



Original Article

Maternal Stress and its Associated Factors among Working Nurses in Public Sector Tertiary Care Teaching Hospitals, Karachi

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ARTICLE INFO

Keywords:

Maternal Stress, Professional Growth, Parental Stress Scale, Work Productivity, Nursing Education

How to Cite:

Zulfiqar, S., Hafeez, R., Badil, ., Channar, H. B., Kumar, A., Ali, Z., & Chandio, S. (2024). Maternal Stress and its Associated Factors among Working Nurses in Public Sector Tertiary Care Teaching Hospitals, Karachi : Maternal Stress among Working Nurses. Pakistan BioMedical Journal, 7(03), 32-27. <https://doi.org/10.54393/pbmj.v7i03.1053>

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ABSTRACT

Maternal stress has been identified as an epidemic that has a detrimental effect on work productivity and personal and professional growth. **Objectives:** To determine maternal stress and its associated factors among working nurses in public sector tertiary care teaching hospitals in Karachi, Sindh. **Methods:** The analytical cross-sectional study was accomplished at Dr. Ruth K.M Pfau Civil Hospital Karachi and Dow University Hospital Karachi. A total of 131 nurses were approached by a convenient non-probability sampling method. The Parental Stress Scale was used for data collection. Data were entered and analyzed by using SPSS version 24.0. Chi-square test was applied out to find an association between maternal stress and associated factors. **Results:** Nurses reported 72 (55%) mild parental stress, 58 (44.3%) parental moderate stress, and 1(1%) severe parental stress. Nurses belonging to the younger age group, widowed or divorced, had mild parental stress, while nurses who lived with their husbands had lesser moderate stress. Female participants with one child of either gender, whose more family members were earning, had less tendency to have mild parental stress. A statistically significant association was found between working nurses' parental stress level and age group (p -value=0.005). **Conclusions:** It was concluded that nurses reported mild, moderate, and severe maternal stress. Hence, it is increasingly imperative to create facilities like daycare centers and offer them the flexibility to perform their job effectively.

INTRODUCTION

Parental stress has been recognized as a grim health-related issue, and it accounts for a significant financial burden worldwide. However, impeding one's physical and emotional well-being may cause overwhelming consequences, mainly low morale attitudes and feelings of apathy at work [1, 2]. Stress incorporates the elevation of an individual's psychological demands. It leads to detrimental effects on one's decision-making ability at work [3, 4]. It is a response to incompatibility between the acknowledged needs and the capability to accomplish those demands [5]. Women as mothers, catering child care, and being in the work field is not a new concept. However, it is demonstrated that nurses are already

overburdened with the increased workload on the job [6]. Thus, women as mothers entering the work field prone to substantially to maternal stress [7, 8]. Furthermore, nurses have to perform multiple tasks at work, which can lead to considerably burdensome experiences [9]. It is affirmed by current research that maternal stress among mothers at work during the infancy period of their children was as high as 75 % [10]. Mothers being involved at work is apparent that women, as mothers' parents, play a more critical role than fathers' parents and may contribute towards the child's development and nurturance process [11, 12]. Nurturance is often viewed to be more of the mother's responsibility than that of nurses, who work in different

shifts that may serve similarity of standard timing and additional scheduled working hours and, therefore, might also possess high maternal stress [13].

There is a lack of data on maternal stress and its associated factors among nurses in Pakistan. Therefore, the study aimed to determine maternal stress and its associated factors among working nurses in public Sector Tertiary Care Teaching Hospitals in Karachi, Pakistan.

METHODS

An analytical cross-sectional study was accomplished at Dr. Ruth K.M Pfau Civil Hospital, Karachi and Dow Hospital, Karachi. Both hospitals are public sector tertiary care hospitals in Karachi, Pakistan. The study was employed for three months, from August 2019 to October 2019. Female married registered nurses with one or more children at least 18 years or below who might also be expecting a baby at the time of data collection (Being pregnant) were included in the study. The selection of participants was made through a non-probability convenient sampling method. The sample was calculated by taking the prevalence of parental stress in working women (P)=79%, [14] margin of error (d)=7%, and level of significance %, the calculated sample size is 131 patients with the help of Open Epi 3.0. online software for sample size calculation. Written informed consent was obtained from all participants before the data collection. Respondents participated voluntarily. The research study was conducted according to the declaration of Helsinki 2000. Data were collected by a validated, adopted tool named PSS (Parental Stress Scale), which measures maternal stress among working nurses. The PSS has an internal reliability of 0.83 and a test-retest reliability of 0.81. PSS was developed by Berry and Jones and established in August 1995. Its reliability was 0.79 measured by using Cronbach's alpha test. PSS tool was firstly established by Cohen *et al.*, in 1983 [15]. Study protocols were approved by the IRC (Institutional Review Committee) of Dow University of Health Sciences, Karachi, Ref-ION/MSN/2019-7/18-420. Data collection permission was taken from the medical superintendent of both hospitals. The confidentiality of participants was assured. The data were entered and analyzed by using SPSS version 24.0. Descriptive measures, like percentage and frequency, were reported to describe categorical variables such as age group, marital status, income level, number of children, gender of children, current pregnancy, nature of family, number of earning members, position at the job, nature of duty and working hours. Additionally, range, mean, standard deviation (SD), median, and interquartile range (IQR) were reported to describe the continuous variable, parental stress score. The Chi-square test and Fisher's exact test were used to assess the association between all independent covariates and parental stress

