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Correlation Between Shift Work and Psychological Problems among Hospitals Personnel of Ardabil University of Medical Science

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Abstract: Working in the from of shift works especially with irregular circulation derange the circadian rhythms of human body, that this derangement has a close relation with' aggravation of depression's sign and other psychological problems. So shift work can be propounded as a risk factor of psychological problems creation. This study has been executed to determine relation between shift work and psychological problems among hospital's personnel of Ardabil University of Medical science. This study is a retrospective case-control one and has been executed on 388 person of personnel of hospitals of Ardabil University of Medical Science (223 as case group and 65 as control group), that has been selected randomly. Requisite information were collected with three questionnaires. Including General Health Questionnaire (GHQ), personal questionnaire and standardized sleep state evaluation questionnaire and were analyzed by SPSS statistical software. Chi-square and analysis of variance tests were used to test investigation's hypothesis. In evaluation of general relation between shift work and prevalence of psychological problems no meaningful relation was found, but with renewed encoding and psychological problems determining, meaningful relation were found between these problems such as somatoform signs ($p<0.005$) anxiety ($p<0.019$) social action disorder ($p<0.001$) and depression ($p<0.019$) and shift work. At the same time result of comparison of sleep state in the case and control group showed that in all items s1sep1 taking nap throughout day, there is meaningful difference between two case and control group and this difference show that more sleep problems is found in case group as compared with control group. Also, meaningful relations were seen between record of service and prevalence of mentioned problems ($p<0.001$). According to obtained results in this survey and meaningful relation between prevalence of psychological problems and shift work, in hospitals that has been studied, it is advised to reform irregular circulation of shift Work in hospitals and with due attention to work conditions of any hospital, a sought after shift work system be executed.

Key words: Shift work, psychological problems, circadian rhythms, shift work in hospitals

INTRODUCTION

Nowadays, 24 h jobs are more common because of the economic causes and technologic advances. Every work performed regularly out of daily work time period is called shifting work (Atkinson, 1990). Working out of mentioned period results in problems in circadian cycles of the human body. Therefore, it is completely obvious that the people who work in such conditions will experience physical, mental, social and familial problems in long-term periods. On the other hand, this may result in functional problems of the people at work and reduce their efficiency. Thus, a research is needed to evaluate the harmful effects of the shifting work. A study was designed to evaluate the psychological problems of the personnel of the hospitals in affiliation with the Ardabil University of Medical Sciences.

MATERIALS AND METHODS

In this retrospective case-control study, the personnel of the Fatemi, Alavi and Ali-Asghar hospitals (In affiliation with the Ardabil University of Medical Sciences) were evaluated. They worked in two types of shifting and non-shifting. The case group included the people who worked in shifts (night posts and turning shifts) and the control group included the people with the fixed time of the work or morning and afternoon shifts. The needed sample size was measured to be 384 people by Cochrane test. The data were collected using relative stratified sampling. A total of 223 and 165 people were considered as case and control groups, respectively. Three questionnaires including General Health Questionnaire (GHQ), standardized questionnaire for the evaluation of sleeping and the self-made questionnaire

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(by the author) were used. Designing the latter questionnaire was performed by the measurement techniques, the definition of the variables and the measuring instruments. The data were collected, coded and analyzed using SPSS software. The data analysis was performed by chi-square and one-way variance test.

RESULTS

In the case group, the most common age range was 20-25 years and in the control group, it was 36 to 40 years. Most of them were married. At first, results showed that there is no significant relation between shift work and prevalence of psychological problems. However after determining psychological problems types that there is significant difference between case and control in physical symptoms ($p<0.005$), anxiety ($p<0.019$), problems in social acts ($p<0.001$) and depression ($p<0.019$) and were more common in the case group (Table 1).

One of the most important effects of the working in shifts is its effect on the quality of sleeping. This variable was evaluated by the questionnaire of sleeping. According to our results, there is significant difference in the quality of sleeping in the case and control groups.

