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Work Shift and its Effect on Nurses' Health and Welfare

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Abstract: Depending on the situation, different social and economic systems are forced to use their workforces in different work shifts. Nursing system is one of these systems in which the personnel working in wards and in particulars in need of work in different shifts. Work shift may have unwanted effects on different aspects of one's life. The present study has aimed at determination of the prevalence of problems pertinent to work shift in nurses working in Hamedan City, Iran. The descriptive cross-sectional study was carried out on 72 nurses working in different shifts at Hamedan hospitals. Survey of Shift workers (SOS) questionnaire was used for data gathering and the data was analyzed by SPSS16. Findings showed that the average age and work record of the participants were 30.45±7.04 and 7.19±6.82, respectively. Burnout disorder was observed as the most prevalent mental/psychological disorder in 55.6% (n = 40) of the participants; stomachache was the most prevalent digestive system disorder in 29.2% (n = 21) of the participants. Dyspnea (37.8%, n = 20) and heart palpitation (18.1%, n = 13) were the most prevalent cardiovascular disorders and pain in keens and legs (45.9%, n = 33) and backache (40.3%, n = 29) were the most prevalent in comparison to the other types of disorders. Results showed that work shift could act as a risk factor in development of physical and psychological disorders in nurses. This indicates necessity to take preventive measures. Therefore, it is recommended to introduce compulsory checkups for the shift personnel.

Key words: Work shift, nurses, Iran, SOS, average

INTRODUCTION

The definition of "work shift" is to carry out the work beyond the standard working hours (before 7 a.m. and after 6 p.m). Now a days, it is considered that a risk factor may have unwanted effects on different aspects of one's life (Fischer, 2004). Different social, service and economic systems impose work shifts
to their employees. Among them, nursing system is notable and the nurses are usually forced to work in rotating shifts. Health and treatment organizations are in charge with public health and providing health care services. Therefore, the service and its qualityare so important. On the other hand, dissatisfied employees are not expected to provide high quality services and poor quality of health services in turn, leads to dissatisfaction of the patients. In addition, professions like nursing, medicine and health care that somehow performed in hospital environments and need to be scheduled in rotating shifts. Peoples in these professions have to work overnight and spend long hours in hospitals. Different work shifts such as overnight shifts

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and overworks might lead to job dissatisfaction (Nazarpour *et al*., 2008). Work shifts reduce the performance, change the nutrition habits, increase the fatigue and insomnia, create health problems and problems in social and personal lives (Knauth, 2006). Work shifts induce long and short-term effects. In short term, sleep pattern, circadian rhythm, performance and immunity and social and personal lives are affected. In long term, digestive problems and heart diseases are notable (Rosa and Colligan, 1997). As suggested by other studies in addition to physiological effects, overnight shifts cause mental and psychological side effects (Colligan *et al*., 1979; Culebras, 2007). Prokis and coauthors introduced the mentioned side effects as sleep disorders, increase of desire for alcoholic drinks, decrease of concentration at work, indigestion and changes in social life. Hannhart *et al*. (2006) ported that individuals in shifts are two or three times more vulnerable to higher levels of drowsiness in comparison to the fixed morning and overnight workers. Most of the risks of drowsiness and low quality sleep are due to the age, the use od sleep medications and sleep deprivation. Choobineh *et al*. (2006, 2011) showed that depression is more prevalent in overnight shift workers comparing with day shift workers. Nurses play pivotal roles in providing health services and fulfilling the patient's needs at overnights. Overnight shift is an essential feature of nursing profession. As suggested by statistics, about one million nurses work in Japan, 75% of them are working in overnight shifts (Ohaida *et al*., 2001). Long work shifts make the nurses vulnerable to variety of health problems. A nurse with poor health is less capable of providing the high quality services (physical and spiritual) (Craven and Hirnle, 2003). Health of the nurse affect the quality of the health services they provide (Suzuki *et al*., 2004). Thus, reaching highest performance depends on good health of the nurse (Mehrabi and Ghazavi, 2005). Taking into account that varying work shifts affect physical and mental health, social and personal lives and performance and efficiency of the nurses therefore, the service taker as the main user of nursing services is also affected by the tensions and side effects of work shifts. That is healthier nurses are more probable to provide high quality health services to the patient. According to the above introduction, work shift and the pertinent health problems in shift-personnel were examined in Hamedan hospitals.

