



Comparison of children's behavioral problems between two groups of shift and fixed working mothers with different occupational stress levels

Elham Kebriyaei¹, Fatemeh Khajeh², Mohammad Hosein Yazdanpanah³, Maryam Naghmachi¹, Zahra Bazargani¹✉

¹Department of Pediatrics, Fasa University of Medical Sciences, Fasa, Iran

²Department of Pathology, Fasa University of Medical Sciences, Fasa, Iran

³Student Research Committee, Fasa University of Medical Sciences, Fasa, Iran

✉Corresponding author

Zahra Bazargani M.D.

Department of Pediatrics,
Fasa University of Medical Sciences,
Ibn-sina square, Fasa, Fars,
Iran

Email: zahbaz@yahoo.com

Article History

Received: 25 June 2020

Reviewed: 27/June/2020 to 29/July/2020

Accepted: 30 July 2020

E-publication: 06 August 2020

P-Publication: September - October 2020

Citation

Elham Kebriyaei, Fatemeh Khajeh, Mohammad Hosein Yazdanpanah, Maryam Naghmachi, Zahra Bazargani. Comparison of children's behavioral problems between two groups of shift and fixed working mothers with different occupational stress levels. *Medical Science*, 2020, 24(105), 3106-3112

Publication License



This work is licensed under a Creative Commons Attribution 4.0 International License.

General Note



Article is recommended to print as color digital version in recycled paper.

ABSTRACT

Background and objective: Work-related stress has become one of the most serious health problems in any career. Occupational stress in mothers can affect family relationships and children's characteristics and behavior. The aim of our study was to investigate any differences between shifts and fixed working mothers with high and low occupational stress in their Children's Behavioral Problems. **Materials and Methods:** The study population was 32 nurse and 23 employed mothers as case and control groups. The data were collected using Cooper Occupational Stress Questionnaire and Children's Behavioral Checklist (CBCL). T-score attributed to CBCL parameters has been measured for assessing behavioral problems. Pearson correlation and Multiple Linear Regression was used to examine the relationships between different variables. **Results:** Mean of age was 36.22 in case group and this value was detected as 37.70 years in control group. In case group, in subjects with low and moderate to severe occupational stress, the mean of T score of anxious/depressed problems was 47.26 and 54.00 respectively, that had significant difference ($p=0.042$). There was a significant relationship between nurses' occupational stress level and their children's anxiety/depression problems ($P=0.011$) and also internalizing disorders ($P=0.012$). **Conclusion:** Increase in the level of nurses' occupational stress in nurses may lead their children to behavior problems especially anxious/depressed and internalizing symptoms.

Keywords: Occupational stress, shift work, children behavioral problems, mothers' stress

1. INTRODUCTION

Occupational stress has become one of the most serious health issues in the modern world, as it occurs in any job and is even more present than in previous decades (Pološki Vokić and Bogdanić, 2008). Work stress has been described as situations in which people's well-being is negatively affected by their incapability in achieving their environmental requirements (Erkutlu and Chafra, 2006). The American National Association has put nursing at the forefront of the first 40 jobs with a high prevalence of stress-related disorders among its employees for occupational safety. It is believed that regarding occupational stress, nursing is probably at the top of the list of health professions (Mehrabi et al., 2008). Nurses encounter various occupational stressors such as working in shifts, workload, conflicts with co-workers, occupational responsibilities, frequent meetings of patients experiencing pain and death, lack of supportive supplies and not having enough time to support the patients emotionally (Mehrabi et al., 2008). It should be noted that shift work and night shifts influence biological rhythm, altering the sleep cycle and work-family relationships (Landa et al., 2008).

In past two decades, children's behavioral problems, including externalizing and internalizing have received considerable attention from researchers. It is estimated that 10–15% of the very young children have social-emotional or behavioral problems (Karabekiroglu et al., 2013). Since 1991, Achenbach and his students have conducted many studies using the Children's Behavioral Check List (CBCL) as the instrument to identify children's behavioral problems (Alizadeh et al., 2011). The family is considered as a socio-cultural-economic arrangement and its significant effect on children's behavior as well as their characters' formation can be seen. Any negligence of parents can lead to unwanted harmful effects on the growth of kids and consequently can end up creating misbehavior problems among children (Alizadeh et al., 2011).

