 8xx-xxxxYou can call in to register for the activity. You can also ask for details.

Pre-contemplation: I am not quitting betel nut use, nor do I plan to in the next 6 months. ii) Contemplation: I am not quitting betel nut use, but I plan to in the next 6 months. iii) Preparation: I have started to quit betel nut use, but I still occasionally chew betel nuts. iv) Action: I have started to quit betel nut use, but have not abstained for 6 months straight yet. v) Maintenance: I do not chew betel nuts and have not used betel nuts for over 6 months. In the 3A3R education method betel nut users are directed downward in the Transtheoretical Model, toward full abstinence. For example: moving from pre-contemplation to contemplation would imply a person previously did not consider quitting betel nut use but is now willing to begin the quitting process.

2.3 Procedure

Prior to the questioning from the dentist, the nurse informed the patients, who could be tentative participants of the study about the objective and procedure, emphasizing the ability to make inquiries and the fact of confidentiality. The first step was to ask patients whether they engaged in betel nut use. If met with a negative answer, the nurse would explain the dangers of betel nut use as a measure of preventative education. If met with an affirmative answer, the nurse would ask the patient whether he would be willing to proceed with the 3A3R betel nut education. If met with agreement, the nurse would help the patient fill out a pre-education questionnaire and proceed with the 3A3R intervention. After the 3A3R intervention, if the patient expressed a willingness to quit betel nuts, the procedure would continue with an evaluation as to whether the program was successful. Patients would also receive a post-education test on the dangers of betel nut use. Three days afterward, a nurse would call the patient to express concern and engage in eliciting awareness on the possibility of being afflicted by illness through betel nut use as well as the severity of oral cancer, changes in betel nut use, and the progress through the stages of quitting betel nut. Answers were recorded. The following flowchart displays the education process outlined by the 3A3R method.

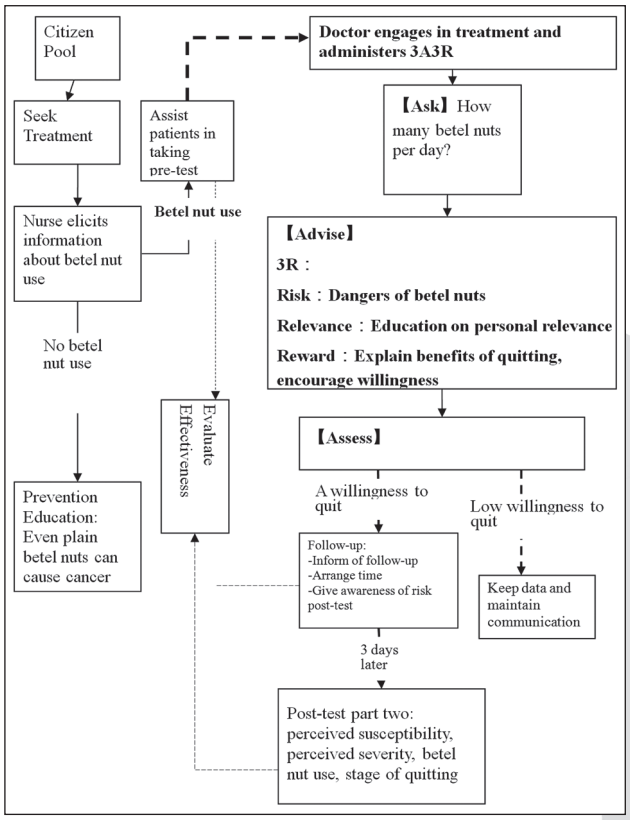

Figure 1. 3A3R education flowchart

2.4 Ethical issue

During the study time, Taiwan's laws on human testing were more lenient. So we could not achieve any formal permission. However, we have strictly followed the WMA guidelines. We ran our study with principles that conform to the laws of today. On the 5th of July, 2012, the Department of Health declared new guidelines for human studies. These guidelines were aimed at studies using subjects who were underage, under the care of others, belonging to an indigenous tribe, pregnant, handicapped, mentally ill, or unable to give consent. (Guidelines regarding studies evaluating educational progress in schools were also given.)

2.5 Statistical Analysis

We employed SPSS for Windows, version 18.0 to code and analyze the questionnaires. For the data analysis, we used descriptive statistics to look at demographics and the stages of quitting. Paired t-tests compared the pre-test and post-test data for the following indicators: self-reported oral cavity problems, perceived susceptibility to oral cavity illness, perceived severity of oral cancer, changes in betel nut use, and the progress through the stages of quitting betel nut. The t-tests were to tell us whether the 3A3R educational process was effective at changing these indicators' values. One-way ANOVA analyzed the differences in age and demographic factors, with alpha at 0. 05 ◦

3. Results

3.1 Demographic information

The sample included 137 (72%) males and 84 (38%) females. Those with high school or vocational school as their highest form of educational attainment constituted the highest proportion of betel nut users 29.4%), followed by middle school (26.7%) and elementary school (25.3%). Seventy nine (35.7%) were engaged in service sector, while 25 participants (11.3%) were in agricultural sector).The average of age is 46.3 years old.

3.2 The effectiveness of 3A3R in moving participants through the stages of quitting and its relationship to demographic factors

Three classes that can describe the movement in the Trans theoretical Model exist, the first being behavioral improvement: Subtract the points on the pre-test from those of the post-test to arrive at a number above zero. Behavioral stasis: Subtract the points on the pre-test from those of the post-test to arrive at zero. Behavioral deterioration: Subtract the points on the pre-test from those of the post-test to arrive at a number below zero. During the pre-test, we found 16 subjects already in the maintenance stage. However, during the post-test one subject regressed to the preparation stage. We subtracted the 15 subjects constantly in the maintenance stage from this analysis, Leaving 206 data points. The analysis did not show any significant connection between demographic variables (sex, education level, and age) and change through the stages to quitting.

3.3 Movement through the stages of quitting betel nut use

Table 3 displays the movement through the stages of quitting betel nut use due to the 3A3R

Table 2. Demographic variables and movement through the stages of quitting betel nut use

Variable	Stage advancement (n=71)	Stage movement: Stasis (n=118)	Stage movement: Deterioration (n=17)	Total (n=206)	Stat. Test
	Number (%)	Number (%)	Number (%)	Number (%)	
Sex					X^2=2. 746
Male	45(63.4)	67(56.8)	13(76.5)	125(60.7)	
Female	26(36.6)	51(43.2)	4(23.5)	81(39.3)	
Education Level					X^2=5. 71
Less than elementary school	8(11.3)	7(5.9)	2(11.8)	17(8.3)	
Elementary school	16(22.5)	33(28)	6(35.3)	55(26.7)	
Middle school	20(28.2)	33(28)	2(11.8)	55(26.7)	
High school or vocational school	21(29.6)	31(26.3)	6(35.3)	58(28.2)	
University	6 (8.5)	14(11.9)	1(5.9)	21(10.2)	
Age (average)	46.69	46.43	46.63		F=0. 01

Table 3. Changes in quitting stages during the 3A3R intervention

	Stages at post-test				Maintenance	Total
	Precontemplation	Contemplation	Preparation	Action		
Pre-test stage						
Precontemplation	22	17	9	2	0	50
Contemplation	6	31	17	7	0	61
Preparation	1	7	53	14	2	77
Action	0	2	1	11	3	17
Maintenance	0	0	1	0	15	16
Total	29	57	81	33	21	221

Table 4. The paired t-tests for the 3A3R intervention's indicators

	Average difference post-test minus pre-test	Standard Deviation	t-value
Betel nut use	-7.772	21.348	5.498**
Awareness of risk	.665	1.062	9.744**
Perceived susceptibility	.780	1.796	6.817**
Perceived severity	.584	2.201	4.152**

***p<0. 05*

intervention. At the time of the pre-test, 50 participants were either in the precontemplation stage or were unwilling to quit betel nut use. At the time of the post-test, 22 of these 50 participants (44%) were still in the precontemplation stage; 17 (34%) had made plans to quit; 9 (18%) had reduced their betel nut intake, entering the preparation stage; 2 (4%) had entered the action stage, having abstained from betel nut – though not yet at the 6-month abstinence point.

At the pre-test, 61 participants were in the contemplation stage, planning to take action toward quitting betel nut use within six months. At the post-test, 17 of these subjects (27.87%) had already reduced their betel nut use, entering the preparation stage. Another 7 (11.48%) had begun to abstain from betel nut use, entering the action stage.

On the pre-test, 77 subjects indicated they were in the preparation stage and were ready to take action toward quitting. Of those, 53 (68.83%) were still in the preparation stage at the time of the post-test. But 14 (18.18%) had taken action in quitting. On the pre-test, 17 subjects indicated they were in the action stage and were taking action toward quitting. At the post-test, 3 subjects had moved into the maintenance stage; 2 had returned to the contemplation stage; and 1 had returned to the preparation stage. During the pre-test, 16 subjects reve-

aled themselves to have abstained from betel nut use for at least 6 months, which classified them as being in the maintenance stage. One of these subjects returned to the preparation stage at the time of the post-test.

