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Perceived Stress and Burnout among Nursing Personnel Working in a Tertiary Care Hospital: a Cross-sectional Study in Eastern India

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Abstract

Purpose:

Perceived stress and burnout are by-products of physiological and psychological burdens among nursing personnel. Physical and psychological stress is a perennial issue among the health care providers, especially among nurses in the resource constrained settings. With this endeavor, we have tried to examine the burden of perceived stress and burnout among the nurses in tertiary care settings. Along with the burden, we have also looked at a few new set of potential determinants for the aforementioned outcomes.

Methodology:

An institution-based cross-sectional study was carried out to assess the level of perceived stress, burnout amongst the nursing personnel working at various levels, in a tertiary care Hospital, Bhubaneswar, Odisha, India. The total enumeration sampling technique was used along with pre-defined inclusion and exclusion criteria. After accounting for the pre-defined inclusion and exclusion criteria, we arrived at a sample size of 401 to be interviewed for the study. Cohen perceived stress scale and Maslach's Burnout Inventory, were used for assessing the perceived stress and burnout, respectively.

Findings:

The study revealed that stress [Low: 9.2%, Moderate: 87.3% and High: 3.5%], emotional exhaustion [Low: 20.4%, Moderate: 45.1% and High: 34.4%] and depersonalization [Low: 10%, Moderate: 26.7% and High: 63.3%] is prevalent among

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nurses in private tertiary care. They also had low perceived personal accomplishment [Low: 63.6%, Moderate: 22.9% and High: 13.3%]. 8 or more hours of duty per day [beta coefficient 1.36, 95% confidence interval 0.42 – 2.31] and 8 or more numbers of night duties per month [beta coefficient 1.76, 95% confidence interval 0.52 – 3.00] emerged as significant risk factors for stress when compared to 6 hours of duties per day and no night duties per month. Similarly, higher night duties [up to 7: beta coefficient 1.76, 95% confidence interval 0.52 – 3.00 and 8 or more: beta coefficient 1.6, 95% confidence interval 0.42 – 2.77] emerged as a significant risk factor for emotional exhaustion when compared to no night duties.

Practical Implications:

Our study findings provide an estimation of stress and burnout burden prevalence in tertiary care and associated factors that will be helpful in advocating policy changes and targeted interventions. The level of stress and burnout among nurses is increasing in tertiary care, therefore, policies should be formulated to identify and take appropriate preventive measures. The coping mechanisms should be promoted for health care providers, especially for the nursing personnel. This paper can pave a path to examine the relationship of life aspirations and their effect on burnout, which will be a valuable addition to the existing body of knowledge in the domain of burnout

Originality:

Having used cross-sectional study design and the robust method of linear regression analysis technique, our study found some novel results that will add valuable knowledge in furthering the understanding of burnout among the nurses and in general.

Keywords

Perceived Stress; Burnout; Tertiary Care; Cross-Sectional Study; Prevalence

1. Introduction

Professional Nurses are the "backbone" of the health care system and quality patient care because of their knowledge, skills, work, and commitment(Anand & Fan, 2016). Nursing personnel brings special insight into health matters that can be incorporated more into a community and individual health plans. Depending on the patient's need, they might be the best coordinators of patient care. They carry tremendous responsibilities in their workplace along with a high degree of personal, interpersonal, and work-home interference(Asiedu et al., 2018), yet with a little autonomy.Nursing profession demands overwhelming duty periods, long work hours, and performance under tremendous pressure as lives of others depend on them(Martín-Del-Río et al., 2018) and their clinical performance bears a direct impact on patient's experience

and health outcome as well as the overall performance of the hospital(Robinson & Gelling, 2019). All this can potentially result in the development of psychological stress and progressive accelerating burnout(WHO, 2010).

Stress is a complex psychobiological process that is experienced when the individual perceives a threat or danger in the environment(Lazarus, 1991). Burnout, on the other hand, is a state of emotional, mental, and physical fatigue brought on by severe and/ or long-term stress. It has three components, namely, physical fatigue, cognitive weariness, and emotional exhaustion(Shirom, 2004).Some of the professional factors are Physical stressors (e.g., working in unsuitable conditions, working long hours, and having insufficient tools and equipment as well as employees), and psychological stressors (e.g., too many symptoms connected to diseases and treatments, rising patient and family expectations, and occupational safety issues), and administrational stressors (e.g., insufficient performance measures and unsatisfactory salaries)(Kovács et al., 2005).

