

Investigating the Correlation between Shift Work and Job Commitment and the Mediating Role of Work-Life Balance among Emergency Medical Personnel

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ABSTRACT

Background: Shift work is a job stressor. Health service is one of the centers where shift work is an integral part, and the level of job commitment in staff has a significant impact on service delivery. The aim of this study is to investigate the correlation between shift work and job commitment, and the mediating role of work-life balance among emergency medical personnel of Chaharmahal and Bakhtiari province in 1400.

Methods: This was a correlational study. The statistical community included emergency medical personnel of Chaharmahal and Bakhtiari province, and the statistical sample was selected by stratified random sampling method. The research tool consisted of 3 questionnaires: a: survey of shift workers (SOS) (@ = 0.8), b: job commitment (@ = 0.9), and c: work-life balance (WLB)

(@ = 0.9). Findings were analyzed using spss21 software ($p \leq 0.05$).

Results: The level of work-life balance in these personnel was very desirable. The job score was slightly higher than average. The score of the work shift status questionnaire was lower than the average. In almost all cases, there was a positive and significant correlation between shift scores and work-life balance. There was no significant correlation between job commitment score and work-life balance in all cases. Moreover, there was no significant correlation between shift score and job commitment.

Conclusion: There is a correlation between shift work and work commitment and the mediating correlation of work-life balance (workplace support component). The adjustment of personnel shift work should be seriously considered by managers and of health organizations in particular and policymakers of the health system in general need to address this correlation.

Keywords: Shift Work, Commitment, Work-Life Balance

Introduction

Shift work in healthcare centers is considered inevitable for the continuation of service provision. Acute diseases, instability of physical and mental condition and dependence of patients on others necessitates continuation of service provision throughout the day and night. Based on studies, the prevalence of shift work in developing countries is 15-30% of the workforce, in European countries, 15-20%, in America, 20%, and in Iran, it is 25% (Williams et al., 2007, Mosavisal et al., 2017, Costa et al., 2003, and Tabatabaei et al., 2017). Evidence shows that those who work on shifts suffer from chronic, acute, and physical and mental disorders (Costa et al., 2003).

The harmful effects of shift work are mainly chronic; they include disturbances in physiological processes such as sleep cycle, wakefulness, weakening of physical and physiological health, alertness problems, and problems for the family and social life of shift workers (Karimian et al., 2018, and Rezaei et al., 2017).

Organizational commitment is also a type of psychological bond between employees and the organization which reduces the possibility of voluntarily leaving the organization; it consists of three dimensions: emotional commitment, continuous commitment, and normative commitment. Affective commitment refers to the positive emotional connection between the employee and the organization. Continual commitment is not the opposite of emotional commitment, which arises from the employee's sense of belonging to the organization. However, commitment is caused by the fact that continuing work is more beneficial for them than leaving the organization. In a normal commitment, a person feels moral obligation to stay in the organization (Riordan et al., 2003).

Creating commitment as well as maintaining and retaining the most skilled employees of the organization are the most cost-effective measures in dealing with scarce resources. It is also the

most reliable way to return the capital spent on developing the skills of employees which takes years. (Mcmurray et al., 2010, and Ravani Pour et al., 2014).

Hospital jobs, including nursing, physician medicine, emergency medical services and other jobs are classified as hard jobs. Working in a stressful environment and having close contact with people has caused widespread job change and displacement in these jobs.

Therefore, investigating issues related to the stability and maintenance of human resources (by measuring the parameters of commitment, satisfaction, and commitment and job retention) in these jobs should be the concerns of managers and researchers. Many studies have been written about the problems of human resources management in hospitals. Some of them have referred to the impossibility of establishing a balance between work and life as a restraining force from the development and sustainability of human resources in hospitals (Patterson et al., 2010).

Accidents and crises are important problems of health regarding public and societies all over the world. In order to protect people's health in such cases, several organizations have been established, each of which fulfills this important responsibility by assuming duties. One example is the Medical Emergency and Accident Management Center, which provides medical services at the patient's bedside in emergency cases (Patterson et al., 2010). Medical emergencies are often faced with chronic stressors such as encountering an injury, the patient's lack of consciousness or even his death; in most cases, this leads to physical and mental pressures for emergency workers (Soloukdar et al., 2019, Ezati et al., 2017, and Machi et al., 2012).