3.4 Comparison of pre-test and post-test in light of the 3A3R intervention

Table 4 describes the indicators used in the intervention: self-reported oral cavity problems, perceived susceptibility to oral cavity illness, perceived severity of oral cancer, changes in betel nut use, and the progress through the stages of quitting betel nut. Subjects, on average, reduced their betel nut intake by 7.77 nuts. Subjects also showed an increase in knowledge as pertains to the risk that betel nut usage poses, with an average increase of 0.665 points as per our scoring system. In addition, subjects demonstrated an average increase in perceived susceptibility, at 0.78 points. Finally, average perceived severity increased by 0.584 points.

4. Discussion

The results of the study demonstrate that this method (3A3R) is effective for quitting betel nuts. The numbers show that few of the participants who were considering quitting (i.e., those in the contemplation or preparation stages) at the pre-test gave up that idea, with only 7.4% (14 out of 188) of them moving to the pre-contemplation stage. In total, 36.16% (68 out of 188) of the participants moved forward one stage, and of those in the pre-contemplation or contemplation stages, 50% moved forward one stage. Moreover, the fact that few of our participants in the action stage moved showing that this intervention tended to be more useful to those who were in the thought-related stages. One possible reason for 3A3R's effectiveness is the model's second step: Advise, which includes Risk, Relevance, and Reward. Borrowing this method from the work of Prochaska and DiClemente [13], we emphasized the risk of betel nut use, drawing on relationships and other personally relevant factors, to arouse self-evaluation among the participants. The evaluation of the pros and cons of betel nut usage were likely to have assisted subjects in assessing their environmental influences to move forward in the process of quitting. Due to the limited duration of the study, our intervention did not include the other elements of Prochaska and DiClemente's methods, namely stimulus control, counterconditioning, reinforcement management, self-liberation, and relationship assistance [13]. Despite this limitation, our study resulted in only 17.6% (3 out of 17) of participants regressing from the action stage.

Previous study on addiction has demonstrated that education is important factor rather than employment as higher education leads to less of smoking [14]. The current study has demonstrated that higher education leads more bête nut chewing. Therefore social autopsy and considering ethnic and cultural backgrounds is warranted. A survey on the betel nut use of transportation employees in central Taiwan has shown that individuals who are aware of the health risks that betel nut chewing poses will be more willing to quit Of those who use betel nut, 75% have considered quitting at least once. [15]. Our study's 3A3R intervention program increased awareness of the health risks, as well as perceived susceptibility and perceived severity. One tangible result was an average decrease in betel nut use, 7.77 less nuts per person. [13]. Overall, despite the short time limitations imposed on the intervention process, our method showed effective results.

Other research on this subject has showed the effectiveness of consulting medical professionals and the frequency of those consultations on assisting individuals who wish to quit smoking and drinking [16 -20]. However, no similar results have been shown for similar interventions working for quitters of betel nut. Nor do clinics for individuals who wish to quit betel nut currently exist in Taiwan. For these reasons, we have no similar literature with which to compare our study. Moreover, the act of quitting smoking differs greatly from that of quitting betel nut use. While cigarettes contain the addictive chemical nicotine, betel nuts do not contain any addictive chemicals. Thus, it would be inappropriate to employ information on the interventions aimed at smoking in the realm of betel nut use.

The principles of the Transtheoretical Model, by Weinstein, Rothman and Sutton emphasizes on using different forms of interventions for patients at different stages [21]. Our research merely used

the Transtheoretical Model. Without using it to determine intervention measures; our main focus was to examine the possibility of expanding the use of such a model via the 3A3R system. This does not affect the original purpose of the Transtheoretical Model. In the design of this study, we proposed treating each patient in an equal manner via a single educational intervention measure that would be convenient for clinical use. This allowed us and the participating clinics to cut down on the time costs involved in classifying each patient.

This research was made possible by 23 participating dental clinics and their willing patients. This subject pool itself might have participants who are already suffering from oral illnesses, which is why the sample and timing (i.e., seeking dental care) were suitable for the 3A3R intervention. The success of this research implies that expanded studies would be effective, such as in involving schools, hospitals, and the department of health in 3A3R interventions.

4.1 Study Limitations

The dental clinics in which the study took place were all in Hualian. As the population of Hualian differs in some ways from those of more populated areas, generalizing these results might be premature. The time limitation, as its name suggests, was also a limitation. Our study employed a follow-up call from nurses only 3 days after the pre-test. Future studies should consider longer, sustained follow-up.

5. Conclusion

Betel nut chewing is becoming a global health problem especially in the Asia, Western Pacific, Micronesia and few parts of Latin America. Therefore the current study has importance for necessary intervention to quitting betel nut chewing. However a large-scale study is warranted before universalization of the intervention.

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Sample of nursing care plan for the individual receiving the treatment of hemodialysis according to Roy's adaptation model*

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Abstract

Nursing is a health discipline which is built on philosophy, theory, application and research. Basic purpose of a professional discipline is to reveal the scientific knowledge content that could be used with the applications of the profession. This basic knowledge is expressed with concepts and theories specific to the profession. If the nurses use the concepts and theories consciously, the possibility to analyse the results rises and it helps the constitution of a database for the nurses. Handling the individual as the focal point, nursing models enable the assessment of nursing applications within the vocational dimension. Besides, these models guide the nurse by systemizing the nursing knowledge and applications and they provide a professional communication. This article was written in an attempt to attract attention to the necessity of using the nursing models and to enable the spread of their usage by explaining the utilization of "Roy's Adaptation Model" with a sample.

Key words: Roy adaptation model, nursing, Hemodialysis Treatment

1. Introduction

Theories particular to an occupation, support the occupational ethical values and provide the improvement of the occupational knowledge. As these theories improve the skills of giving clinical decisions and analytical thinking, they provide to gain the occupational autonomy (1-3).

Nursing models provide the nursing practices to be evaluated in the occupational dimension by dealing with the individual. Besides, by systematizing the knowledge and practices of nursing, they lead the nurse and provide a professional communication (4,5).

Nursing models provide the nursing practices to be evaluated in the occupational dimension by dealing with the individual. Besides, by systematizing the knowledge and practices of nursing, they lead the nurse and provide a professional communication (2,4,5).

The nursing process increases the person's getting service in accordance with his/her needs, the constancy of the care and the quality of it. Again, the nursing process provides the communication among the team members and gives the opportunity to the nurse to practice different roles. It also provides the improvement of the practice of recording among nurses and the objective evaluation of the given care (2,6).

Nursing theories and models are used to develop a point of view about the information gathered on the person and to make evaluations by planning attempts according to that point of view (1, 7).

The usage of the model provides solution offers to be developed by leading the analysis of the problems in the practice and the nurse to focus on the nursing practice instead of the medical practice (5,7). One of the widely used models in nursing is the Roy Adaptation Model (RAM).

Roy Adaptation Model

Roy adaptation model presents the person as a holistic adaptive system in constant interaction with the internal and the external environment. The goal of nursing is to foster successful adaptation. The adaptation level represents the condition of the life processes. Three levels are described by

Roy: integrated, compensatory, and compromised life processes. An integrated life process may change to a compensatory process, which attempts to reestablish adaptation. If the compensatory processes are not adequate, compromised processes result (8-11).

Coping processes in the Roy adaptation model include both innate coping mechanisms and acquired coping mechanisms. Innate coping processes are genetically determined or common to the species; they are generally viewed as automatic processes. In contrast, acquired coping processes are learned or developed through customary responses (12-14).

The processes for coping in the Roy adaptation model are further categorized as the regulator and cognator subsystems as they apply to individuals, and the stabilizer and innovator subsystems as applied to groups. A basic type of adaptive process, the regulatör subsystem responds through neural, chemical, and endocrine coping channels. The second adaptive process, the cognatör subsystem, responds through four cognitive–emotional channels: perceptual and information processing, learning, judgment, and emotion (8-10,15).

The behaviors can be observed in four categories, or adaptive modes: physiologic–physical mode, self-concept–group identify mode, role function mode, and interdependence mode. It is through these four modes that responses to and interaction with the environment can be carried out and adaptation can be observed (8-10,16).

Physiologic-physical mode is the manifestation of the physiologic activities of all cells, tissues, organs, and systems making up the body. Five basic needs exist: oxygenation, nutrition, elimination, activity and rest, and protection. In addition, four processes are involved in physiologic adaptation: the senses; fluid, electrolyte, and acid–base balance; neurologic function; and endocrine function. The underlying need for the physiologic mode is physiologic integrity (12-15).

The self-concept–group identity mode includes the components of the physical self, including body sensation and body image, and the personal self, including self-consistency, self-ideal, and moral-ethical-spiritual self (12-16).

The role function mode need is social integrity. To know who one is inrelation to others so that one can effectively function within that role and may reasonablyanticipate the activities of others within a groupand or in society (12-15) .

The interdependence mode is a category of behavior related to interdependent relationships. This mode focuses on interactions related to the giving and receiving of love, respect, and value. The basic need of this mode is relational integrity, or the feeling of security in nurturing relationships (9,17).

In the Roy adaptation model, three classes of stimuli form the environment; the focal stimulus, contextual stimuli, and residual stimuli.