One of the major shift work's effects is its effect on sleeping state. Sleep state questionnaire was used to study this subject. According to results, there were significant differences between case and control groups in all aspects of sleeping save drowsiness during day.

The one-way variance test was used to evaluate the psychological problems of the night workers of night shifts and its comparison with workers of day shifts and no significant difference was found between them in this regard (Table 2). Some of the demographic characteristics may have a background or confounding role. Age, sex and marital status were evaluated and compared in the case and control groups and a significant relation was found between the marital status and mental problems ($p<.001$) but not with the age and sex (Table 3 to 5).

Also, a significant relation was found between the psycho logic problems and some job characteristics including the history of working ($p<.001$) and the type of the work ($p<.009$) but not with the place of the work (Table 6-8).

Table 1: Average scores in groups of psychological problems

Group Psychiatric disorders	Case	Control	F	Sig
A = Physical signs	4.9	6.57	7.93	0.005
B = Anxiety	5.12	6.56	5.5	0.019
C = Social act disorders	4.49	6.34	14.4	0.001
D = Depression	3.64	4.7	5.5	0.019

Table 2: Results of sleep state analysis and chi-square test

	Case		Control		
Group Sleep state	Yes	No	Yes	No	Chi-square results
Feeling sleepy during day	(162)73.6	(58)26.4	(93)56.4	(72)43.6	p<0.02
Drowsiness in day	(112)50.9	(108)49.1	(83)50.3	(82)49.7	NS
Problems in sleeping	(164)74.5	(56)25.5	(60)36.4	(104)63	p<0.03
Waking up during night	(134)60.9	(86)39.1	(61)37.2	(103)62.8	p<0.02
Early morning awaking	(124)56.4	(96)43.6	(66)40	(99)60	p<0.001
Using sedatives	(192)87.3	(28)12.7	(106)64.5	(59)35.5	p<0.03

Table 3: Numbers of samples in age separated groups (case and control)

Age rang group	Case	Control
20-25	95	6
26-30	60	28
31-35	31	34
36-40	22	50
Over40	15	47
Total	223	165

Table 4: Numbers of patients and normal samples in marital state separated groups

	Case		Control	
Group Martial state	Normal	Patient	Normal	Patient
Single	(49)43.4	(37)34.3	(14)17.9	(2)2.3
Married	(46)56.6	(70)64.8	(64)82.1	(84)96.6
Divorced	-	(1)0.9	-	(1)1.1
Total	(113)100	(108)100	(78)100	(87)100

Table 5: Numbers of patients and normal samples in case and control with sex separation

	Case		Control	
Group Sex	Normal	Patient	Normal	Patient
Male	(39)34.5	(21)19.4	(27)34.6	(17)19.5
Female	(74)65.5	(87)80.6	(51)65.4	(70)80.5
Total	(113)100	(108)100	(78)100	(87)100

Table 6: Numbers of patients and normal samples in case and control groups with work history separation

	Case		Control	
Group Work precedent	Normal	Patient	Normal	Patient
Under 5 Years	(61)54	(58)53.7	(8)10.3	(5)5.7
5-10 Years	(26)23	(38)35.2	(29)37.2	(34)39.1
Over 10 Years	(26)23	(12)11.1	(41)52.6	(48)55.2
Total	(113)100	(108)100	(78)100	(87)100

Table 7: Numbers of patients and normal samples in case and control groups with work place separation

	Case		Control	
Group Work place	Normal	Patient	Normal	Patient
Fatemi hospital	(48)42.5	(21)19.4	(35)44.9	(21)24.1
Alavi hospital	(28)24.8	(21)28.7	(18)23.1	(26)19.9
Buali hospital	(37)32.7	(56)51.9	(25)32.1	(40)46
Total	(113)100	(108)100	(78)100	(87)100