scores categories among nurses. First, the normality of the continuous variable was checked using the Shapiro-Wilk test. Then, Mann-Whitney U and Kruskal-Wallis tests were applied to study the mean differences between groups of all independent factors. All test results having p-values less than or equal to a 0.05 level of significance were considered statistically significant.

RESULTS

Table 1 exhibits working nurses' demographic, family, and workplace characteristics. A total of 131 female nurses were included in this study. Among all the participants, 61(46.6%) were less than thirty-one years old, and 47 (35.9%) were aged between 31 and 40 years, whereas only 23(17.6%) participants were more than forty years old. Most female nurses were married and lived with their husbands 125(95.4%). Nearly 120(92%) of the participants were earning a satisfactory level of income (>30,000 PKR). A high proportion of the female nurses had two children 59 (45.0%), whereas only 9 (6.9%) of nurses had several children. 72 (55%) of the participants had both-gender children, whereas almost an equal proportion of the female nurses had boys only 31(23.7%) or girls only 28(21.4%). Nearly half of the female participants lived in nuclear families 64(48.9%) and half in extended families 67(51.1%). Around 96 (73%) earned with their husbands. At the workplace, 110(84.0%) of participants had job positions as bedside nurses, whereas a deficient proportion of nurses were team leaders 13 (9.9%) and head nurses 8 (6.1%). Female nurses allotted fixed duty timings were 58(44.3%), whereas 73 (55.7%) nurses worked in different shifts. Nearly 47(36%) worked for six hours, and around 84 (64%) had a working duration of eight hours at their respective workplaces. None of the participants withdrew from the study.

Table 1: Socio-Demographic Characteristics of Working Nurses(n=131)

Characteristics	Frequency (%)
Age Group (Years)	
21 – 30	61(46.6)
31 – 40	47(35.9)
41 – 50	23(17.6)
Marital Status	
Widowed/ Divorced	6(4.6)
With Husband	125(95.4)
Income Level	
Average	11(8.4)
Satisfactory	120(91.6)
Number of Children	
1	42(32.1)
2	59(45.0)
3	21(16.0)

≥ 4	9 (6.9)
Gender of Children	
Boys Only	31 (23.7)
Girls Only	28 (21.4)
Both	72 (55.0)
Current Pregnancy	
Yes	8 (6.1)
No	123 (93.9)
Nature of Family	
Nuclear	64 (48.9)
Extended	67 (51.1)
Number of Earning Members	
Only Self	16 (12.2)
Self & Husband	96 (73.3)
Others	19 (14.5)
Position at Job	
Bedside Nurse	110 (84.0)
Team Leader	13 (9.9)
Head Nurse	8 (6.1)
Nature of Duty	
Fixed	58 (44.3)
Shift	73 (55.7)

Table 2 describes parental stress scores among working nurses. According to the Parenting Stress Scale (PSS), which was used to assess parental stress among working nurses, it was found that the average stress score of female nurses was 42.74 with SD ± 9.56, and scores ranged between 29 and 68. Stress scores were also categorized into three categories: 18-41 = mild, 42-65 = moderate and 66-90 = severe [10]. 72 (50%) nurses reported having parental stress, and 58 (44.3%) had moderate stress; however, only one female participant, 1 (0.8%), fell into the category of severe parental stress.