The focal stimulus is the internal or external stimulus most immediately in the awareness of the individual or group-the object or event most present in the consciousness (8,9). **Contextual stimuli** are all other stimuli present in the situation that contribute to the effect of the focal stimulus. That is, contextual stimuli are all the environmental factors that present to the human adaptive system from within or outside but which are not the center of attention or energy. Even though the contextual stimuli are not the center of attention, these factors do influence how people deal with the focal stimulus (12-15).

Residual stimuli are environmental factors within or outside human systems, the effects of which are unclear in the situation. The effects of these stimuli may be unclear if there is no awareness on the part of the patient that a stimulus is an influence, or it may not be clear to the observer that these stimuli are having an influence on the human system (5,7,12-15).

Chronic Kidney Failure and Hemodialysis Therapy

The kidney failure which is one of the chronic deseases, is a tough desease that threatens one's life, deformes his/her anathomy, causes the most important activities and relationships to change and thus requires a physical, psichological and social adaptation (18).

Nowadays, the hemodialysis patients' adaptation to the therapy is a significant problem from the aspect of health condition and life standard. Discussing the factors that effect the patients' adaptation to the therapy might lead to reaching better health results by increasing the therapy's effectiveness (19,20).

Chronical kidney failure is one of the chronical diseases that frequently cause loss of function, change in the life style and thus problems in adaptation (21). As a result of these negative facts, it has been observed that the individuals start having low self esteem. Hemodialysis therapy is a different experience that causes changes in patient's life style. This situation affects the patient and his/her family closely and requires new regulations in life. The loss of role in family, loss of job and losses in the body functions cause the rise of remarkable psycho social problems for the patient (22). The negative cases that come out as a consequence of the kidney failure cause the patient to get away from the social life and makes it difficult for the individual to adapt him/herself to the roles. Social, economic, psychologic, in a nutshell, all the aspects of life of hemodialysis patients are affected negatively (22,23).

Emotional support in chronic patients, increases the psychological adaptation to the disease and decreases depression. The social support that is given to the hemodialysis patients increases the psychological wellness (19,24). Being affected by the disease, the patients who suffer from chronical kidney failure feel themselves different from the other individuals. That they have to go to dialysis centers, get the therapy from the dialysis machine, that they are afraid of dying cause them to feel themselves alone during the period of therapy (21,24).

An individual can manage to compete with this disease, adapt him/herself to the changes in his/her life and can lead a life in peace with hemodialysis as long as he/she can adapt him/herself to the changes that occur in his/her life. As a result of chronical kidney failure, in the solution of those hemodialysis patients' problems that exist or may occur, primarily the nurses support the individuals to adapt themselves to life along with their diseases, by the trainings they give. Nursing care and training has a great significance in this process.

This article was written in an attempt to attract attention to the necessity of using the nursing models and to enable the spread of their usage by explaining the utilization of "Roy's Adaptation Model" with a sample.

2. Etics

This study from EB patients and after obtaining necessary permission from the relevant authority has been applied.

3. Example Case

3.1. Descriptive Characteristics

EB is forty-seven years old. She is married and has three children. She is a housewife. She lives with his wife and children.

3.2. Story

3 years ago, EB was diagnosed to have chronical kidney failure, five years later than the diagnosis the patient has started to receive hemodialysis therapy, after six years of hemodialysis the patient had a kidney transplantation, a year later then the transplantation, the patient got infected and the transplanted kidney has been removed. One year ago, the hemodialysis therapy was started for this patient again. The patient receives the hemodialysis therapy 3 times a week in the afternoons. The patient's fistule is on her right arm. EB is a housewife and she has difficulty in doing the housework. She states that she has oedema a day before the hemodialysis, before and after the hemodialysis she suffers from constant pain and she cannot sleep at nights. She states that her family do not understand her and they keep demanding, she does not have any relationship with her neighbors and she stays away from them as they keep asking questions about her disease. This research has been done after taking the required permissions from the patient called EB and the related institution.

3.3. Personal and Family

EB's history of frequent urinary tract infections are available. There is no family history of any property.

3.4. Physical Examination

General condition good. EB's Before hemodialyses session weight 62.4 kg, after hemodialyses session weight 60.8 kg dir. Visual Analogue Scale

(VAS) pain in the assessment of pain severity score was 3.5.

Vital Signs	Before hemodialyses session	After hemodialyses session
Blood Pressure:	170/100 mmHg	120/80 mmHg
Pulse:	96atm/dk	84atm/dk
Respiration:	24/dk	22/dk
Body Temperature:	36.3ºC	36.3ºC

3.5. Blood Biochemistry Levels

Haemoglobin: 12 mg/dl; Hematocrit: % 36; Erythrocytes: 3.80/mm^3; Leukocytes: 6.7/mm^3; Trombosit: 9.0 /mm

Calcium: 13.9; Iron: 65; Iron-binding Capacity: 322; Total Protein: 7.1; Albumin: 4.4

	Before hemodialyses session	After hemodialyses session
Sodium	139	141
Potassium	5.2	3.7
Urea Nitrogen (BUN)	123	31
Creatinine	7.7	2.3

The adaptation models by Roy nursıng care plan

Physiologic-Physical Mode

1. Behaviour: Pain

Focal stimuli: Hemodialysis Treatment

Contextual stimuli: Impaired physical mobility

Residual stimuli: The thought that the disease will not get better and will get worse despite the treatment.

Nursing diagnose: Chronic pain

Goal: That pain now and verbal / non-verbal expression, pain score points fall

Nursing Activities:

- Pain the location, severity, onset time, increasing and decreasing factors are evaluated together with EB.
- The emotional reactions of EB against the pain and her way of managing with it is evaluated and observed.
- The condition that the daily activities increase and decrease the pain is determined by discussing with EB and unnecessary movements are avoided.
- To relieve EB, warm and cool compress application, usage of foam bed, underpinned pillow and brace are recommended.
- She is assured of receiving a warm shower in the morning.
- Leisure activities are directed to.
- Relaxation techniques are taught.
- Daily rest periods are planned.

Evaluation: EB stated that pain was reduced, pain severity score VAS: 2.

2. Behaviour: İnsomnia

Focal stimuli: Hemodialysis Treatment

Contextual stimuli: To sleep during the day

Residual stimuli: Patients believe that individuals need to constantly lie

Nursing diagnose: Disturbed sleep pattern

Goal: EB ensure uninterrupted night's sleep and rest

Nursing Activities:

- Determine an individual's sleep patterns and habits.
- The disturbance of her sleep is tried to be avoided.
- The patient's sleep during the day in order to sleep at night is provided.
- Individuals dealing with different activities during the day will be provided.
- Provide a secure environment for patients.
- She is encouraged to state her fears and solutions are tried to be found.
- Sleeps facilitating activities are taught (relaxation exercises, warm milk, warm baths, etc.)
- Caffeine-free diet consisting of foods and drinks list is provided.

Evaluation: EB said good night's sleep.

3. Behaviour: Imbalanced nutrition

Focal stimuli: Hemodialysis Treatment

Contextual stimuli: Being of the patient's diet

Residual stimuli: Few believe that eating more healthy

Nursing diagnose: Imbalanced nutrition: less than body requirements

Goal: Appropriately-balanced nutrition diet provides sufficient

- Nursing Activities:
- Nutritional status is assessed.
- Diet is controlled.
- The factors that cause changes in nutrition are evaluated.
- She is explained that she has to keep away from nourishment that contains sodium and potassium with its reasons.
- A written training material is given to EB about her right nutrition.

Evaluation: She has told that she has so much misinformation about nutrition and she will correct them.

The Self-Concept–Group Identity Mode

4. Behaviour: Fear

Focal stimuli: Chronic disease

Contextual stimuli: Hemodialysis Treatment

Residual stimuli: The negative experiences that she had before

Nursing diagnose: Anxiety

Goal: Relieving her, by decreasing the nervousness and anxiety.

Nursing Activities:

- She is provided with the opportunity to state her feelings and thoughts about the disease and treatment.
- The old managing methods are evaluated, the suitable one is used.
- The caring is provided in a calm, supporting and secure way.
- The process is supported by liaison psychiatry when needed.
- Progressive relaxation exercises are done.

Evaluation: EB has stated that "life goes on. I need to put myself together for my children".

5. Behaviour: Being disturbed by the changes in the body image

Focal stimuli: Hemodialysis Treatment

Contextual stimuli: Changes in skin

Residual stimuli: The image of beauty in society

Nursing diagnose: Disturbed body image

Goal: Developing effective coping skills with the changes in the body image,

Nursing Activities:

- Sparing some time to EB, her perception is evaluated and supported for stating her opinions.
- She is encouraged to ask questions about the disease, treatment, healing process and prognosis and she is provided with the required information.
- She is given right and reliable information and the information given before is confirmed.
- She is trained to raise her self esteem.
- Assistance is given for defining old, effective managing mechanisms.
- If she needs psychological support, psychiatric consultation is demanded.
- Self-confidence is supported.

Evaluation: By defining the changes occured in her body image caused by her disease, EB has had positive statements about herself like "the changes in my skin do not disturb me anymore, I can look at the mirror with more self esteem".