In the nursing profession, burnout is a reality. It has three dimensions: emotional exhaustion, depersonalization, and reduced personal accomplishment and is caused by persistent stress in the hospital setting (Velando-Soriano, et al., 2020).Emotional exhaustion highlights the lack of energy, the inadequate perception of own emotions, and the context. Depersonalization refers to the disruption of interpersonal, constant indifferent, and cynical inclination. Similarly, perception of lack of personal accomplishment can manifest either through the tendency of negative self-assessment of capabilities, achievements, and professional success or by limiting opportunities and obligations to others, resulting in the development of an image of an incompetent and incapable professional(Dall'Ora et al., 2020).

Many studies suggest that health professionals are at a higher risk of psychosocial stress than others(Kheiraoui et al., 2012), nursing professionals, in particular(Chiang & Chang, 2012).In the present day, rising stress had resulted in morbidities and dissatisfaction among the caregivers in tertiary care settings(Thomas, 2004). In resource-poor settings, especially in developing countries like India, perceived stress and burnout among the nursing personnel are found to be highly prevalent(Chaudhari et al., 2018; Maharaj et al., 2018). And this plays an important role in the nurse- patient unrest, which is a burning issue today and this often leads to deadly consequences for both(Halbesleben et al., 2008). However, there are very few studies in India that looked into the determinants of stress and burnout among nurses in tertiary hospitals(Catherin et al., 2019; Shajan & Nisha,2019; Vernekar & Shah, 2018)and is insufficient in understanding the width and depth of the underlying phenomenon.

Therefore, it becomes imperative to understand the factors related to perceived stress and the development of burnout among nursing professionals in a tertiary care

hospital. Hence, a current study was conducted, in this unexplored area to find out the prevalence of stress and burnout and the role of various professional and personal-level factors associated with the nursing personnel working at a tertiary care Hospital, Bhubaneswar, Odisha, India.

2. Methodology

2.1 Study design

An institution-based cross-sectional study was carried out from July to December 2018 to assess the level of perceived stress, burnout amongst the nursing personnel working at various levels, in P B M Hospital, Bhubaneswar, Odisha, India.

2.2 Sampling Design and Sample Size

The total enumeration sampling technique was used along with pre-defined inclusion and exclusion criteria. The inclusion criteria were nursing personnel having more than 1 year of working experience in a tertiary care hospital, willingness to participate in the study, and without any physical/mental disability. Exclusion criteria for the study were nursing personnel with less than one year of experience in tertiary care, nurses who were not directly related to patient care - managerial and administrative positions. After accounting for the pre-defined inclusion and exclusion criteria, we arrived at a sample size of 401 to be interviewed for the study.

2.3 Data

During the study, data were collected on socio-demographic attributes, relevant covariates, perceived stress, and burnout. Data were collected using a pre-tested self-administrable structured questionnaire. Under basic socio-demographics, data on age, education, caste, and cohabitation status were collected. Similarly, data were collected on relevant personal and professional covariates such as number of children, number of family members, monthly household income, total experience, total years of experience, working hours, and number of night duties per month. Perceived stress was assessed using Cohen Perceived Stress Scale consists of 10 questions with a final score ranging from 0-40 with higher scores indicating higher perceived stress(Cohen, 1994). The Perceived Stress Scale was also represented as levels of stress using preset cut points - scores ranging from 0-13 were considered as low stress, 14-26 as moderate stress, and 27-40 was considered as high perceived stress(Cohen, 1994).

Similarly, the Maslach's Burnout Inventory, comprising 22 questions, was used for assessing emotional burnout, which subsumes subscales on emotional exhaustion, depersonalization, and personal accomplishment(Maslach et al., 1996). However, the Maslach's Burnout Inventory was rescaled to 5 point scale (0 – Never, 1 – Rarely, 2 – Sometimes, 3 – Frequently, 4 – Always) as opposed to the original 7 point scale (0 -

6) to make it easier to perceive and respond for the participants. The continuous scale was further tabulated into three categories (low, moderate, and high) created by using a proportional score to the already established reference range for the original 7 point scale(Aquino et al., 2018). The cut-offs used were - for emotional exhaustion, low (0–10), moderate (11–18), and high (≥19); for depersonalization, low (0–4), moderate (5–8) ,and high (≥9), and finally, for personal accomplishment, low (≤20), moderate (21–25) and high (≥26).