Mothers play an important role in the family and have a significant effect on children's behavior. The main objective of the present study is to determine the relationship between the level of nurses' occupational stress and their children's behavioral problems.

2. METHODS

Design of the study & Participants

This research was a case-control study performed in Vali-E-Asr Hospital as a hospital-associated to Fasa University of medical sciences in Shiraz, Iran. The population for this study was 32 nurse mothers, who had night shift work at least 1 night/week and rotating day shift works as case group and 23 employee mothers of Fasa University of Medical Science who had not night shift works and had fixed day shift work as control group (32 mothers in the case group and 23 mothers in the control group).

Inclusion and exclusion criteria

Inclusion criteria for mothers were having at least a 4-16 years old child. Participants signed their consent at the beginning of the investigation, knowingly and with satisfaction. Exclusion criteria were considered as lack of data and refusing to complete our questionnaires, self-report history of the behavioral problems of children's which has been proven by a psychiatrist.

Questionnaire, Instrument, Reliability and Validity

For children's behavior, Children's Behavioral Checklist (CBCL) questionnaire was used to assess children's behavior problems which fulfilled by mothers. The eight syndrome scales consisted of anxious/depressed, withdrawn/depressed, somatic complaints, social problems, thought problems, attention problems, rule-breaking behavior, and aggressive behavior (Achenbach and Rescorla 2001; Liu et al., 2013). These scales are categorized as internalizing syndromes (anxious / depressed, withdrawn/depressed, and somatic complaints), and externalizing syndromes (rule-breaking behavior and aggressive behavior). The CBCL form completed by the parents has a reliability of 93%. Its' attributed reliability for affective and behavioral symptoms equals 90%. Attributed alpha regarding CBCL internal stability of this scale is 0.63 in 79% CBCL (Alizadeh et al., 2011). Standardized T-scores were derived from raw scores. Standardized T scores for the syndromes equal to or greater than 65 (93rd percentile) indicates the presence of behavior problems in the borderline/clinical range (Liu et al., 2013). The total problem score is the sum score of all 115 problem items. Participants with standardized T scores more than 60 (83rd percentile) are considered having internalizing, externalizing, or total problems in borderline and clinical range (Alizadeh et al., 2011).

Cooper Occupational Stress Questionnaire was used to assess the level of occupational stress created by L. Cooper includes two parts. The first and the second part consist of demographic data (age, the count of children, and an average of work hours a week and night shifts a week) and occupational stressors such as workload and conflicts with co-workers, respectively. This questionnaire computes Level of occupational stress by summing the scores of its items, and then scores are categorized into clinical, sub-clinical, and normal range.

Data Collection

The authors distributed the questionnaire to potential participants. Data were collected by mothers during the spring and summer of 2018. Variables included children age, mother age, working experience, working hours (hours), occupational stress.

Data Analysis

The IBM SPSS Statistics for Windows, Version 19.0 (Armonk, NY: IBM Corp) was used to analyze the data. The relationship between maternal occupational stress in nursing and children's behavioral problems is evaluated by the Pearson Correlation coefficient. A comparison of children's behavioral problem scores between mothers with and without stress was done with T-test and ANOVA. The significance level was considered 0.05.

Ethical considerations

Methods of study were performed following relevant guidelines and regulations of our regional and national research ethics committees. Also, the protocol of this study was approved by the Medical Ethics Committee of Fasa University of Medical Sciences (ethical approval code: IR.FAUMS.REC.1397.275).