Role Function Mode

6. Behaviour : Not being able to do the responsibilities at home,

Focal stimuli: Impaired physical mobility, fear

Contextual stimuli: Feeling tired after hemodialysis

Residual stimuli: That the patient believes that she is half human

Nursing diagnose: Ineffective role performance

Goal: EB can fulfill its responsibility to provide home life

Nursing Activities:

- With the illness period of EB, the changes in her family, work and social roles are evaluated.
- EB is allowed to express her opinions about role performance.
- EB is lead to make regulations according to the changes of role.
- A training is planned for EB about role planning.
- EB is supported to maintain the usual roles and the activities that she can do.

Evaluation: EB says that she will do the house cleaning by herself as much as she can.

7. Behaviour: Complaint about the reactions given by the family members

Focal stimuli: The reactions of the family members against the person.

Contextual stimuli: Chronic diseases

Residual stimuli: The fact that she believes that her family regards her as a burden.

Nursing diagnose: Interrupted family processes

Goal: EB's establish positive relationships with family members

Nursing Activities:

- It is provided that EB controls her own disease.
- She receives help to cope with the stressors of her disease.
- The family is supported to express their fears about the disease and its consequences.
- By using the right communication techniques, a platform is provided for the patient and her family to share and discuss their feelings.
- The burden of EB is lessened by sharing the missions that need to be done in the family, among the family members.
- Problem solving methods are taught.

Evaluation: EB stated that she had difficulties in her relationship with her family because of her disease.

Interdepence Mode

8. Behaviour: Disruption of communication with neighbors

Focal stimuli: Hemodialysis Treatment

Contextual stimuli: Fatigue experienced after a hemodialysis session

Residual stimuli: Their neighbors think they understand it

Nursing diagnose: Impaired social interaction

Goal: Increase social interaction

Nursing Activities:

- Individuals are encouraged to share their feelings.
- She is asked to define the cases that ruin the social communication.
- The ways of starting the social interaction with EB is discussed.
- EB is explained the significance of having some spare time activities that are suitable for her personal preferences.
- She is encouraged to try new social behaviors.

Evaluation: EB stated that she makes an effort to make plans with her neighbors in her spare time activities.

Result and recommendations

That the nurses use the theories and models particular to their field of occupation in their services to the families, individuals and society, helps to understand and comprehend the relationship between the basic concepts of nursing by taking the attention on them. By this way, nurses focus on their nursing role and practice.

In this case, the nursing care of the patient has been proceeded in accordance with the six steps (the evaluation of the behavior, the evaluation of the warning, nursing diagnosis, developing an aim, choosing the nursing attempts and evaluation) that are stated according to the adaptation fields that are defined in the Roy Adaptation Model of a person who receives the hemodialysis treatment. It has been observed that, with the nursing process that has been organized, in the hemodialysis treatment used for the treatment of chronical kidney failure which is a chronic disease, the nursing care that has been provided for the patient has been successful and has contributed to the adaptation of the individual. Accordingly it is possible to state that the Roy Adaptation Model is suitable to be applied to an individual who receives hemodialysis therapy.

For increasing the usage of the nursing models by clinic nurse, there is a need for them to be integrated in basic nursing and organizing in service trainings in health institutions. Articles and books that describe the models by sampling them with cases are needed as well.

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Knowledge and Attitudes towards Bystander Cardiopulmonary Resuscitation among Chinese University Freshmen

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Abstract

Introduction: Early bystander cardiopulmonary resuscitation (CPR) is essential for survival from out-of-hospital cardiac arrest (OHCA). Students who are bystanders may be important CPR providers.

Objective: To examine university students' knowledge and attitudes towards providing bystander CPR and explore effective training methods for this population.

Methods: A cross-sectional study was conducted among 300 freshmen from six majors of three non-medical universities in Xi'an China. Participants' knowledge and attitudes to performing bystander CPR and methods used to obtain the knowledge were assessed.

Results: A total of 97.3% of university freshmen sampled were willing to provide bystander CPR. About 36.3% freshmen had received more or less training in layperson CPR. The percentage of correct responses for the knowledge of emergency care in different situations varied from 22.7% to 84.4%. Only 6.8% to 48.8% freshmen knew some common knowledge of CPR. The major reasons for unwillingness to provide bystander CPR were poor knowledge or imperfect performance of CPR (65.4%), lack of confidence (48.5%) and legal concerns (23.2%). The main method for obtaining knowledge regarding CPR was via radio and TV (52.2%) and printed public materials (47.1%).

Conclusion: The majority of Chinese university students included in this sample was willing to provide bystander CPR. Lack of knowledge or confidence in performing CPR was common among them. Sufficient targeted CPR training developed by healthcare workers, including appropriate refresher courses, should be considered to increase survival from OHCA.

Key words: freshmen, bystander CPR, knowledge, health education, training

Introduction

Sudden out-of-hospital cardiac arrest (OHCA) is a leading cause of death throughout the world[1]. Survival from OHCA depends on the provision of appropriate emergency care immediately after the accident or medical emergency occurs. Emergency care, which constitutes life-saving treatments for traumatic injuries or unexpected illnesses, is important for every individual. To prevent further injury and reduce disability, it is essential that the victim receives timely and effective emergency care before the arrival of emergency medical services, especially in a resource-limited setting[2]. In 1990, WHO made an appeal that every citizen should learn one or two skills of life-saving emergency care. Immediate bystander cardiopulmonary resuscitation (CPR) is believed to be a major contributor to survival from OHCA[3-5], which can increase survival rates of OHCA victims by two to three times[6, 7], and is independently associated with "very good quality of life" for survivors[8]. Previous studies show the prevalence of bystander CPR is 28%-46%[7, 9]. This indicates that around a third of OHCA have a CPR attempt made on them. However, the effectiveness of this CPR is variable, and the studies suggest only around half of bystander CPR is performed correctly[10, 11]. Various endeavors have been made to improve the quality of CPR performed by bystanders[12, 13]. Healthcare professionals are making great

efforts to develop effective educational programs to improve the knowledge and performance of CPR for laypersons. However, the proportion of CPR-trained persons remains insufficient and the frequencies of immediate bystander CPR remain inadequate[9, 14, 15]. China is a country of 1.3 billion people, and as such is one of the most densely populated countries in the world[16]. However, only 0.01% of the Chinese public has participated in CPR training[17]. Lack of training cannot satisfy the demand of emergency care in such densely populated country. Furthermore, the Chinese public's knowledge and attitudes to performing CPR as bystanders remains unclear.

According to the literature, the willingness to perform CPR varies considerably among high school students in Japan[18] and New Zealand[19]. As a target group with high educational backgrounds, university students are expected to be thoroughly knowledgeable about CPR[20]. Till now, few studies have provided insight into the knowledge and skills of CPR among this population. To our knowledge, no study has been published that focuses on the ability of Chinese university freshmen to serve as laypersons who can provide CPR. A lack of insight of knowledge and attitudes regarding bystander CPR among university students becomes an obstacle for the healthcare workers to develop targeted education for this population.

To investigate knowledge of CPR and attitudes to providing bystander CPR among young Chinese, we examined university freshmen about knowledge and attitudes to providing bystander CPR, and methods used to obtain knowledge or skills of CPR. The study will help healthcare workers develop evidence-based strategies to facilitate awareness, knowledge and performance of CPR among students. Higher quality and willingness of bystander CPR is expected to increase survival rates and decrease further injury and disability rates of out-of-hospital emergency under the targeted intervention based on this study.

Methods

Design and sample

This was a cross-sectional study. It was conducted in Xi'an, a large city in northwest China.

In September 2012, thirty freshmen were surveyed for the pilot. Approximately 12%-30% of the freshmen in the pilot survey had some knowledge of emergency care regarding to different types of accidents or medical emergencies. The required sample size (N) was calculated to obtain a 95% confidence interval (α=.05) and was determined referring to the following formula which is commonly used in cross-sectional studies in epidemiology:

$$N = (1.96/d)^2 \times P_{exp} \times (1- P_{exp})$$

Here, d is the desired absolute precision. It was assumed that d=±4%. The range of the required sample size was between N_1=254 and N_2=504. N_1 was selected for this study. In anticipation that the final sample would include students who would not consent to participate, an additional 15% was added to this sample estimate. A total of 300 freshmen were recruited using the convenience and multi-stage sampling method. First, three non-medical universities were selected using a convenience sampling method. Second, two majors were randomly selected from each university, respectively. Third, fifty freshmen in the six selected majors were randomly recruited according to their order of last name.

The study was approved by the Institutional Review Board of Fourth Military Medical University. Anonymity and confidentiality were assured for all respondents. All students were informed of the study purpose, written consent was acquired.

Measures

The students were given a self-evaluation questionnaire.

The questionnaire was developed by Nursing School of Fourth Military Medical University. It was divided into four sections. In the first section, demographic data were collected (gender, age, major and whether they were the member of the Red Cross or not). In the second section, 16 questions were asked to assess the respondents' knowledge about CPR and emergency care of electric shock, active bleeding, falls and drowning before CPR performing. In the third and fourth sections, respondents' attitudes towards bystander CPR and methods for obtaining the knowledge or skills of CPR were assessed using 6 and 12 items, respectively. Of all items, the methods used to obtain knowledge and the reasons for unwillingness to provide bystander CPR were multiple choice que-

stions, and the knowledge related to CPR had a single-choice response option.