Table 2: Parental Stress Scores among Working Nurses (n=131)

Parental Stress Scores		Measurements
Mean ± SD		42.74 ± 9.56
Range		29 – 68
PSS Categories N (%)	Mild	72 (55.0)
	Moderate	58 (44.3)
	Severe	1 (0.8)

Table 3 reveals the results of Chi-square/ Fisher's exact tests, which were run to find the association between parental stress (Mild/ Moderate) among nurses and various demographic, family, and workplace-related independent factors. Only one female 1 (0.8%) nurse was found to be severely stressed; therefore, that case was excluded from the data, and the tests, as mentioned earlier, were run on a sample of 130 participants. It was found that most of the female nurses who belonged to the younger age group had mild parental stress 43 (70.5%). Female nurses who were widowed or divorced had more chances of being

moderately stressed 4 (66.7%), whereas those who lived with their husbands had lesser chances of having moderate stress 54 (43.5%). It was noted that female participants who had one child only of either gender were less likely to have mild stress 15 (35.7%). Those participants whose other family members were also less likely to have moderate parental stress 6 (31.6%). It was found that those female participants who were in bedside nurse position 50 (45.9%), working on shift duty 37 (51.4%), and working for eight hours 40 (48.2%) were more likely to have moderate stress, as compared to those who were team leader or head nurse 8 (38.1%), working on fixed duty timings 21 (36.2%) and working for six hours 18 (38.3%), respectively. It was observed that none of the variables, except the age group (p-value=0.005), showed a statistically significant association with the parental stress level among working nurses.

Table 3: Factors Associated with Parental Stress among Working Mothers (n=130)

Variables	Total	Parental Stress		P-value
		Mild (n=72) n (%)	Moderate (n=58) n (%)	
Age Group (Years)				
21 - 30	61	43 (70.5)	18 (29.5)	0.005^A
31 - 40	47	19 (40.4)	28 (59.6)	
41 - 50	22	10 (45.5)	12 (54.5)	
Marital Status				
Widowed/ Divorced	6	2 (33.3)	4 (66.7)	0.406~
With Husband	124	70 (56.5)	54 (43.5)	
Income Level				
Average	11	6 (54.5)	5 (45.5)	0.999~
Satisfactory	119	66 (55.5)	53 (44.5)	
Number of Children				
1	42	27 (64.3)	13 (44.8)	0.321^A
2	59	29 (49.2)	30 (50.8)	
≥ 3	29	16 (55.2)	15 (35.7)	
Gender of Children				
Boys Only	31	20 (64.5)	11 (35.5)	0.499^A
Girls Only	28	15 (53.6)	13 (46.4)	
Both	71	37 (52.1)	34 (47.9)	
Current Pregnancy				
Yes	8	5 (62.5)	3 (37.5)	0.731~
No	122	67 (54.9)	55 (45.1)	
Nature of Family				
Nuclear	63	36 (57.1)	27 (42.9)	0.696^A
Extended	67	36 (53.7)	31 (46.3)	
Number of Earning Members				
Only Self	16	10 (62.5)	6 (37.5)	0.334^A
Self & Husband	95	49 (51.6)	46 (48.4)	
Others	19	13 (68.4)	6 (31.6)	
Position at Job				
Bedside Nurse	109	59 (54.1)	50 (45.9)	0.512^A
Team Leader/ Head Nurse	21	13 (61.9)	8 (38.1)	

Nature of Duty				0.083 [^]
Fixed	58	37 (63.8)	21 (36.2)	
Shift	72	35 (48.6)	37 (51.4)	

[^] p-value has been calculated using the Chi-Square Test
 ~p-value has been calculated using Fisher's Exact Test
 Table 4 discloses the mean stress score among various characteristics of working mothers. Mann-Whitney U and Kruskal-Wallis tests were used to compare mean parental stress scores among different attributes of female working nurses (n=131). It was observed that the average stress score was lower among those females who belonged to younger ages (mean 38.28 with SD ± 6.20) compared with those female nurses who belonged to older ages (mean 47.87 with SD ±11.12). Statistically, significant mean stress differences were found among the periods of nurses (p-value=< 0.001). Widowed or divorced working nurses had higher average stress scores (48.33 ± 12.59) than nurses who lived with their husbands (42.47 ± 9.37), although these mean differences were insignificant. An increase in average stress scores was found along with the rise in the number of children, as nurses having one child only had low parental stress (40.62 ± 9.65), while those nurses who had three or more children also had relatively higher stress (44.53 ± 9.31). It was assessed that nurses who worked as bedside nurses (43.12 ± 9.56) and those who worked for eight hours (44.15 ± 11.03) had higher average scores as compared to other nurses who worked as a team leader or head nurse and those who spent six working hours at the workplace, respectively. The average stress score was lower among those nurses whose duty timings were fixed (mean 40.03 with SD ± 7.07) than those female nurses who worked on shift duty (mean 44.89 with SD ± 10.72). Statistically, significant mean stress differences (p-value=0.027) were found between types of responsibility.