3. RESULTS

Means of mothers age (case: 36.22 ± 4.48 years and control: 37.70 ± 4.83 years), work experience (case: 10.75 ± 4.13 years and control: 13.35 ± 5.85 years) and children age (case: 9.63 ± 3.75 years and control: 9.96 ± 3.3 years) didn't show significant differences between case and control groups ($p=0.234, 0.075, 0.975$). The mean of nurses' occupational stress was 40.38 ± 18.54 , and the mean in employees was 36.17 ± 20.12 which had not a significant difference between the two groups ($p=0.359$).

However, the means of work hours in a week of case and control groups showed a significant difference ($p=0.01$). Table 1 depicted the values of mean \pm , Standard Deviation (SD) related to variables and show a comparison between both groups. Also, the number of children, their sex, and birth order didn't have significant differences between case and control groups ($P>0.05$).

Table 1 Characteristic of variables and their comparison according to case and control group

Variables	Group				P-value
	Control (n=23)		Case (n=32)		
	Mean	SD	Mean	SD	
Mother age (years)	37.70	4.83	36.22	4.48	0.234
Children age (years)	9.63	3.75	9.96	3.3	0.975
Work experience (years)	13.35	5.85	10.75	4.13	0.075
Work hours (hours)	43.00	2.00	49.93	9.77	0.001
Occupational stress	36.17	19.12	40.38	18.54	0.359

The mean of different T scores of children's behavioral problem variables has reported in Table 2. None of the children's behavioral problems did show any significant difference between the case and control group ($p > 0.05$).

Table 2 Mean & standard deviation of children's behavior problems and their comparison between case and control groups

T score	Group				P-value
	Control (n=23)		Case (n=32)		
	Mean	Standard Deviation	Mean	Standard Deviation	
Anxious/depressed	55.52	12.30	50.00	9.30	0.063
Withdrawn/depressed	52.26	10.08	51.78	9.15	0.855
Somatic complaints	62.26	15.08	56.75	11.28	0.125
Social problems	56.13	11.63	54.09	11.72	0.526
Thought problems	60.30	13.73	59.31	6.15	0.748
Attention problems	52.17	9.47	51.25	7.82	0.694
Rule-breaking behavior	59.48	11.95	57.41	10.84	0.506
Aggressive behavior	58.22	12.02	58.16	11.69	0.985
Internalizing problems	58.74	13.97	53.88	10.45	0.145
Externalizing problems	58.83	11.50	58.56	11.38	0.933
Total problems	60.13	12.35	57.28	10.06	0.350

In low occupational stress nurses' group, the mean of T score of anxious/depressed problems in their children was 47.26 ± 4.84 and in moderate to severe occupational stress was nurses' group 54 ± 10.1 that had significant difference ($p = 0.042$). On the other hand, in the control group, the mean of T score of anxious/depressed problems in children of those with low occupational stress was 55.71 ± 5.09 and in moderate to severe occupational stress subjects was 55.22 ± 8.87 that didn't have significant difference ($p = 0.928$) (figure 1). Therefore, as the level of nurses' occupational stress increases, their children's anxious/depressed problems increase.