The data were gathered in the university orientation for freshmen in September 2012. Trained investigators, who worked at Nursing School, carried out the community survey using a structured questionnaire. After receiving written instructions, students completed questionnaires according to their current status and the questionnaires were then collected at the scene. If more than two items were not answered in the entire questionnaire, the questionnaire was considered invalid and was eliminated from the final analysis.

Statistical analysis

Data were loaded into Epidata3.1a database. The SPSS statistical package for social sciences software (version 17.0) was used for all data analysis. Descriptive statistics including frequencies, percentages, means and standard deviations (SD) were used.

Results

Sample demographic characteristics

The original sample contained 300 freshmen. After removing 5 students whose questionnaires were not completed, data from295 participants remained with an effective rate of 98.3%. Of the 295 participants, there were 165 males and 130 females. The mean age was 18.7 years (range 17 ～22). The participants were all non-medical students. Fifteen students (5.1%) had registered to be members of the Red Cross.

General knowledge about emergency care before CPR performing

Table 1 presents the general knowledge of emergency care before CPR performing when freshmen were faced with different accidents or medical emergencies. The knowledge about emergency care varied among them. A total of 64.1% freshmen knew the critical time to rescue is within 4 minutes after sudden cardiac arrest. The percentage of respondents reporting the awareness of clearing victim's nose and mouth firstly after rescuing a drowning person was highest (84.4%). However, few of them (22.7%) knew how to address an emergency correctly such as handling active bleeding.

Table 1. Knowledge of emergency care before CPR performing among university freshmen (N=295)

Number	Items	Correct n (%)
1	The critical time for emergency care is within 12 hours after an accident injury	88(29.8)
2	The critical time to rescue is within 4 minutes after sudden cardiac arrest	189(64.1)
3	The most effective method for stopping active bleeding	67(22.7)
4	Emergency care to an unconscious patient after a sudden fall	187 (63.4)
5	The method of moving the wounded away from the high voltage area after electric shock	192(65.1)
6	The method of clearing victim's nose and mouth when rescuing a drowning person	249(84.4)

Knowledge of CPR

Table 2 shows freshmen's knowledge of CPR. CPR occupies an important position on the scene of an emergency. Of the 295 participants, 107(36.3%) of freshmen had accepted more or less training in layperson CPR. The percentage of correct responses for main signs of sudden cardiac arrest, the predictors of successful CPR and the method of artificial respiration was 66.4%, 59.0% and 48.8%, respectively. Only 20 (6.8%) students knew the appropriate depth of chest compressions and 46 (15.6%) knew what to do to initiate CPR.

Attitudes towards providing bystander CPR

As first witnesses of an accident or medical emergency, 192(65.1%) students were willing to provide bystander CPR, 95 (32.2%) would give a hand according to the circumstance of the emergency and 8(2.7%) would not offer help. The reasons for unwillingness to provide CPR were lack of knowledge or skills surrounding CPR (65.4%), having no confidence in their ability to perform CPR (48.5%) and legal concerns (23.2%).

When asked their opinions related to the phenomenon that a bystander gave a hand on the scene of an emergency but was later falsely charged by the rescued wounded or patient, 34.2% of the stu-

Table 2. Knowledge of CPR among university freshmen (N=295)

Number	Items	Correct n (%)
1	The depth of chest compressions	20(6.8)
2	What should be done to initiate CPR	46(15.6)
3	The speed of chest compressions	51(17.3)
4	The order of CPR	60(20.3)
5	The palm position during CPR chest compressions	65(22.0)
6	The method for checking arterial pulses	85(28.8)
7	The method for providing artificial respirations	144(48.8)
8	Signs of successful CPR	174(59.0)
9	Main sign for establishing heart arrest	196(66.4)
10	The importance of initiating immediate CPR	203(68.8)

dents responded that they were willing to provide CPR to a victim with cardiac arrest without hesitation, while over half (58.4%) of them would offer help after clearly assessing the situation or finding witnesses on the scene, and 7.4% of the respondents were unwilling to provide help.

Methods used to obtain CPR knowledge

Among the freshmen, the major methods identified to obtain CPR knowledge were radio and TV (52.2%), followed by receiving information from publicity materials (47.1%), newspapers or magazines (36.6%) and internet (35.6%). Only 3.4% to 4.7% of students obtained CPR knowledge through mandatory or elective courses in school. The majority (95.3%) expected to get systematic training on CPR from healthcare professionals.

Discussion

This study showed that university freshmen in China do not possess sufficient CPR knowledge. Few of them knew how to address a common emergency correctly such as active bleeding (22.7%). With regard to the emergency care, Eisenburger and Safar have recommended that life-supporting first aid (LSFA) should be part of basic health education and that "all fit laypersons above the age of 10" should learn LSFA-skills including basic life support (BLS) and CPR.[21] However, only 6.8%-48.8% of freshmen surveyed knew some common knowledge about basic life-saving CPR. The findings suggest it is imperative for them to learn more about CPR and other emergency care skills. With increased knowledge and skills, when they encounter an accident or witness someone in a life-threatening situation, appropriate emergency care could be rendered in timely way. In 2011, there were 6815, 000 university and college freshmen in China. For such a large group, effective training on CPR is very necessary to be strategically developed by healthcare workers of the university. These targeted training on CPR, along with their professional courses study in the university, were expected to greatly improve this population's knowledge and performance of emergency care. As a virtuous circle, such improvement may bring a positive impact on CPR training among students at various education levels.

Regarding the attitudes to providing bystander CPR, a total of 97.3% freshmen were found to be willing to provide it. Regretfully, only 36.3% of them had participated in CPR related training. The results indicate that the top barrier to performing bystander CPR among freshmen was a lack of training rather than a lack of willingness to do so. Lack of knowledge and skills led to inadequate preparation for CPR among the students surveyed. In recent years, there has been growing evidence that the knowledge and ability of CPR among the public has been increasing. In New Zealand, 74% of residents had ever been CPR trained.[22] In Sweden, 45% had accepted CPR training.[23] In the United States, the American Red Cross (ARC) provides first aid courses by trained instructors to about 12 million citizens per year, and the American Heart Association (AHA) has given CPR-BLS courses to approximately 5.5 million citizens per

year.[21] In contrast, the proportion of the Chinese public who had received systematic CPR training has been reported to be only 0.01%.[13] A large gap exists between CPR training provided in China and that of other countries.[21-23] The results suggest the need to improve Chinese public training in life-saving CPR is very urgent. For university students, opportunities should be created to integrate knowledge of emergency care into current curriculums to facilitate opportunities for them to become well-trained CPR bystanders.

Of the respondents who declined to provide bystander CPR, the majority stated 'poor knowledge or imperfect performance of CPR', 'lack of confidence' and 'being afraid of potential legal consequences' as deciding factors. The results were consistent with the reasons why laypersons were reluctant to perform CPR.[24-27] One of the reasons for the discrepancy in willingness to provide bystander CPR and lack of confidence among university students was likely to be derived from inadequate training.[20] The major methods identified to obtain CPR knowledge among freshmen were radio and TV, followed by receiving information from publicity materials, newspaper or magazine and internet. Hamasu et al. reported that effective BLS training increased laypersons' confidence and willingness to perform bystander CPR on cardiac arrest victims.[28] Emergency care should be given by trained individuals who are closest to the scene of the emergency. Notably, Only 3.4% to 4.7% of respondents in our sample reported obtaining knowledge about CPR through standard training in their compulsory or elective courses. Two reasons have been elucidated for them not choosing traditional lectures as their preferred way to obtain CPR knowledge.[17] First, the traditional teaching methods lacked appeal and were unable to cultivate students' interest in the topic area. Second, no courses on CPR were offered in most of the universities. In the study, 95.3% respondents showed the expectation to get systematic training on CPR from healthcare professionals. The results suggest effective training through compulsory or elective courses should be considered for university students to obtain the knowledge and skills of CPR. Individualized and innovative teaching methods that include interactive scenarios and simulation should be encouraged to develop future training by healthcare professionals.

In recent years, Chinese media described several incidents where a bystander provided emergency care on the scene of an accident or medical emergency and was later falsely charged by the rescued wounded or patient. This publicity negatively influenced public's attitudes towards emergency care. When asked their opinions related to this scenario, 92.6% freshmen responded that they would provide bystander CPR to a victim with cardiac arrest. It is well established that early initiation of bystander emergency care is essential to improve survival in out-of-hospital accident greatly.[29] Every layperson including university student has the potential to be the first person on the scene of an emergency. It is very gratifying to see that the majority of freshmen were not influenced by the media describing the undesirable phenomenon. Among the freshmen surveyed, 7.4% of them were unwilling to offer help in an emergency. This reluctance was also due to the desire to avoid potential legal consequences to some extent. Awareness of exemption clauses for the layperson providing emergency care has been shown to be closely associated with willingness to attempt emergency care.[30] In some countries such as France, German, Canada, U.S. and Singapore, adults with the capacity to provide emergency care are expected to assist others at the scene of an emergency. Consistent with these countries, laypersons are encouraged to provide emergency care in General Rule of Civil Law in China. However, there is no specific law related to it. The findings suggest measures to protect laypersons who provide care during an emergency should be further encouraged in China. Additionally, CPR knowledge and skills should be widely publicized among students at various education levels to improve their ability and confidence to perform bystander CPR.