Machi stated that most of shift workers will face complications and unpleasant consequences in their everyday life, many of which cannot be controlled (Machi et al., 2012). Shift work has negative physical, psychological, and social

effects on the staff's personal life, and consequently, their families. Furthermore, working long hours can endanger a person's health and safety (Asghari et al., 2013).

Asghari indicated that shift work problems are related to 4 factors: circadian and sleep factors, and social, psychological, and family factors (Asghari et al., 2013). All these elements interact with each other and have a significant effect on the tolerance of people regarding shifts (Darko-Asumadu et al., 2020).

The purpose of this study was to determine the effect of shift work on job commitment with the mediating role of work-life balance among employees working in medical emergencies in Chaharmahal and Bakhtiari province. In addition, the highest and lowest job commitment of employees will be analyzed and reported based on the obtained results.

Methods

This was a correlational study. In order to collect information, the researcher distributed the questionnaire after obtaining the necessary permission from Islamic Azad University, Shahrekord branch. Then, permission was given and arrangements were made with the management of Chaharmahal and Bakhtiari hospitals. After providing necessary explanations to the participants, they completed the questionnaires and information was collected.

The statistical population of the research included 280 people from all emergency medical personnel in Chaharmahal and Bakhtiari province. Inclusion criteria were the following: having at least one year of work experience in the current department, an associate degree or higher, and the voluntary participation.

Exclusion criteria were the following: unwillingness to continue cooperation or providing an incomplete questionnaire.

The sample size was determined using Cochran's formula regarding 162 people. In this study, a statistical sample of medical emergency personnel of Chaharmahal and Bakhtiari province

was selected by simple random sampling.

Questionnaires were used to collect information. The shift work status questionnaire had 54 items, and each question was scored from 1 to 4 points, (from almost always to almost never). The minimum score was 54 and the maximum score was 216.

The study tools included 3 questionnaires:

1- Survey of shift workers (SOS): This is a valid questionnaire to study problems related to shift work. It includes questions about demographic and personal characteristics (11 questions), type of shift work system (3 questions), job satisfaction (5 questions), mental-psychological problems (10 questions), digestive problems (8 questions), cardiovascular problems (5 questions), sleep (4 questions), and skeletal-muscular disorders (4 questions). Furthermore, there are adverse effects of new shift work on the individual's life such as rest, study, exercise, going to the laboratory and the effects on family life (4 questions).

Content validity was confirmed by healthcare service management experts. The reliability of the questionnaire was 0.8 (Zamanian et al., 2012).

2. The job commitment questionnaire: This questionnaire contains 20 items related to job commitment, with Cronbach's alpha of 0.9. This questionnaire checks the level of employees' commitment to the organization, which has 3 dimensions (pride, goals, and participation). In the present research, to check the validity of the questionnaire, from the validity the average variance extracted (AVE) criterion was used for convergent validity and the Fornell-Larker criterion for discriminant validity, which indicates the acceptable validity of this questionnaire. The reliability of the present questionnaire was 0.9 (Moghtaderi et al., 2021).

3. Work-life balance (WLB): The first part of the questionnaire includes 4 questions about the demographic characteristics such as gender, education level, and work experience and employment status. The second part includes 20 questions on six dimensions; having free time (4

questions), work support in case of family problems (3 questions), work commitment (3 questions), job flexibility (3 questions), level of attention to life issues (4 questions), reducing working hours voluntarily in order to solve personal problems (3 questions). Cronbach's alpha of the questionnaire was 0.9. Content validity and face validity were approved by 6 experts from Jiroft University of Medical Sciences and 5 professors from Tehran University's Faculty of Management who had expertise in the field of human resource management. The reliability of the questionnaire was calculated to be 0.9 (Kamrani et al., 2018).

This article was registered with the ethical code: IR.IAU.SHK.REC.1400.032 in Azad University of Shahrekord. The researcher explained to the statistical samples about the purpose of the study, ensured the confidentiality of the data and obtained consent. The people who were willing to participate in the study were included.