2.4 Analysis

The distribution of all the relevant co-variates was examined in descriptive tables across two levels of seniority (senior nurse and staff nurse). Statistical significance of the distribution differentials was tested using appropriate tests- Fisher's Exact Test for categorical variables and t-test for continuous variables. Similarly, perceived stress and burnout results were also represented across levels of seniority.

The principal outcomes of our study were perceived stress, emotional exhaustion, personal accomplishment, and depersonalization. To estimate the factors associated with these outcomes, we modelled the principle outcome variables using linear regression frameworks. We modelled each of the four principal outcome variables separately. The equation for the used model framework is as follows

$$y= \beta_0+\beta_1 x+\varepsilon$$

Where,

y is the outcome variable of interest

x is the matrix of exposure and co-variates

$\beta 1$ is the fixed- effect regression coefficient

$\beta 0$ signifies intercept and

ε is the vector of errors

After the initial estimation of un-adjusted models, we estimated the fully-adjusted association using the independent variables which emerged significantly from the un-adjusted model. Through fully-adjusted estimations, the independent impact of individual explanatory variables on the estimates of regression was measured.

2.5 Ethical Approval

The study obtained ethical approval from the Institutional Ethics Committee of Kalinga Institute of Medical Sciences, Bhubaneswar (KIMS/KIIT/IEC/75/2018). All participants completed an informed consent form to be a part of this study. Confidentiality of data was ensured at every level of the study.

3. Results

The data was collected from 401 eligible nurses. The median age of the senior nurses was 32 years, whereas, the median age of staff nurses was 26 years. Among senior nurses, more than 80% of the senior nurses belonged to the general caste and none from Scheduled Tribe or Scheduled Caste. Among the staff nurses, 59.4% belonged to the general caste and 25.3%, 10.6%, and 4.7% were from other backward castes, scheduled caste, and scheduled tribe, respectively. Most senior nurses (46.3%) have Bachelor of Nursing Science, whereas, most staff nurses have pursued General Nursing and Midwifery (64.7%). In regards to duty hours, most nurses have 8 or more hours of duty (senior nurses: 87.5%, staff nurses: 54.1%).

Further, a higher proportion of staff nurses (68%) have more than 8 days of night duties every month in contrast to only 9.8% among senior nurses. Intuitively, senior nurses had higher a proportion of personnel (51.2%) doing 7 or fewer days of night duties every month. Furthermore, the senior nurses have a higher proportion of 2 or more children than staff nurses. Though, there was no difference in the number of family members in both the groups, but, a higher proportion of senior nurses (56%) have a household income of more than 50,000 rupees, whereas, a higher proportion of staff nurses (42%) have a household income between 20,000 to 30,000 rupees. (Table 1)

Overall the median value of perceived stress was 19 (16.0 – 21.0) and around 9 out of 10 nurses were found to be suffering from moderate stress (87.3%). Both senior and staff nurses have identical average perceived stress score (19), however, among stress categories, a higher proportion (9.8%) of senior nurses were found to be in the high-stress category in comparison to the staff nurses (2.8%). In regards to the burnout, the overall average score for emotional exhaustion was 16 (senior nurses: 13, staff nurses: 17) and for depersonalization was 10 (senior nurses: 8, staff nurses: 10) and for personal satisfaction was 19 (senior nurses: 22, staff nurses: 18). Intuitively, the proportion of high emotional exhaustion (37.2%) and high depersonalization (65.8%) was substantially higher among the staff nurses and the proportion of high perceived personal accomplishment (12.2%) was half in comparison to the senior nurses (high emotional exhaustion: 9.8%, high depersonalization: 41.5%, high personal accomplishment: 24.4%). (Table 2)

Estimates from the adjusted model for perceived stress revealed that, on an average, the perceived stress score is 1.36 (0.42 – 2.31) unit higher among those who work 8 hours or more than those who work for 6 to 7 hours. Similarly, those who do 8 or more night duties a month, on an average, have a 1.76 (0.52 – 3.00) unit higher stress score than those who do not do night duties at all. The co-variate found partially association with the unadjusted models -caste, education, and household monthly income were attenuated in the adjusted model. (Table 3)