Conclusion

The majority of Chinese university students included in this study was willing to provide bystander CPR. Lack of knowledge or confidence in performing CPR was common among them. Sufficient targeted training in the university, including appropriate refresher courses, could contribute to increased survival from OHCA. The development of effective educational program can be based on the results of this study as well as further studies.

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The effect of lower extremity exercises and water drinking in preventing vasovagal reaction Prevention of vasovagal reactions during blood donation

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Abstract

Objective: Blood donors willingly give their time and blood to help patients. Advancing blood donor safety is therefore crucial in maintaining an adequate supply of donated blood and is the task of blood collectors. Although on the whole blood donation is considered safe, certain donors may experience reactions during and/or after blood donation. In this study the complications occurring during blood donation, along with the practices which would help to reduce these, have been researched. The research was performed with the aim of examining the effect of pre-donation water intake, leg exercise, water intake plus leg exercise, and crossing of the legs on the prevention of vasovagal reactions.

Methods: The sample consisted of 300 healthy individuals who were selected by block randomization. A significant difference was found between the mean Blood Donation Reactions Inventory (BDRI) points and Symptom Questionnaire (SQ) points immediately after donation and 24 hours after donation in donors in all groups.

Results: At least one of the symptoms located in the BDRI scale appeared in 31% of all donors. Of symptoms on the BDRI scale, fainting was developed in 9.3% of all donors and fatigue in 22.3%, while dizziness was experienced in 15.3% of donors and drowsiness in 23%, which are presyncopal symptoms. Systolic and diastolic blood was reduced after donation in donors in all groups.

Interpretation: BDRI and SQ scores indicated no significant differences between the groups. Compared to other groups, there has been less decrease on the blood pressure value in the group of water + leg exercise and taking its statistically seen significance ($p<0.05$) into account, it has been suggested that the intervention can be beneficial on the prevention of reaction development. That the making of research in different sample groups has also been suggested.

Key Words: vasovagal reaction, donor, donation

Introduction

Blood transfusion is a widely used life-saving measure [3]. A donor's first experience of donating blood has important consequences with regard to their becoming a regular, repeat donor [18]. The probability of donors coming back for further blood donations increases in parallel to the reduction in negative effects during the first donation [23]. Indeed, the fact that efforts to avoid negative manifestations during blood donation play an important role in attracting and retaining potential donors cannot be ignored: such manifestations, however slight they may be, are directly correlated with a reluctance to continue blood donation [19]. Meeting the need for blood products is dependent on the existence of healthy volunteers and their continued willingness and availability to donate [10]. Some of donors have adverse physical event during or after donation [8, 19,21,27]. Vasovagal reaction (VVR) is a common advers event of blood donation [1].

Vasovagal reactions may develop which can be defined as any, or the combination of, the following: dizziness, asthenia, sweating, anxiety, palpitations, pallor, hypotension and bradycardia. These can occur immediately or shortly after blood transfusion. These complications, the severity of which varies during or following the operation, result in the reduction the number of new, reliable and matching donors. This, in turn, reduces the blood donation rate [1,5,6,8,9,10,13] leading to difficul-

ties in meeting the relentlessly increasing demand for blood [19].

Water intake before blood donation has been proposed as a simple and effective way to prevent VVR [1,15,22]. Additionally, tension in the whole body, isometric arm exercises, and tension specifically of the leg, abdomen and thigh muscles by crossing one's legs have been documented as efficient maneuvers in the countering of an impending malaise of vasovagal origin [3]. The efficacy of keeping one's legs crossed during a blood donation to prevent vasovagal reactions is, however, unknown. No such study has, to our knowledge, been reported in this country. Research related to this topic has examined procedures that might potentally minimize complications, especially VVR due to donation. Researchers have investigated the effect on reducing VVR due to donation in adults of muscle tension [6,13], pre-donation hydration and muscle tension combine [13], leg crossing with muscle tension [16], water drink [16,23].

Measures to prevent complications related to blood donation are highly significant because, as noted, they influence the ratio of habitual donors (to one-off donors) and the ability to meet the need for transfusions in our society.

The aim of this study was to examine the effect of pre-donation water intake, leg exercise, water intake coupled with leg exercise, and the crossing of legs on the prevention of VVR and to examine state anxiety, blood-injection phobia and possible reactions which are related to development of VVR.

Participants and methods

This study was conducted in the Antalya Blood Center of the Red Crescent Western Mediterranean Area. The study data were collected between January 1st and December 28th, 2012. Individuals were required to respond to the general criteria specified in the 2011 National Blood and Blood Products Guide. First time donors aged 18-30 whose fitness to donate had been verified were included in the study.

According to the relevant method to be utisiled on the experimental research, simply the following criteria have been given for the sample dimension [4]:

- If a survey to be conducted in relationally genre, so the sample dimension must not be less than 30.
- Causal-comparative and experimental researches require that sample dimension is more than 50.
- On survey type researches, however, sample dimension must be 100 for each great subgroup located in the universe, for each small sub-group must be between 20–50.

According to the suggestions in this research stated above the sample dimension must be, as given criteria, at least 50. A power analysis has been carried out by means of the data obtained through the research; considering the level of significance as 0.05 basis according to the standard deviation, the strength of the research has been estimated together with STAI, BIPS, BDRI and SQ point averages as basic parameters of the research. In consequence of the analysis, the strength of the research has been assessed as follows: for STAI 0.70, BIPS 0.96, BDRI 0.93 and SQ 0.78.

Data collection procedure

Randomized Allocation

Donors were allotted by the restricted randomization method, using permuted blocks. Given that the institution statistics indicated that 6% of donors were female, ten women were recruited to each group.

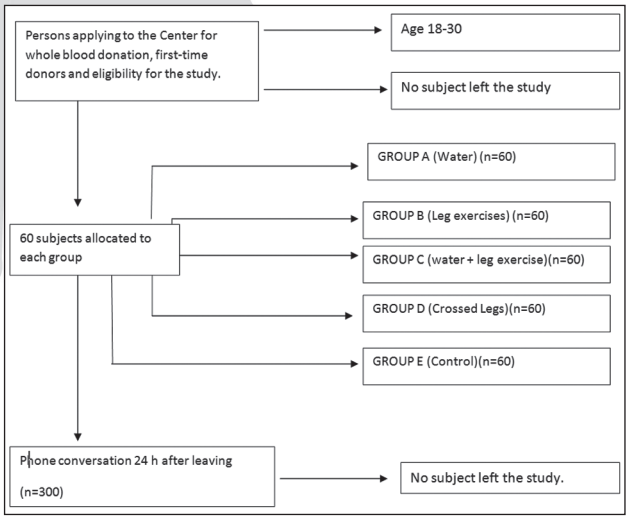

Figure 1. Consort schema

Donors were allocated to blocks of 10 with the following schemes: ABCDE, EABCD, DEABC, CDEAB, BCDEA, BACDE, CBADE, DCBAE, EDCBA, and CABDE. In the ABCDE block, the first donor was allocated to Group A, the second to Group B, the third to Group C, the fourth to Group D and the fifth to Group E, completing the first block. Each of the ten blocks was completed following the same method. Each group thus contained 60 subjects, to a total number of 300 subjects.

Persons applying to the Red Crescent Blood Center were asked to fill out the Blood Center Donor Application Form, after which blood was drawn for testing. The subjects' individual eligibility for donation was then evaluated by a physician.

Donors who fulfilled the study eligibility criteria, namely applying to donate blood for the first time and agreeing to take part in the study, were allocated to one of the five study groups.

- The water group was required to drink 500 ml of water fifteen minutes prior to their blood donation.
- The leg exercise group was informed that they would have to lift each leg by 30 cm, alternating from one leg to the other, and then immediately return it to the resting position every 10 seconds. They were made to perform this exercise for the duration of the donation under the investigator's supervision.
- The water plus leg exercise group were first given 500 ml of water to drink fifteen minutes prior to their blood donation, during which they were made to perform in the same way as the leg exercises group.
- The crossed legs group was asked to keep their legs crossed for the duration of the donation procedure.
- The control group performed the blood donation in the standard fashion.

Prior to donating blood, subjects in all groups were asked to fill out the Donor Information Form (DIF), the State-Trait Anxiety Inventory (STAI) and the Blood-Injection Phobia Scale (BIPS) form. The donors' heart rate and blood pressure were measured by the investigator prior to the blood donation. The donors rested for ten minutes, in the donation chair, following the end of the donation. The subjects' heart rate and blood pressure were measured again by the investigator before leaving the chair. They were then asked to fill out the Blood Donation Reactions Inventory (BDRI) and Symptom Questionnaire (SQ) forms following the procedure, while resting in the volunteer's area. All donors in the study were subsequently contacted by phone within 24 hours of the end of the operation. Forms were filled out by asking the donors if they had experienced the symptoms listed in the BDRI and SQ.