Result

The average age of the participants was 34.5 ± 1.38 , and work experience was 9.5 ± 1.1 . The gender of the participants included 6 women (3.7%) and 156 men (96.3%). 41 people were single (25.3%), and 121 people were married (7.74%). The educational qualification of 50 people (30.9%) was associate degree, 106 people (65.6%) had bachelor's degree, and 6 people (3.7%) had master's degree. The mean and SD of job commitment was 3.28 ± 0.029 , work-life balance was 3.4 ± 0.049 and shift work status was 3.39 ± 0.04 .

The results of the Pearson correlation test showed a positive relationship between shift work score and work-life balance in almost all cases, which was significant. As the work-life balance score increases, the shift work score increases ($p \leq 0.05$) as well. Voluntary reduction of working hours was not correlated with shift work component (Table 1).

Table 1. Correlation between work-life balance and shift work status and job commitment

Work-life balance variable	Shift work		Job commitment	
	R	P-value	R	P-value
Sufficient time off work	0.327	0.001	.0121	.0123
Workplace support for work-life balance	0.312	0.012	0.195	0.215
Loyalty to employees, flexibility in work schedule	0.275	0.032	0.125	0.93
Flexibility in work schedule	0.296	0.02	0.201	0.062
Life orientation	0.182	0.045	0.132	0.93
Voluntary reduction of working hours	0.115	0.624	0.105	0.083
work-life balance	0.235	0.022	0.117	0.21

($P \leq 0.05$)

The correlation coefficient of the shift work status with the occupational commitment score of emergency medical personnel of Chaharmahal and Bakhtiari province in 2021 was equal to 0.6 (P -value = 0.878).

The correlation between the average score of shift

work with job commitment and work-life balance among the emergency medical personnel of Chaharmahal and Bakhtiari province in 2021 with some demographic variables (age, gender, marriage, education, work experience, employment status, position and shift status) is presented in Table 2.

Table 2. Correlation between the average score of work commitment, shift work status and work-life balance with demographic variables (gender, etc.)

Variable	Multivariate regression model				
	Standardized coefficients(β)	t	Lower limit β	Upper limit β	P-value
The value of the constant number (β_0)	34.164	1.862	8.326	61.15	0.001
Gender	- 0.08	- 0.596	- 0.703	0.453	0.762
Marital status	0.083	1.362	9.625	1.36	0.025
Education	- 0.182	- 1.59	- 12.036	0.983	0.098
Work experience	0.203	2.039	- 0.222	17.345	0.094
Age	0.089	1.296	- 2.506	12.123	0.206
Shift work	- 0.032	- 0.325	- 7.845	7.126	0.986
Job commitment	0.091	0.881	- 0.196	0.420	0.452
Work-life balance	0.315	3.159	0.31	0.986	0.015

(p \leq 0.05)

The correlation between job commitment, shift work status and the mediating role of work-life is shown in Table 3.

Using the linear regression model, the obtained results showed that there was no significant

relationship between the shift work score, job commitment and the mediating role of work-life balance (except for the workplace support (p \leq 0.05). In other words, the workplace support score increased from -0.185 to 0.079.

Table 3. Correlation between the average score of work commitment, shift work status and the mediating role of work-life balance

Variable	Linear regression model		Limit β		Standardized coefficient β	t	p-value
			Lower limit β	Upper limit β			
	Constant number β		5.122	0.723	- 0.006	7.080	0.000
	Sufficient time off work		- 0.007	0.078	- 0.007	- 0.086	0.931
	Workplace support for work-life balance		- 0.185	0.079	- 0.185	- 2.331	0.021
	Loyalty to employees		0.029	0.048	- 0.049	0.610	0.543
	Flexibility in work schedule		- 0.032	0.068	- 0.039	- 0.473	0.637
	Life orientation		- 0.083	0.083	- 0.080	- 0.999	0.319
	Voluntary reduction of working hours		- 0.089	0.091	- 0.077	0.975	0.331
	work-life balance		- 0.095	0.058	- 0.091	- 0.975	0.183

Discussion

The aim of this study was investigating the correlation between shift work and job commitment, and the mediating role of work-life balance among emergency medical personnel of Chaharmahal and Bakhtiari province in 2021.