We found, from the adjusted model, participants who do up to 7 and 8 or more night duties have on an average, 1.52 (0.14 – 2.89) and 1.6 (0.42 – 2.77) units higher emotional exhaustion, respectively, than those who don't work in night duties at all. The statistics from the adjusted model for depersonalization showed that nurses with 4 or more family members have -0.78 (-1.52 – -0.03) units less depersonalization than those who have 3 or fewer family members. Similarly, on an average, other backward caste and the general category showed -4.59 (-7.73 – -1.45) and -5.64 (-8.63 – -2.65) units less personal accomplishment, respectively, when compared to the scheduled tribe category. The associated co-variate from unadjusted models, such as age, position, total experience, and monthly family income, turned out to be insignificant in the respective adjusted models. (Table 3)

4. Discussion

In India, mental health has historically been neglected and stigmatized due to the lack of mental health literacy(Thornicroft et al., 2007). Although comparatively less than the general population, the stigma and misinformation are prevalent among the medical fraternity as well(Kishore et al., 2011). Stress and emotional burnout could easily be considered as the most prevalent and the most ignored mental health conditions even among the health service providers. Our study found that around 9 out of 10 nurses were suffering from moderate stress. The figure is quite large and in conformity with many other studies conducted in similar tertiary care hospitals in developing countries(Alharbi & Alshehry, 2019; Bodke & Dhande, 2018).

Similarly, we found 45% and 34% of nurses were experiencing moderate and high emotional exhaustion and 26% and 63% were experiencing moderate and high depersonalization, respectively. In tandem, 64% had scored their accomplishment to be low. The results are more or less in conformity with similar studies conducted in similar settings in India(Rajeswari& Sreelekha, 2015; Saravanabavan et al., 2019). This epidemic-like-situation of stress in tertiary cares could be a distinct sign of continuous negligence in combating this indistinct menace, which could potentially compromise the quality of treatment and the health outcome of a substantial number of patients, when put in a national or global perspective(Hatch et al., 2018; Rodrigues et al., 2017).

The chaotic and ever-demanding nature of the nursing profession in India is well documented(Crawford, 2016; Gill, 2016;Varghese et al., 2018) and has been reflected in our results when isolating the factors of stress and burnout too. Though caste, education, working hours, and number of night duties were associated with perceived stress in the unadjusted models, it was the latter two which were significantly associated when adjusted. Workload leading to stress is well established, globally, and our results are in agreement with it(Conradie et al., 2017; Faremi et al., 2019; Halpin et al., 2017).

Further, the result pertaining to emotional exhaustion reflected a similar story – the impact of the number of night duty was significant with a secular trend across categories in the adjusted model. Although age, seniority, and the number of family members were also found to be associated with the unadjusted model but were diluted in the adjusted model giving a clearer picture, that was in sync with previous studies(Lasebikan &Oyetunde, 2012). An identical result was also found for depersonalization as well – night duties being the primary determinant. A study by Muhammad & Vishwanath, in 1997, has extensively documented the interplay of shift work and mental health wellbeing(Jamal & Baba, 1997). The authors, contrary to our result, had observed no significant association of burnout with shift work but associated it with psychosomatic health problems, skill use, job satisfaction, intrinsic motivation, and absenteeism. 30 years fast forward, the work environment of tertiary health care has leapfrogged in tandem with the urbanization across India. With increased professional demand, it might become very challenging to get adequate sleep and thus may create cascading effect leading to increased burnout, as observed in a recent study(Vidotti et al., 2018).

Finally, the third component in Maslach's burnout inventory, that is personal accomplishment, was found to be related to caste, marital status, seniority, years of experience, and monthly family income in the unadjusted model. However, in the model where all the factors were accounted for, only caste came out as significant with a clear gradient. This is an interesting finding. In comparison to the schedule tribe (considered as one of the most deprived sections in India), the general and other backward caste nurses had perceived far less personal accomplishment. The difference between the scheduled tribe and scheduled caste, which is considered as the 2nd most deprived section, however, is not significant. This result is novel and we could attribute it to the variation in emerging life aspirations in Indian society, which is influencing all the aspects of life in all the developing countries. Though there are no studies connecting aspiration and personal accomplishment in the context of burnout, but in general, aspiration is found to be associated with life satisfaction(Mason &Faulkenberry, 1978).

These findings, in turn, toss and serve to contribute to a broader discussion about the design and implementation of policies aimed at reducing inequality and prejudice based on factors like as gender, race, and caste. These policies are at the heart of the contentious discussions about reservations in education, employment, and political office in India more broadly. Because such arguments frequently privilege identity politics over empirical evidence. People's conceptions of what they want their lives to be, what they believe they will be, and finally what investments they will make to achieve these goals may be influenced by the

existence of pervasive—often negative—identity salience. This could be the case in Odisha, as well as India as a whole. As a result, we argue for the potential contribution of information and behavior change communication campaigns that reaffirm positive aspects of identity and its importance in encouraging people to engage in their human, economic, and social capital (Alvi et al., 2019).