MATERIALS AND METHODS

A cross-sectional and descriptive study was carried out in Hamedan hospitals (Iran). Sampling method was random and 72 morning and shift-work nurses entered the study. Survey of Shift workers (SOS) was used for data gathering. The questionnaire has been designed by the Economic and Social Research Council/Medical Research Council (MRC/ESRC) in the UK. It is considered as one of the most reliable and widely used tools to measure the problems caused by work shifts. Reliability and validity of the Farsi version of the questionnaire have been examined by Choobineh *et al*. (2012). The questionnaire is comprised of 57 questions out of which the first eleven questions collect demographical information and the rest deals sleep problems, satisfaction with personal life, satisfaction with personal life, satisfaction with social life, mental andspiritual problems, cardiovascular problems anddigestive problems. Data was analyzed using SPSS16.

RESULTS AND DISCUSSION

The results showed that average age and work experience of the participants were 30.54±7.04 and 7.19±6.82, respectively. Thirty nine nurses (54.2%) suffered from insomnia, five nurses (6.9%) used sleep medicines, thirty two nurses (44%) experienced concentration problems, thirty four nurses (47.2%) reported of problems in their ability to make decisions. The negative effects of work shifts on family and social lives was reported by 69 (95.8%) of the participants shown in Table 1-5.

Work shift is a social phenomenon that was common in the past and has been grown in the modern age due to changes in economic and technology. The phenomenon is an integral part of many industrial and service businesses. The pattern of work shift is not the same in different organizations and it upsets the balance of natural circles of the body (Jamie and Lillie, 2004). Adami and coauthors conducted a study entitled "work shift in nursing-a real risk to nurses and safety of patients" and discussed that physiological and psychological side-effects of work shift have been confirmed by many studies. Increase of accident is the importance of safety in shift work (Rahmani *et al*., 2013). Among these side effects, biological rhythm disorder, sleep disorder, health problems, decrease of performance, job dissatisfaction and social isolation are notable (Moradi *et al*., 2014). Studies have shown that work shift has destructive effects on life from different aspects including mental/spiritual, sleep, digestive, cardiovascular and musculoskeletal problems (Choobineh *et al*., 2006; Moradi *et al*., 2014). Results of this study supported the

Table 1: Demographical and job information (n = 72)

Variables	F-values	%
Education		
Associates' degree	11	75.3
Bachelors' degree	54	75.0
Masters' degree	4	5.6
PhD	3	4.2
Employment		
Life-time	16	22.2
Contractual	53	73.6
Temporary	3	4.2
Marital status		
Single	23	31.9
Married	49	68.1
Children		
None	43	59.7
One	19	26.4
Two and more	10	13.9
Overtime work		
Yes	56	77.8
No	16	22.2
2nd job		
Yes	12	16.7
No	60	83.3
Using sleep medicines		
Yes	5	6.9
No	67	93.1
Satisfaction with family life		
Yes	32	44.4
No	40	55.6
Satisfaction with work shift		
Yes	43	59.7
No.	29	4.3
Ready to stay in the shift		
Yes	61	84.7
No	11	15.3

Table 2: Prevalence of mental and spiritual problems (n = 72)

Psychological problems	F-values	%
Fatigue over the day	40	55.6
Depression	13	18.1
Stimulation	13	18.1
Impatience	21	29.2
Frequent errors	3	4.2
Lack of concentration	8	11.1
Anger	10	13.9
Headache and dizziness	11	15.3

Table 3: Prevalence of digestive problems (n = 72)

Digestive problems	F-values	%
Increase of appetite	13	18.1
Decrease of appetite	15	20.8
Constipation	13	18.1
Indigestion	6	8.3
Stomach ulcer	3	4.2
Stomachache	21	29.2
Diarrhea	3	4.2

Table 4: Prevalence of cardiovascular problems (n = 72)

Cardiovascular problems	Most of the time	Usually	Sometimes	Rarely
Heart palpitation	2 (2.8)	11 (15.3)	17 (23.6)	42 (58.3)
Pain in the chest	0	9 (12.5)	20 (27.8)	43 (59.7)
Dyspnea	3 (4.2)	17 (23.6)	32 (44.4)	20 (27.8)
Blood pressure	2 (2.8)	1 (1.4)	10 (13.9)	59 (81.9)

Table 5: Musculoskeletal problems (n = 72)