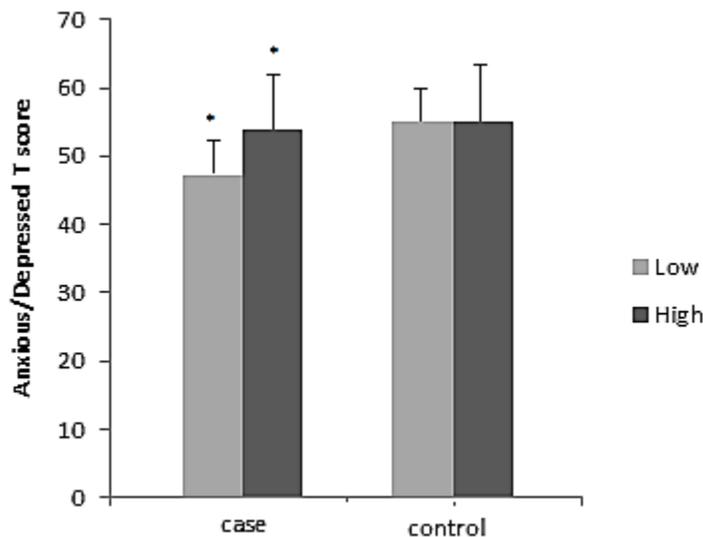
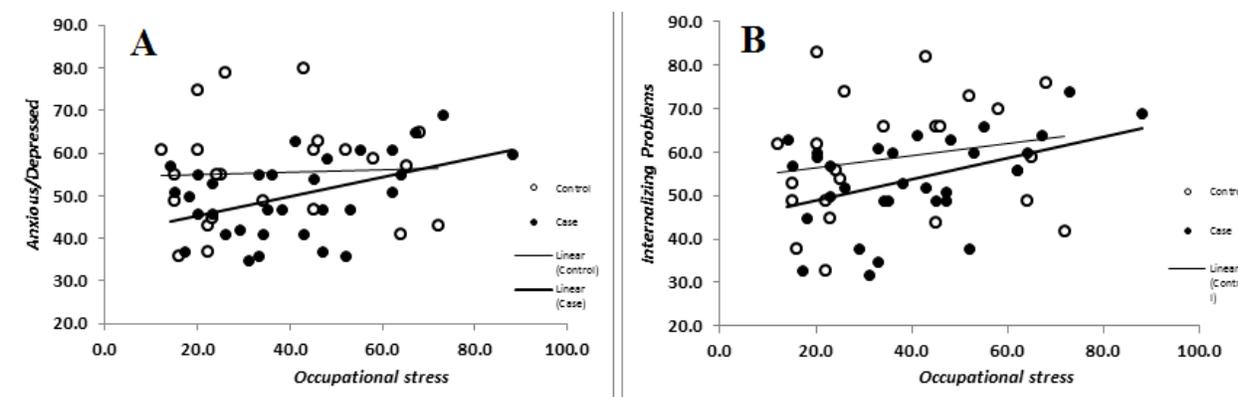


Figure 1 comparison of children anxious/depressed problem scores according to the low and high level of occupational stress in case and control groups * $P < 0.05$

The nurses' occupational stress has a positively significant relationship with anxious/depressed problems T score of their children ($r = 0.444$, $p = 0.011$), and also the nurses' occupational stress has a positively significant correlation with internalizing problems T score of their children ($r = 0.438$, $p = 0.012$). There isn't a significant relationship between nurses' occupational stress and other children's behavioral problems T score (Table 3). Also, Correlation between occupational stress and children's behavioral problems T score was not significant in the control group. Correlation between the level of occupational stress and children's anxious/depressed and internalizing problems T score in both case and control groups has been shown in Fig 2, AB.

Table 3 Correlations between the level of occupational stress and childhood behavior problems T score in the case group

T score		Occupational stress score
Anxious/depressed	Pearson Correlation	0.444*
	Sig. (2-tailed)	0.011
Withdrawn/depressed	Pearson Correlation	0.325
	Sig. (2-tailed)	0.070
Somatic complaints	Pearson Correlation	0.274
	Sig. (2-tailed)	0.129
Social problems	Pearson Correlation	0.216
	Sig. (2-tailed)	0.236
Thought problems	Pearson Correlation	0.105
	Sig. (2-tailed)	0.566
Attention problems	Pearson Correlation	0.150
	Sig. (2-tailed)	0.413
Rule-breaking behavior	Pearson Correlation	0.232
	Sig. (2-tailed)	0.201
Aggressive behavior	Pearson Correlation	0.278
	Sig. (2-tailed)	0.123
Internalizing problems	Pearson Correlation	0.438*
	Sig. (2-tailed)	0.012
Externalizing problems	Pearson Correlation	0.287
	Sig. (2-tailed)	0.111
Total problems	Pearson Correlation	0.324
	Sig. (2-tailed)	0.071

**Figure 2** A) Correlation between the level of occupational stress and children's anxious/depressed problems T score in both case and control groups B) Correlation between the level of occupational stress and children's internalizing problems T score of both case and control groups