This recent phenomenon of increased aspiration has been well documented(Reeves, R. V., et al.,2018) , and, it has been observed that it is largely limited to the privileged half – mostly the general and the other backward classes. A recent study was conducted in Odisha in 2019, the same state where our study was conducted, had provided robust evidence for the same(Alvi et al., 2019). It also has to be noted that there is no representation from the schedule caste and scheduled tribe among the senior nurses. Therefore, we could say that at similar professional levels respondents from deprived categories were far more satisfied with their professional achievement and thus more resilient to burnout than the upper caste respondents.

5. Limitations

Along with all the methodological rigor and robust analytics, the study has a few limitations as well. First of all, this study was conducted at one tertiary care hospital in the capital of Odisha. Accordingly, the findings in this study may have limited scope in representing the burden of stress and burnout among nurses across the continuum of care. In our study, we have derived the factors from the demographic, family, and professional characteristics, but did not ask for self-perceived factors for stress and burnout from the participants and thus might have missed a few factors which were not related to the aforementioned categories. Furthermore, we have discounted the vertical and horizontal inter-personal relationship at work and family which plays a significant role in the mental health state.

6. Conclusion

The study reveals that the prevalence of stress and burnout among nurses in private tertiary care is high. The major factors for stress and burnout, which came afore was workload. It is evident that the level of stress and burnout among nurses is on increase in tertiary care now and therefore, policies should be formulated to facilitate induction of preventive measures and coping mechanisms should be promoted by the concerned administration for health care providers, especially for the nurses. Further, we would recommend an in-depth study on the association of aspiration and personal accomplishment and how to leverage on the relationship to manage burnout.

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Table 1 Distribution of Demographic and Professional Characteristics Across Working Levels of Nursing personnel (n=401)

Variable	Senior Nurse n = 41 n (%)	Staff Nurse n = 360 n (%)	Total n = 401 n (%)	P-value
Age in completed years				
Median (IQR)	32.0 (30.0 - 36.0)	26.0 (24.0 - 28.0)	26.0 (24.0 - 29.0)	< 0.0001
Caste				
General	33 (80.5%)	214 (59.4%)	247 (61.6%)	0.017
Other Backward Caste	8 (19.5%)	91 (25.3%)	99 (24.7%)	
Scheduled Caste	0 (0.0%)	38 (10.6%)	38 (9.5%)	
Scheduled Tribe	0 (0.0%)	17 (4.7%)	17 (4.2%)	
Cohabitation status				
Single	7 (17.1%)	220 (61.1%)	227 (56.6%)	< 0.0001
Married	34 (82.9%)	140 (38.9%)	174 (43.4%)	
Highest education				
General Nursing and Midwifery	17 (41.5%)	233 (64.7%)	250 (62.3%)	0.001
Bachelor of Science - Nursing	19 (46.3%)	118 (32.8%)	137 (34.2%)	
Master of Science - Nursing	5 (12.2%)	9 (2.5%)	14 (3.5%)	
Total experience				
2 years or less	0 (0.0%)	139 (38.6%)	139 (34.7%)	< 0.0001
3 to 5 years	4 (9.8%)	145 (40.3%)	149 (37.2%)	
6 years or more	37 (90.2%)	76 (21.1%)	113 (28.2%)	
Total experience in PBM Hospital				
2 years or less	2 (4.9%)	158 (43.9%)	160 (39.9%)	< 0.0001
3 years	7 (17.1%)	106 (29.4%)	113 (28.2%)	
4 years or more	32 (78.0%)	96 (26.7%)	128 (31.9%)	
Working Hours				
6 to 7 hours	5 (12.5%)	163 (45.9%)	168 (42.5%)	< 0.0001
8 hours or more	35 (87.5%)	192 (54.1%)	227 (57.5%)	
Number of night duties per month				
Not at all	16 (39.0%)	54 (15.0%)	70 (17.5%)	< 0.0001
7 or less days	21 (51.2%)	58 (16.2%)	79 (19.8%)	
8 or more days	4 (9.8%)	247 (68.8%)	251 (62.7%)	