Ethical considerations

In order to conduct the study, written permissions were taken from Ege University High School of Nursing Ethical Committee, Akdeniz University Medical Faculty and Kızılay Blood Center together with the written consent from the included donors, after providing the donors with the necessary verbal and written information.

Data collection tools

1. Donor Information Form (DIF):

This form contains eleven questions regarding the donors' demographic data and characteristics related to past syncope experiences.

2. Blood Donation Reactions Inventory (BDRI)

The BDRI measures subjective presyncopal reactions to blood donation. The scale consists of 4 items: faintness, dizziness, weakness and lightheadedness. Each item is rated on a 5-point Likert scale. The reliability coefficient for the scale item scores was calculated to be 0.93. The total score is calculated by simple addition of the individual item scores, with a possible range of 0 to 20 points. High BDRI score indicate the subjective perception of strong presyncopal symptoms [12].

The validity and reliability study of the inventory in the Turkish language was performed on 532 donors prior to the main study. Cronbach's alpha was determined to be 0.93 and the split half reliability value was 0.91 for the BDRI.

3. State-Trait Anxiety Inventory (STAI)

The STAI was developed in order to assess anxiety in patients and healthy individuals/inclinical and healthy samples. The reliability coefficient established on normal subject and patient samples

is reported as varying between 0.83 and 0.87 [24]. The State Anxiety subscale of this inventory was used; Cronbach's alpha was found to be 0.70 in our study.

4. Symptom Questionnaire (SQ)

Developed by Page *et al.* (1996), this scale studying possible reactions consists of 17 items. One point is attributed for each response, with the total number of "yes" answers accounting for the total score for the scale. The validity and reliability study for this scale was performed by Kose and Mandıracıoglu (2007). Cronbach's alpha coefficient was found to be 0.87 for this scale [18]. Cronbach's alpha coefficient was found to be 0.78 in our study.

5. The Blood-Injection Phobia Scale (BIPS)

Developed in 2007 by Kose and Mandıracıoğlu, this scale includes 20 items. The 5-point Likert-type scale has a range of 20 to 100 points. Cronbach's alpha coefficient for this scale is 0.98. It is composed of two subscales, blood (0.96) and injection (0.97) [18]. Cronbach's alpha coefficient of the scale was 0.96 in our study.

Statistical Analysis

Analyses were managed with SPSS 18.0 (SPSS Inc., Chicago,IL, USA) Comparisons of measurements between 5 groups were analyzed with nonparametric Mann-Whitney U, Kruskal-Wallis and Wilcoxan Signed Ranks tests. The significance level was 5% ($p<0.05$). Analyses of variance were conducted to compare the groups on continuous, nonparametric tests were conducted for variables that were not normally distributed.

Results

By being gender randomized, the donors have been received into the research groups. The donors belonging to resonance and control groups have been evaluated prior to the comparison in terms of dependent parameters (age, marital status, profession), social and demographic features and past syncope experience so as to determine whether they are similar or not, and the confounding factors, which can have influence upon dependent parameters, have been aimed to remove. At the comparison of socio demographic and past syncope experience features between the donors belonging to resonance and control groups chi squared (χ^2) analysis has been conducted and $p>0.05$ measure criteria acknowledged. Seen from a statistical perspective, there is no significant difference in terms of all the features regarding socio demographic and past syncope experience between the donors belonging to resonance and control groups; the groups are homogeneous ($p>0.05$).

The mean age of donors 20.27±2.39, 97% of the subjects in the study were unmarried. This was the case for 98.3% of those in the control group and 96.7% of subjects in the four treatment groups. Of the donors, 63% were students, 27% were self-employed and 10% were company employees.

While 13.7% of the donors had previously experienced a syncope, 21.3% knew of a first-degree relative who had had one. Of these donors, 2.4% only had this syncope during a blood draw for a lab test, with 4.9% experiencing a syncope at the sight of blood.

STAI, BIPS, BDRI and SQ scores

Means and standard deviations for donor ratios of pre-donation anxiety, blood-injection phobia are provided in Table 1. According to the Kruskal-Wallis test, there were significant differences between the groups in terms of pre-donation anxiety ($p<0.05$). BIPS score no significant differences between the groups (Table 1). Similar to the BDRI and SQ scores indicated no significant differences between the groups (Table 2).

Reactions experienced by the donors during, and 24 hours after, the blood donation

Symptoms listed in the BDRI for all donors during the donation were experienced in 31 % of the study population. The most widely distributed symptoms among those listed in the BDRI by severity were weakness (13%) and lightheadedness (15%), both mild in degree, across all groups. When evaluating the BDRI faintness symptom for severity, it was found to be present, to a mild degree, in 8.3% of donors in the crossed legs group. Fainting was present to an excessive degree in one donor in each of the leg exercise and in the control groups. Of all the donors who reported any reaction 24 hours after the donation (n=30), 70%

Table 1. Donors' mean scores State-Trait Anxiety Inventory (STAI) and Blood Injection Phobia Scale (BIPS)

Scales	Scale point range	Water (n = 60)		Leg Exercise (n = 60)		Water+Leg exercises (n = 60)		Leg Crossing (n = 60)		Control (n = 60)	
		X	SD	X	SD	X	SD	X	SD	X	SD
STAI	(20-80)	30.28	7.927	28	6.734	30.86	9.261	27.33	6.215	30.05	6.416
x^2 =9.973, P=0.041											
BIFS	(20-100)	68.51	11.817	66.73	12.043	64.98	13.938	68.73	12.730	68.18	13.517
x^2 =3.937, p=0.415											

Table 2. Distribution of Mean Scores of Blood Donation Reactions Inventory and Symptom Questionnaire During Donation and 24 Hours Thereafter

Scales (Scale point range)	*Water (n = 60)*		*Leg Exercise (n = 60)*		*Water+Leg exercises (n = 60)*		*Leg Crossing (n = 60)*		*Control (n = 60)*	
Blood Donation Reactions Inventory (0-20)										
	X	*SD*	*X*	*SD*	*X*	*SD*	*X*	*SD*	*X*	*SD*
During donation	0.75	1.781	1.38	3.314	0.83	2.009	1.30	2.539	1.53	3.562
x^2 =1.943, p=0.746										
24 hours thereafter	0.16	1.666	0.31	1.359	0.25	1.018	0.21	0.865	0.11	0.415
	z= -3.011 p=0.003		z= -2.544 p=0.011		z= -2.446 p=0.014		z= -3.613 p=0.000		z= -3.482 p= 0.000	
***Symptom Questionnaire* (0-17)**										
During donation	0.83	1.553	1.58	2.272	0.83	1.474	1.21	2.116	1.13	1.943
x^2 =3.520, p=0.475										
24 hours thereafter	0.06_	0.381	0.10	0.476	0.06	0.362	0.06	0.251	0.05	0.286
	z= -4.080 p=0.000		z= -4.505 p=0.000		z= -4.144 p=0.000		z= -4.322 p=0.000		z= -4.259 p=0.000	

(n=21) reported weakness, 13.3% (n=4) faintness and dizziness, and 10% (n=3) lightheadedness. When evaluating donor groups according to average BDRI score during and 24 hours after their donation, symptom reduction ratios were 0.59 in the water group, 1.07 in the leg exercise group, 0.58 in the water plus leg exercise group, 0.09 in the crossed legs group and 1.42 in the control group (Table 2).

The most frequently experienced symptoms listed in the SQ for all donors during the donation were numbness (in the arm) in 30.3% (n=91), hot flashes in 15% (n=45), dizziness in 12.3% (n=37) and sweating in 10.7% (n=32). Symptoms listed in the SQ were also checked 24 hours later; one subject presented a sensation of coldness, while sweating and nausea were present in three subjects each, faintness in four and numbness of the arm in two. When evaluating donor groups by average SQ score during and 24 hours after their donation, symptom reduction ratios were 1.48 in the leg exercise group, 0.77 in the water plus leg exercise group, 1.15 in the crossed legs group and 1.08 in the control group.

It has been determined that while the pre-donation average pulse velocity of the donors is 78.046±7.057, the post-donation is 80.986±8.615. The intergroup difference has been found as statistically non-significant (p>0.05). It has been determined that while the pre-donation average systolic

blood pressure of donors is 113.650±10.236, the post-donation is 103.016±13.921; while the average diastolic blood pressure is 72.116±7.646, the post-donation is 70.000±8.840. Seen from a statistical perspective, the difference in terms of the average systolic and diastolic blood pressure between the donor groups has been found as significant.

Discussion

Seen from a statistical perspective, even though no significant difference has been found in terms of age ranges among the five groups (x=1.68, p0.05), the spaciousness of group interval may have affected the outcomes. Being woman is one of the factors related to the frequency of development of higher VVR [1]. The outcomes of the research may have been affected by the fact that in contrast to the presence of larger number of male donors, each group has been given 10 women (due to small number of female donors).