According to the result of the test related to the input variables of the model was significant there was no significant correlation between the score of shift work, job commitment and the mediating role of work-life balance. Except for the workplace support component, it can be said that there was a significant correlation between shift work and

work commitment, and the mediating correlation of work-life balance (workplace support component). In other words, the workplace support score increased from - 0.185 to 0.079. The level of work-life balance among these personnel was highly desirable. Marcelo believed that because of working in unusual conditions, lack of sleep and the consequent problems, being in contact with patients and painful situations and problems caused by taking on the roles of father and mother, nurses endure more work conflict with family in terms of pressure.

The result of the same study also showed that

the average score of work-life conflict was higher than work-life. The benefits of family for work were more than the benefits of work for family. The results of the present study were in line with Darko's study (Darko-Asumadu et al., 2020).

The job commitment score in emergency medical personnel of Chaharmahal and Bakhtiari province in 2021 was slightly higher than average. Human resources are probably committed and compatible with organizational goals, tend to be members of the organization and work beyond their assigned duties. The results of the present study were not consistent with Yadollahi's research (Yadollahi et al., 2020).

The definition and clarity of the role can lead to the feeling of satisfaction from work. This feeling itself causes encouragement and the desire to stay in the organization and the feeling of being useful for the individual, which ultimately causes the satisfaction of the organization's customers and changes the overall vision. The individual's attitude towards his duties and job was consistent with Raeisi research (Raeisi et al., 2021).

The score of shift work status of medical emergency personnel in Chaharmahal and Bakhtiari province in 2021 was lower than average.

The tension caused by working in inappropriate conditions and working at night causes disturbed sleep, stress and reduced efficiency. One of the centers in which shift work is an integral part is working in medical services, where the level of job satisfaction and commitment of their employees has a significant impact on the quality of service delivery. This was in line with Raisi's study (Raeisi et al., 2021).

There was no significant correlation between the average score of shift work and work-life balance in emergency medical personnel of Chaharmahal and Bakhtiari provinces in 2021(21).

According to Farzianpour's research, planning according to the standards of nurses' working hours and avoiding working overtime, especially for nurses who have more work experience, can prevent the severe complications of shift work,

improve the level of health, and ultimately, the quality of care. This was not in line with the present study (Farzianpour et al., 2017).

Some of these measures and organizational support include: consulting services for employees, programs to help employees, training in time management and stress management, and childcare facilities for employees both inside and outside the organization, as well as plans such as temporary changes that allow employees to reduce their working hours (for example, job sharing); flexible work schedules which helps employees choose the start and end of their working hours according to their personal needs, while they are at work during main hours; remote work and working with the Internet, where employees experience location flexibility in doing their work.

By managing the balance between work and life, managers can have happy and satisfied employees who provide effective performance in their jobs with interest, loyalty and commitment to the organization. Achieving this goal requires that manager's abandon the traditional view of the work-life correlation in which the competition between work and life leads to a "zero-sum game". They should choose an approach with regard to the interests of the individual and the organization. This is in line with the research done by Hutagulung (Hutagulung et al., 2020).

Healthcare organizations have a special place in society due to the importance of their duties in the field of prevention, care and treatment. Research has shown that working night shifts will have mental and psychological side effects in addition to physiological effects. The rotation of shift work affects physical and mental health, lack of concentration, job satisfaction, job commitment, absenteeism, desire to stay in the job, and professional efficiency.

According to the regression model, only marriage is related to work-life balance; married personnel had a higher work-life balance error score. In fact, this score increased; married people have a higher work-life balance. Jena's study was not in line with the present study (Jena et al.,

2015).

Dealing with work and family are two important aspects of every person's life. The physical and mental health of people depends on the harmony and compatibility of these two aspects.

1- Determining the correlation between the average score of shift work and job commitment, and work-life balance and some demographic variables (age, gender, marriage, education, work experience, employment status, position and shift status):

Since working life affects his private life and the opposite can also be true, every person must find a way to balance work life with private life. These mutual effects can be positive or negative. When the conflict of roles between these two halves of life is at its minimum and the person is satisfied and performs well at work and at home, there will be a good work-life balance. The study by Hashempour's was not in line with the present study.