Table 8: Numbers of patients and normal samples in case and control groups with work type separation

Group	Case		Control	
Work type	Normal	Patient	Normal	Patient
Nurse	(71)620.8	(74)68.5	(28)35.9	(26)29.9
Paramedic	(21)18.6	(19)17.6	(25)32.1	(39)44.8
Paramedic assistant	(8)7.1	(7)6.5	(16)20.5	(20)23
Anesthetist	(2)1.8	(2)1.9	-	-
Operation room	(3)2.7	-	(2)2.6	(1)1.1
Laboratory science	(2)1.8	-	(3)3.8	-
Midwife	(5)4.4	(6)5.6	(3)3.8	(1)1.1
Radiolgy	(1)0.9	-	(1)1.3	-
Total	(113)	(108)100	(78)100	(87)100

DISCUSSION

According to our results, the frequency of the physical problems, anxiety, social act problem and depression is more in the case group. That is, a significant relation exists between the working in shifts and physical problems ($p<0.005$; $F = 7.9$), anxiety ($p<0.019$; $F = 5.5$), problems in social act ($p<0.001$; $F = 14.4$) and depression ($p<0.019$; $F = 5.5$).This is in accordance with the previous results so due to the problems in the activity and awakening cycles in these people which accompany with more psychological problems especially depression (Jackson, 1998). Also, anxiety, depression, loss of concentration, and problems in circadian cycles are of the most important problems in these people (Atkinson, *et al*., 1998).

By evaluation of the sleeping in both case and control groups, it can be concluded that working in shifts has a direct effect in making problems in physiologic acts such as sleeping. In our study, the sleeping and awakening were evaluated and compared in the case and control groups and a significant difference was found between them regarding drowsiness at day ($p<0.02$), problems in sleeping ($p<0.03$), waking up during the night ($p<0.02$), early wake up ($p<0.001$) and the usage of sedatives ($p<0.03$) and working shifts. In a study performed by Jackson and colleagues in 1998, will for drugs, sleeping problems and loss of concentration were significantly increased. (Snape and Gawangh, 1998) In another study, the researchers stated problems in the quality of life as the first effect of the working in shifts and suggested that it might result in tiredness, anxiety, depression and cardiovascular and gastrointestinal problems (Horolod, 1998; OEM, 2001).

One of the most important findings in the prevalence of psychological problems was some individual or demographic characteristics including marital status, age and sex. According to our results, psychological problems have a relation with the marital status ($p<0.001$) and no relation with the age and sex. Gadbuis states that the familial and marital duties may be affected by working in shifts and include changes in the quality of caring (mostly in women) and social relations. In this study, it has been stated that women have more problems with this method of working because they have to do the house works, as well. Other studies are also in accordance with the findings of this study. In a study performed in France in 1981, it was revealed that age and experience play negative roles in this regard (Timothy and Simon, 1996). Also, it has been revealed that less than 20 % of these people continue this type of working until the retirement. According to the results of this study, the more are the years of service, the more are the psychologic problems ($p<0.001$) and incomplete adaptation in circadian cycles in these people. Other variables reviewed included the type of work which was known as a significant factor ($p<0.009$). The study Snop and colleagues is in accordance with these results and have stated that the job pressures, absence due to the work and physical problems have been more common in the nurses in comparison with other medical personnel (Venuta and Zaghi, 1999). Finally, we evaluated the relation between the place of the work and psychological problems in these people which was no significant. This may be due to the similarity of the working circumstances in all 3 hospitals of our study.

CONCLUSION

Confirming the relation between the working in shifts and problems in circadian cycles with the psychological problems is a difficult aim especially in retrospective studies because of the frequency of confounding variables. Other studies evaluating the psychological, cardiovascular and gastrointestinal problems in theses people are warranted. Since most of the people in the case group had irregular shifts and these shifts were proposed by the people themselves, it is recommended to determine a specific working system.

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