Pre-donation anxiety may cause negative feelings, including emotional expectations about the act of blood donation, reactions of repulsion at seeing blood and fear of pain [23]. Studies performed by applying measures to prevent state and trait anxiety have confirmed that continuous anxiety and worrying are related to a higher level of negative reactions during the blood donation procedure. Published reports indicate that such reactions are more frequently encountered in first-time donors in comparison to experienced subjects [1,7,10,13,19,23]. This is associated with the higher anxiety levels of first time donors when compared to experienced donors. The control group donors' pre-donation mean state anxiety score was higher than that of the crossed legs and leg exercise groups, and that the score of the crossed legs group donors was lower than that of the water plus leg exercise group. The first-time donors who made up our study population were found to experience a "mild" level of anxiety before their blood donation. Analysis showed that the control group donors' pre-donation mean state anxiety score was at its highest level, higher than that of both the crossed legs and the leg exercise group scores. The lower state anxiety level seen in the crossed legs and the leg exercise groups may be related to a feeling that precautions to prevent anything untoward from happening would be in place, a feeling acquired during the informed consent process. Blood injection injury phobia is characterized by an illogical, permanent and excessive fear of blood, wounds, injections, maiming and similar stimuli. Blood injection injury phobia differs from other phobias; 75-80% of the patients respond to the stimulus by fainting / experiencing vagal syncope [14]. It is accepted in the USA that the main reason for refusal by 95% of prospective donors eligible for donation is fear of the needle, as much as that of adverse reactions such as fainting, nausea, dizziness or lightheadedness [23].

Our study found no significant difference in BIPS score means among groups at the pre-donation stage. No significant differences were found among post donation groups in either BDRI or in SQ scores (Table 1).

Although it has been obtained 0.93 strength on the research according to the BDRI criteria, the outcomes may have been affected by the sample quantity due to the high infrequency of VVR. It has been found out that the BDR point averages of individuals belonging to the groups of water (0.75) and water + leg exercise (0.83) have been lower than the other 3 groups, yet this difference has statistically no significance. That the point averages have been low in both groups, in which water intervention has been made, suggests that the uptake of water prior to the donation can have influence upon reducing reactions. The researches [15,22] analysing the influence of uptake of water prior to blood donation on experiencing vasovagal reaction at the time of the blood donation have suggested that acute water uptake have beneficial effect on donation reactions. Nevertheless, water alone has cardiovascular effects in both normal and diseased humans. The mechanisms of the pressor response, especially in autonomic failure, continue to be debated.

It was suggested that pressor effect may be of benefit in preventing or reducing postural, post-prandial and exercise-induced hytension [20]. In the present study, 31% of all donors experienced at least one of the symptoms listed in the BDRI scale. The pre-syncopal symptoms of dizziness and lightheadedness occurred in approximately 1/5 of our donors. Studies show that the factors of young age, the female sex of the donors, the procedure being their first experience, and a

Table 3. Donors' Heart Rate and Their Systolic and Diastolic Blood Pressure Before Donation and After Donation

GROUPS	Water (n=60)		Leg Exercise (n=60)		Water+Leg Exercises (n=60)		Leg Crossing (n=60)		Control (n=60)		Statistical Analysis (Kruskal-Wallis)
	Before Donation	After Donation	Before Donation	After Donation	Before Donation	After Donation	Before Donation	After Donation	Before Donation	After Donation	
	X±SD	X±SD	X±SD	X±SD	X±SD	X±SD	X±SD	X±SD	X±SD	X±SD	
Heart Rate	78.9±7.9	81.6±9.2	78.5±6.4	82.8±7.8	77.2±7.0	81.6±8.4	78.4±7.2	80.0±9.3	77.1±6.4	78.8±7.7	KW=4.068 P=0.397
Systolic Blood Pressure	113.3±9.3	104.3±12.7	115.5±11.0	103.0±13.4	113.0±11.2	107.0±14.2	114±9.8	100.4±14.5	112.4±9.4	100.3±13.9	KW=10.946 P=0.027
Diastolic Blood Pressure	71.5±7.6	63.3±8.9	71.8±8.2	61.3±7.0	70.9±7.2	65.8±9.2	73.2±7.5	60.6±9.5	73.0±7.4	60.5±8.3	KW=21.001 P=0.000

lower than expected blood volume, are related to a higher frequency of VVR [1,7,17,29]. The fact that the present study was performed in a subject population of high-risk, first-time donors in mostly younger age groups may explain such findings.

The analysis performed to compare the BDRI and SQ score means for all groups immediately following the donation with the one 24 hours later showed a significant difference for donors in all five groups. The highest reduction was seen in the leg exercise group (1.48), whereas the smallest in the water plus leg exercise group (0.7). It has been suggested that nearly 10% of outer scope vasovagal syncopes (vvs) have developed subsequent to donor's leaving the bloodletting area [2]. These reactions are important since they are related rather to the wounding than inner scope reactions. Outer scope syncope has come out in less than 5 hours subsequent to removal of injection. Since the problems, apart from syncope, experienced even in a slight level, have negative effects on blood redonation; hematoma, weakness, exhaustion etc. Determination of the VVS ratio of outer scope depends on the voluntary notification made by donors. As there is no active post-donation follow-up related to donors, we did not want to overlook this data on our research. Aside from that, there is no research in the nomenclature available, which examines the effects developed subsequent to donor's leaving the bloodletting area and the effects of conducted interventions on vasovagal reactions. Yet, the utilising of different measuring methods may have led to bias sourcing from data over the decrease that based on comparison of survey points subsequent to donation and within the following 24 hours. This situation can be considered as the deficient aspect of the research. The consultation carried out with donors after 24 hours has suggested that any of the symptoms on the scale experienced by donors as follows; 4 out of 30 donors have experienced fainting syndrome with the intensity (13.3%) of 1-3. Donors were questioned 24 hours after a full blood donation about the symptoms listed in the SQ. A reaction had developed in 4.66% of the donors.

Changes in heart rate and systolic and diastolic blood pressure, before and after blood donation

A vasovagal reaction is an autonomous nervous system reflex that causes both arteriolar dilatation and inappropriate slowing of the heart rate. A high pre-donation heart rate has been proposed as a hemodynamic risk factor for the development of VVR [1,7,29]. The present study evaluated the changes in the donors' heart rate and their systolic and diastolic blood pressure (Table 3). The difference between the pre-donation and post-donation average heart rate for all patients was not found to be significant. One previous study indicated that a low heart rate before donation may be correlated with a reduced risk of adverse effects [29].

The effect of muscular tension, used in several studies to prevent VVR [8,9,25,28], is based on increasing blood pressure and the cerebral circulation. The difference between mean blood pressure at baseline and that immediately after donation was found to be significant when considering all patients. The reduction in blood pressure means in the leg exercise group, crossed legs group and the control group was superior to that of the water plus leg exercise group.

Hydration and muscle exercise have provided with the increase of blood pressure through various physiologic mechanisms [16,28]. Compared to other groups, there has been less decrease on the blood pressure value in the group of water + leg exercise and taking its statistically seen significance ($p<0.05$) into account, it has been suggested that the intervention can be beneficial on the prevention of reaction development. One study on the effect of water intake and the lifting of legs on presyncopal reaction development during blood donation showed that hydration combined with leg exercise reduced VVR in first-time donors [13].

No vasovagal reaction necessitating medical intervention, or hospitalization requiring a physician's intervention occurred. Such a result may be related to the good physical and psychological atmosphere in the blood centers, the appropriate measures by team members to reduce risk, and especially to the intense effort shown in defining specific issues to the donors.

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Abstract

In this paper the instructions for preparing camera ready paper for the Journal are given. The recommended, but not limited text processor is Microsoft Word. Insert an abstract of 50-100 words, giving a brief account of the most relevant aspects of the paper. It is recommended to use up to 5 key words.

Key words: Camera ready paper, Journal.

Introduction

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Instructions for the authors

Times New Roman 12 points font should be used for normal text. Manuscript have to be prepared in a two column separated by 5 mm. The margins for A4 (210×297 mm2) paper are given in Table 1.

Table 1. Page layout description

Paper size	A4
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Regular paper may be divided in a number of sections. Section titles (including references and acknowledgement) should be typed using 12 pt fonts with **bold** option. For numbering use Times New Roman number. Sections can be split in subsection, which should be typed 12 pt *Italic* option. Figures should be one column wide. If it is impossible to place figure in one column, two column wide figures is allowed. Each figure must have a caption under the figure. Figures must be a resolution of 300 DPI, saved in TIFF format, width 10 cm min. For the figure captions 12 pt *Italic* font should be used. (1)

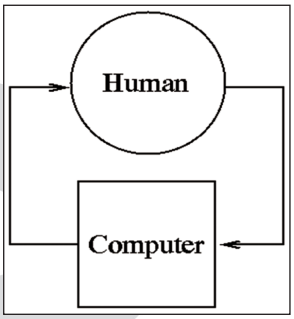

Figure 1. Text here

Conclusion

Be brief and give most important conclusion from your paper. Do not use equations and figures here.

Acknowledgements (If any)

These and the Reference headings are in bold but have no numbers.

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