The balance between work and life not only affects job satisfaction and performance, but also affects the life of employees outside of work, including family, leisure time, and social needs. When the needs of employees are not met at work, they are likely to experience a lot of work stress, which will have negative consequences on their well-being.

The main limitation of this project was high workload of emergency medical personnel.

The activity of the researcher in medical emergencies and a lot of communication with other personnel was the main strength of this study.

Conclusion

According to the results of the current research based on the correlation between job commitment score, shift work situation and work-life balance, the causes and factors which reduce job commitment should be identified, as well as the necessary psychological interventions to change the attitude of employees about shift work. In the same vein, managers of health organizations in particular and policymakers of the health system in

general should take organizational commitment seriously.

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Conflict of interest

Authors declared no conflict of interest.

Authors' Contribution

Conceptualization, M. M.; methodology, M. M and L. GH.; data collection, A. A. H.; writing original draft, M. M.; data analysis, M. M and A. A. H.; supervision, L. Gh. All authors read and approved the final manuscript and were responsible about any question related to the article.

References

- Asghari, M., Ahmadnezhad, I., Rahmani, A. R., et al. (2013). Investigation of Disorders and Problems caused by Shift Work in an automotive industry. *Journal of North Khorasan University of Medical Sciences*, 5(1), 7-14. [Persian]
- Costa, G. (2003). Shift work and occupational medicine: an overview. *Occupational medicine*, 53(2), 83-8.
- Darko-Asumadu DA, Sika-Bright S, Osei-Tutu B. (2018). The influence of work-life balance on employees' commitment among bankers in Accra, Ghana. *African Journal of Social Work*, 8(1), 47-55.
- Ezati, P., Vaziri, M., Adli, F. (2017). Educational Needs Assessment in the Medical Emergency Technicians of Tehran Emergency Center. *Safety Promotion and Injury Prevention*, 5(2), 109-19. [Persian]
- Farzianpour F, Ansari Nosrati S, Rahimi Foroushani A. (2017). Survey of Correlation between Nurses Shift and Personality Characteristics in Private Hospitals in Tehran City. *Payavard*, 10(5), 419-428. URL: <http://>