Table 4: Comparison of Mean Stress Score among Various Characteristics of Working Mothers(n=131)

Variables	Parental Stress		p-value
	Mean ± SD	Median (IQR)	
Age Group (Years)			
21 – 30	38.28 ± 6.20	39.0 (9.0)	< 0.001 [^]
31 – 40	46.02 ± 9.92	42.0 (17.0)	
41 – 50	47.87 ± 11.12	52.0 (18.0)	
Marital Status			
Widowed/ Divorced	48.33 ± 12.59	50.0 (23.0)	0.210~
With Husband	42.47 ± 9.37	40.0 (14.5)	
Income Level			
Average	41.27 ± 8.62	39.0 (20.0)	0.580~
Satisfactory	42.88 ± 9.66	40.0 (15.0)	
Number of Children			
1	40.62 ± 9.65	39.0 (10.0)	0.128 [^]
2	43.34 ± 9.51	42.0 (15.0)	
≥ 3	44.53 ± 9.31	41.0 (13.5)	

Gender of Children			
Boys Only	40.81 ± 9.36	39.0 (14.0)	0.257 [^]
Girls Only	42.00 ± 9.47	40.5 (11.0)	
Both	43.86 ± 9.64	40.5 (14.7)	
Current Pregnancy			
Yes	41.62 ± 4.56	39.5 (5.5)	0.813~
No	42.81 ± 9.80	40.0 (16.0)	
Nature of Family			
Nuclear	42.73 ± 10.38	39.5 (19.7)	0.521~
Extended	42.75 ± 8.78	40.0 (9.0)	
Number of Earning Members			
Only Self	43.06 ± 9.00	39.0 (9.0)	0.105 [^]
Self & Husband	43.73 ± 10.11	40.5 (16.7)	
Others	37.47 ± 4.28	37.0 (8.0)	
Position at Job			
Only Self	43.12 ± 9.56	40.0 (15.0)	0.175~
Self & Husband	40.76 ± 9.53	39.0 (20.0)	
Nature of Duty			
Only Self	40.03 ± 7.07	39.0 (6.5)	0.027~
Self & Husband	44.89 ± 10.72	42.0 (19.5)	

SD = Standard Deviation, IQR = Inter-Quartile Range

[^] P-value has been calculated using the Kruskal-Wallis Test
 ~P-value has been calculated using the Mann-Whitney U Test

DISCUSSION

The present study portrays greater maternal stress among working nurses. These study results are parallel with a study carried out by Park *et al.*, in China which reported a higher level of maternal stress among working nurses [16]. This current study reveals that maternal stress among working nurses prevailed more at a mild level than a moderate extent. These study findings are in line with a study employed in Malaysia on the association of child behavior and maternal stress among mothers of preschool children by Yeo *et al.* The study showed that maternal stress among working mothers was similar to the current findings [17]. Moreover, the researchers used the PSS tool incorporated in the present study. These findings disclose that more working mothers experienced mild stress than moderate stress levels; yet, none of the mothers, whether employed or staying at home, suffered extreme stress levels [16]. The current study results disclosed that the younger age group of female nurses had maternal stress to a greater extent. These study findings are consistent with a study employed in Italy, which indicated that the younger age group is more prone to maternal stress as compared to the older age group of female nurses [18]. One of the factors that prevented the mother from suffering from severe maternal stress was the availability of strong family support. It was found that mothers who worked had excellent support from their parents to look after their children, enabling them to stay protected by related family

members. Similarly, in the current study, nurses were supported by either joint family. If not, at least they had arranged their duties shifts according to the availability of their spouse. Consequently, their children are better cared for in their absence. Hence, none of the mothers in this study suffered severe stress. However, there was a prevalence of mild to moderate maternal stress levels. Another study by Juin, Jaafar, and Ghazali titled 'The relationship between maternal stress and perceived children's social problems behavior among Chinese working mothers [19], examined the relationship between maternal stress and children's social behavior problem. The study findings revealed that parenting stress among working mothers was highly associated with children's behavior problems, the income of the family, and the number of children. Present study findings exhibited that female nurses having more than eight working hours and on shift duty had shown a far larger level of maternal stress among nurses. These study results are congruent with a study accomplished in Portugal, which demonstrated a much higher level of maternal stress in those who had long working hours and on-shift duty [20].

CONCLUSIONS

It is concluded that working nurses experience higher level of maternal stress. Younger age group of nurses had greater level of maternal stress. Strong family support was identified as preventive factor from maternal stress among working nurses.

Authors Contribution

Conceptualization: SZ

Methodology: RH, B., ZA, SC

Formal analysis: AK, HBC

Writing, review and editing: RH, B., ZA, SC

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

Source of Funding

The authors received no financial support for the research, authorship and/or publication of this article.

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