4. DISCUSSION

Our data showed that in subjects with moderate to severe occupational stress in our nurses' group, there is a higher mean of T score of anxious/depressed. Also, nurses' occupational stress had a positive correlation with anxious/depressed problems and internalizing problems T score of their children while such results didn't report in the control group. According to Mehrabi et al. study on 170 nurses (Mehrabi et al. 2008) ranged between 26 to 59 years old, with about three years of experience in nursing; more than 73% of the nurses experienced stress at the medium level, which can be as a support for our study that our Mean of nurses' occupational stress was about 40.38 ± 18.54 which shows low to moderate level of stress in nurses (Mehrabi et al., 2008). Another study, demonstrated that the mean score for nurses' occupational stress was significantly different in males and females. Female nurses had a higher level of occupational stress than male nurses. These differences between genders and higher occupational stress levels of females may alter family relationships and children's socio-emotional well-being (Adeb-Saeedi, 2002).

In this study, we found out that nurses' occupational stress leads to their children's anxious/depressed and internalizing symptoms: therefore, occupational stress and depression may have a correlation that other studies need to be done in the future. Musavi et al. reported somatic complaints, anxiety, depression, social problems, thought problems, externalizing, internalizing, and antisocial behavior scores were significantly higher in children with depressive mothers (Moosavi and Ahmadi, 2012). Alizadeh et al. did a research on 681 mothers of using the CBCL questionnaire reported, an authoritative parenting style with high responsiveness and high demanding in parenting behavior has shown to be directly related to fewer children's internalizing and externalizing symptoms (Alizadeh et al., 2011).

In present study, it was found that the average working hours in two groups of nurses and employees were different and statistically, findings showed the role of working hours on maternal job stress. Various findings have shown that existing workplace conditions can affect job performance and job stress (Cooper and Cartwright, 1994). In the present study, the effect of job stress on families and children was well identified. But similar findings suggest that job stress has cost billions of dollars for employees by affecting health care costs, reducing productivity and increasing absenteeism rates among employees (Luthans, 2002). New diseases such as corona are now affecting many nurses, making medical care more difficult and stressful (Liao, Wang and Kang, 2020; Cloyd and Thompson, 2020). This has certainly had a negative effect on nursing mothers. Studies have shown that heavy work, forced labor and high working hours, lack of support, job inadequacy, job insecurity have been potential factors and variables of job stress (Hoboubi et al., 2017; Kitronza and Mairiaux, 2015; Habibi et al., 2014). Studies have shown that nurses are emotionally pressured to deal with patients and the tensions associated with their treatment (Sweet and Norman, 1995; Ribeiro et al., 2014). Studies in the UK have shown that a lack of understanding and support from caregivers and caregivers has contributed to increased job stress (Sveinsdottir, Biering and Ramel, 2006).

To our knowledge, this is the first study which is evaluating children's behavior by CBCL questionnaire in children of mothers with night shift work in an Iranian population. As a result, it is important to pay attention to useful solutions and focus more on this issue. The most important limitation of the present study was the educational and professional variables of nurses. Among the nurses were some assistants, which we assumed might affect their stress. In fact, unlike those who have higher levels of education and more professional skills, they affect their morale. Studies have shown that inadequate education, low levels of education, and ambiguous job prospects are among the mediating variables associated with job stress in nurses (Golubic et al., 2009).

5. CONCLUSION

An increase in the level of nurses' occupational stress is showed that may lead their children to behavior problems like anxious/depressed and internalizing symptoms. To find the best solution to reduce job stress; we need to examine nurses during various longitudinal studies to identify and manage job stress in Iranian nurses. In this way nursing mothers during their working hours, they have experienced fewer problems and challenges, and this strategy is effective in their family relationships. Also, as a suggestion, screening children of nurses in case of behavior problems is recommended to prevent further problems.

Acknowledgement

The authors thank the Fasa University of Medical Sciences for supporting this research this article was based on a thesis performed by Dr. Naghmachi. The authors also acknowledge the support of Vali-e-Asr Hospital. The abstract this manuscript was presented as poster presentation in the Women Health Congress last year

Funding

This research received no external funding.

Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

Conflict of interest

The authors declare that they have no conflict of interest.

Data and materials availability

All data associated with this study are present in the paper and/or the Supplementary Materials.

Peer-review

External peer-review was done through double-blind method.

REFERENCES AND NOTES

- Achenbach TM, Rescorla L. Manual for the ASEBA school-age forms & profiles: An integrated system of multi-informant assessment: Aseba Burlington, VT: 2001.
- Adeb-Saeedi J. Stress amongst emergency nurses. *AENJ*. 2002;5(2):19-24.
- Alizadeh S, Talib MBA, Abdullah R, Mansor M. Relationship between parenting style and children's behavior problems. *ASS*. 2011;7(12):195-200.
- Cloyd B, Thompson J. Virtual Care Nursing: The Wave of the Future. *Nurse Leader*. 2020;18(2):147-50.
- Cooper CL, Cartwright S. Healthy mind; healthy organization—A proactive approach to occupational stress. *Human relations*. 1994;47(4):455-71.
- Erkutlu HV, Chafra J. Relationship between leadership power bases and job stress of subordinates: example from boutique hotels. *Manag Res News*. 2006.
- Habibi E, Dehghan H, Safari S, Mahaki B, Hassanzadeh A. Effects of work-related stress on work ability index among refinery workers. *JEHP*. 2014;3.
- Hoboubi N, Choobineh A, Ghanavati FK, Keshavarzi S, Hosseini AA. The impact of job stress and job satisfaction on workforce productivity in an Iranian petrochemical industry. *SH@W*. 2017;8(1):67-71.
- Karabekiroglu K, Uslu R, Kapci-Seyitoglu EG, Özbaran B, Öztop DB, Özel-Özcan Ö, et al. A nationwide study of social-emotional problems in young children in Turkey. *infant Behavior&Development*. 2013;36(1):162-70.
- Kitronza PL, Mairiaux P. Occupational stress among textile workers in the Democratic Republic of Congo. *Tropical medicine and health*. 2015.
- Landa JMA, López-Zafra E, Martos MPB, del Carmen Aguilar-Luzon M. The relationship between emotional intelligence, occupational stress and health in nurses: a questionnaire survey. *IJNS*. 2008;45(6):888-901.
- Liao X, Wang B, Kang Y. Novel coronavirus infection during the 2019–2020 epidemic: preparing intensive care units—the experience in Sichuan Province, China. *ICM Journal*. 2020; 46(2):357-60.
- Liu J, Leung PW, McCauley L, Ai Y, Pinto-Martin J. Mother's environmental tobacco smoke exposure during pregnancy and externalizing behavior problems in children. *Neurotoxicology*. 2013;34:167-74.
- Luthans F. Positive organizational behavior: Developing and managing psychological strengths. *AMP*. 2002;16(1):57-72.
- Mehrabi T, Parvin N, Yazdani M, Rafat NA. A study of the severity of some occupational stresses in nurses. *Iranian J Nursing Midwifery Res*. 2008;12(1).
- Moosavi S, Ahmadi M. Behavioral disorders in children with major depressive mothers. *J Gorgan Univ Med Sci*. 2012;14(3).
- Pološki Vokić N, Bogdanić A. Individual differences and occupational stress perceived: a Croatian survey. *ZIREB*. 2008;11(1):61-79.
- Ribeiro VF, Ferreira Filho C, Valenti VE, Ferreira M, de Abreu LC, de Carvalho TD, et al. Prevalence of burnout syndrome in clinical nurses at a hospital of excellence. *IAM*. 2014;7(1):22.
- Sveinsdottir H, Biering P, Ramel A. Occupational stress, job satisfaction, and working environment among Icelandic nurses: a cross-sectional questionnaire survey. *IJNS*. 2006;43(7):875-89.
- Sweet SJ, Norman IJ. The nurse-doctor relationship: a selective literature review. *JAN*. 1995;22(1):165-70.