- payavard.tums.ac.ir/article-1-6114-fa.html.
[Persian]
- Ghaedi GH, Mohamadi N, Ghasemi M. (2015). Comparison of fixed and rotating shifts on burnout among nurses working in public and private hospitals in Rasht. *Daneshvar Medicine*, 23(3), 27-34. [Persian]
- Hashempour R, Hosseinpour Ghahremanlou H, Etemadi S, et al. (2018). The Correlation between Quality of Work Life and Organizational Commitment of Iranian Emergency Nurses. *Health in Emergencies and Disasters Quarterly*, 4(1), 49-54. [Http: dx.doi.org/10.32598.hdq.4.1.49](http://dx.doi.org/10.32598.hdq.4.1.49). [Persian]
- Hutagalung., I., Soelton., M. and Octaviani., A., 2020. The role of work life balance for organizational commitment. *Management Science Letters*, 10(15), 3693-3700.
- Jena, R. K. (2015). An assessment of demographic factors affecting organizational commitment among shift workers in India. *Management-Journal of Contemporary Management Issues*, 20(1), 59-77.
- Kamrani, M.A., Amiri, A.N., Alavi, S.H.A., et al. (2018). Factors Affecting Work-Life Balance of Nurses in Hospitals Affiliated to Jiroft University of Medical Sciences in 1396. *Journal of Nursing Education (JNE)*, 7(4). [Persian]
- Karimian Zo M, Soliemanian A, Rahimi Pordanjani T. (2018). The Role of Shift work Tolerance and Job Stress as Predictions of Marital Satisfaction among Mashhad City Firefighters. *Tkj*, 10(2), 1-9. URL: [http: tkj.ssu.ac.ir/article-1-903-fa.html](http://tkj.ssu.ac.ir/article-1-903-fa.html). [Persian]
- Machi, M. S., Staum, M., Callaway, C. W., et al. (2012). The correlation between shift work, sleep, and cognition in career emergency physicians. *Academic Emergency Medicine*, 19(1), 85-91.
- McMurray, A. J., Pirola-Merlo, A., Sarros, J. C., et al. (2010). "Leadership, climate, psychological capital, commitment, and wellbeing in a non-profit organization". *Leadership & Organization Development Journal*, 31(5), 436-457.
- Moghtaderi Isfahani A, Mehdad A. (2021). Mediating role of intrinsic work motivation in correlation between job commitment and professional ethics with firefighters' extra-role performance. *Tkj*, 13(3), 9-23. URL: [http: tkj.ssu.ac.ir/article-1-1135-fa.html](http://tkj.ssu.ac.ir/article-1-1135-fa.html). [Persian]
- Mosaviasl Z, Babayipouya A, Karimi A. (2017). The Correlation between Shift Work and Occupational Burnout among Nurses in a Teaching Hospital in Ahvaz. *Ohhp*, 1(2), 118-128. [Persian]
- Patterson, P. D., Suffoletto, B. P., Kupas, D. F., et al. (2010). Sleep quality and fatigue among prehospital providers. *Prehospital Emergency Care*, 14(2), 187-93
- Pourshareiati, F., Amrollahi, M. (2017). Patient safety culture from Rahnemom hospital nurses' perspective. *Occupational Hygiene and Health Promotion Journal*, 1(1), 52-61. [Persian]
- Ravani Pour, M., Vanaki, Z., Afsar, L., et al. (2014). The standards of professionalism in nursing: the nursing instructors' experiences. *Evidence Based Care*, 4(1), 27-40. [Persian]
- Raeisi S, Sadeghy N, Azarbarzin M. (2021). Comparison of Behavioral Problems in Children of Permanent Morning Shift and Circulating Shift Nurses in Ayat Allah Kashani Educational Treatment Center in Isfahan 2018. *JPEN*, 7(2), 39-45. [Persian]
- Rezaei H, Bahmanbijari B, Beigzadeh A, et al. (2017). Job satisfaction and organizational commitment of nurses in teaching hospitals affiliated to Kerman University of Medical Sciences. *Iranian Journal of Medical Education*, 17, 245-250. URL: [http:ijme.mui.ac.ir/article-1-3927-fa.html](http://ijme.mui.ac.ir/article-1-3927-fa.html). [Persian]
- Riordan, C. M., Griffith, R. W., Weatherly, E. W. (2003). Age and work-related outcomes: the moderating effects of status characteristics. *Journal of Applied Social Psychology*, 33(1), 37-57.
- Soloukdar, A., Goodarzi, B. (2019). The Correlation of Agility of Human Resources on Performance of Staffs at Tehran Emergency Center. *Nurse and Physician Within War*, 7(22), 27-33. [Persian]

- Tabatabaei, S., Khani Jazani, R., Ghaneh, S. (2017). The Role of Age and Work Experience on Fatigue, Health, and Social Well-being of Employees; a Case Study of Iran Railway Transportation Employees. *Occupational Hygiene and Health Promotion Journal*, 1(1), 19-32. [Persian]
- Williams, E. S., Manwell, L. B., Konrad, T. R., et al. (2007). The correlation of organizational culture, stress, satisfaction, and burnout with physician-reported error and suboptimal patient care: results from the MEMO study. *Health Care Management Review*, 32(3), 203-12.
- Yadollahi, S., Heydarpoor. Dastgerdi, S. (2020). The Correlation between Organizational Commitment of Emergency Medical Service Staff and Care Quality of Pre-hospital Services in Chaharmahal-Bakhtyari Province in 2020. *Paramedical Sciences and Military Health*, 15(3), 36-43
URL: <http://jps.ajaums.ac.ir/article-1-230-fa.html>. [Persian]
- Zamanian, Z., Mohammadi, H., Rezaeeyani, M., et al. (2012). An investigation of shift work disorders in security personnel of 3 hospitals of Shiraz University of Medical Sciences, 2009. *Ioh*, 9(1), 52-57. [Persian]