Musculoskeletal problems	Most of the time	Usually	Sometimes	Rarely
Pain in shoulders and neck	6 (8.3)	17 (23.6)	24 (33.3)	25 (34.7)
Backache	10 (13.9)	19 (26.4)	27 (37.5)	16 (22.2)
Pain in arms or wrists	3 (4.2)	12 (16.7)	30 (41.7)	27 (37.5)
Pain in knees or legs	12 (16.7)	21 (29.2)	28 (38.9)	11 (15.3)

high prevalence of spiritual/mental, digestive, social and personal problems among the participants. These results are consistent with Choobineh *et al*. (2006) study on surgery room technicians. Moradi *et al*. (2014) studied of security personnel in an oil company and showed high risks of digestive problems. Thereby, one may argue that work shift is a risk factor of digestive diseases (Vogel *et al*., 2012; Moradi *et al*., 2014). Zamanian *et al*. (2012) studied security personnel of some of Shiraz hospitals and found a significant difference between shift workers and working days with regard to digestive disorders. Choobineh *et al*. (2011) compared the healthy consequences of shift workson employees of petrochemical companies and found significant difference between rotating shift workers and fixed shift workers such as digestive problems. The results showed that 3 (4.2%) respondents had stomach ulcer. Changes in circadian rhythm may create problems in timely secretion of stomach acid which in turn may lead to digestive system problems such as, stomach ulcer (Moradi *et al*., 2014). Circadian rhythm is affected by pulmonary and vital capacities (Barkhordari *et al*., 2011). In addition, 40 respondents (55.6%) reported for fatigue over the day. In consistent with Beers (2000) and Moradi *et al*. (2014) reported that shift workers tend to feel more fatigue compared with day work employees. Increase in fatigue felt by the emplo yee leads to decrease in sleeping time, sleep pattern disorder and loss of the quality of sleep (Farahnaki *et al*., 2014; Gharagouzlo *et al*., 2016). Moreover, higher fatigue level curtails awareness and performance which in turn, increases the risk of human errors (Takeyama *et al*., 2004).

Prevalence of depression in the present study was 18.1%. Nam *et al*. (1997) maintained that depression in shift nurses was significantly higher than those nurses with fixed work hours (Dehghani *et al*., 2009) carried out a study in Namazi Hospital in Shiraz, Iran and showed that the prevalence of depression among nurses was 58.5%. Our results are not consistent with Tang *et al.* (2005) results with regard to prevalence of depression which indicate the low rate of depression among nurses in Hamedan city. According to our findings, 5 (6.9%) participants used sleep medicines which is consistent

with Choobineh *et al*. (2006) study on technicians of surgery room (4.1%). Unwanted effects of work shift on personal and social lives were reported by 39 (54.1%) and 37 (51.5%) of the respondents, respectively. Choobineh *et al*. (2006) noted that the negative effect of work shift on personal and social lives was reported by 106 (62.4%) and 113 (66.5%) of the respondents, respectively. Golabadi *et al*. (2012) examined the effect of work shift on blood pressure of workers in a rubber workshop and showed that work shift may increase the systolic and diastolic blood pressures and causes hypertension and prehypertension. Although, work shift is a risk factor of blood pressure, studies on the effect of work shift and blood pressure have reported different results. Our results indicated low prevalence of cardiovascular disorders. There is no consensus about the relationship between the shift work and cardiovascular problems (Choobineh *et al*., 2011; Boivin *et al*., 2007; Shen and Dicker, 2008). Some studies have supported the significance of the relationship and some have rejected it (Moradi *et al*., 2014; Boivin *et al*., 2007). Our results showed that musculoskeletal disorders are prevalent at shoulders and arms (31.9%, n = 23), back (40.3%, n = 29), arms and wrists (20.9%, n = 15) and knees (45.9%, n = 33). Prevalence of musculoskeletal problems has been supported by Choobineh *et al*. (2012) study.

CONCLUSION

Work shift can be a risk factor of physiological and psychological disorders in nurses. This indicates the necessity to take preventive measures to preserve health and wellbeing of the shift workers. Routine compulsory checkups for the shift workers must be introduced and employers, managers and nurses must be informed about the necessity of surveying the circadian rhythm routinely (annually). Any problems in the rhythm should be solved by changing the work shifts (Moradi *et al*., 2014; Pati *et al*., 2001). Changing the work shift prevents the risk factors caused by them. Ergonomics interventions such as bright lightsat nights, reduce the subjective sleepiness (Karchani *et al*., 2011). Sleepiness is the biggest effect of shift works. To gain this aim, detection of sleepiness from the worker's face is useful (Karchani *et al*., 2015a, b). It is also recommended to measure the individuals' resistance, anxiety and mental health with regard to rotating shifts. We recommended that safety and health risk assessment in this field must be done (Sohrabi *et al*., 2016) as well as macro ergonomics and safety climate approach measures (Khandan *et al*., 2011, 2012, 2013).

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