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Household Characteristics				
Number of Children				
One child	13 (31.7%)	249 (69.4%)	262 (65.5%)	< 0.0001
2 or more children	28 (68.3%)	110 (30.6%)	138 (34.5%)	
Number of Family Members				
3 or less	11 (26.8%)	99 (27.7%)	110 (27.6%)	1
4 or more	30 (73.2%)	259 (72.3%)	289 (72.4%)	
Monthly Household Income				
20,000 - 30,000	9 (22.0%)	154 (42.8%)	163 (40.6%)	< 0.0001
30,001 - 40,000	6 (14.6%)	102 (28.3%)	108 (26.9%)	
40,001 - 50,000	3 (7.3%)	48 (13.3%)	51 (12.7%)	
More than 50,000	23 (56.1%)	56 (15.6%)	79 (19.7%)	

Table 2 Stress and Burnout Scores by Working Levels of Nursing Personnel (n=401)

	Senior Nurse	**Staff Nurse**	**Total**	**P-value**
Outcome	**No. 41**	**No. 360**	**No. 401**	
Perceived Stress				
Median (IQR)	19.0 (16.0 - 23.0)	19.0 (16.8 - 21.0)	19.0 (16.0 - 21.0)	0.29
Low Stress (0-13)	2 (4.9%)	35 (9.7%)	37 (9.2%)	0.071
Moderate Stress (14-26)	35 (85.4%)	315 (87.5%)	350 (87.3%)	
High Stress (≥27)	4 (9.8%)	10 (2.8%)	14 (3.5%)	
Emotional Exhaustion				
Median (IQR)	13.0 (10.0 - 16.0)	17.0 (12.0 - 20.0)	16.0 (12.0 - 20.0)	0.002
Low (0-10)	12 (29.3%)	70 (19.4%)	82 (20.4%)	0.0007
Moderate (11-18)	25 (61.0%)	156 (43.3%)	181 (45.1%)	
High (≥19)	4 (9.8%)	134 (37.2%)	138 (34.4%)	
Depersonalization				
Median (IQR)	8.0 (7.0 - 9.0)	10.0 (8.0 - 11.2)	10.0 (8.0 - 11.0)	0.022
Low (0-4)	5 (12.2%)	35 (9.7%)	40 (10.0%)	0.006
Moderate (5-8)	19 (46.3%)	88 (24.4%)	107 (26.7%)	
High (≥9)	17 (41.5%)	237 (65.8%)	254 (63.3%)	
Personal Accomplishment				
Median (IQR)	22.0 (19.0 - 25.0)	18.0 (14.0 - 22.0)	19.0 (15.0 - 23.0)	< 0.0001
Low (0-20)	17 (41.5%)	238 (66.1%)	255 (63.6%)	0.006
Moderate (21-25)	14 (34.1%)	78 (21.7%)	92 (22.9%)	
High (≥26)	10 (24.4%)	44 (12.2%)	54 (13.5%)	

Table 3Associationof Demographic, Social and Professional Factors with Stress and Burnout Among nurses in P B M Hospital

	Perceived stress Beta coefficient (95% CI)		Emotional exhaustion Beta coefficient (95% CI)		Personal accomplishment Beta coefficient (95% CI)		Depersonalization Beta coefficient (95% CI)	
Exposure	**Unadjusted β (CI)**	**Adjusted β (CI)**	**Unadjusted β (CI)**	**Adjusted β (CI)**	**Unadjusted β (CI)**	**Adjusted β (CI)**	**Unadjusted β (CI)**	**Adjusted β (CI)**
Age	0.01 (-0.10 – 0.11)	-	**-0.16 (-0.31 – -0.01)**	0.01 (-0.11 – 0.12)	0.07 (-0.08 – 0.22)	-	-0.03 (-0.11 – 0.05)	-
Caste								
Scheduled tribe	Ref	Ref	Ref	-	Ref	Ref	Ref	-
Scheduled caste	-2.09 (-4.62 – 0.45)	-1.87 (-4.39 – 0.66)	-2.08 (-5.81 – 1.65)	-	-1.51 (-5.07 – 2.05)	-1.81 (-5.26 – 1.63)	-0.96 (-2.99 – 1.06)	-
Other backward caste	-2.7 (-4.98 – -0.41)	-2.2 (-4.50 – 0.10)	-1.18 (-4.54 – 2.17)	-	-3.88 (-7.08 – -0.68)	-4.59 (-7.73 – -1.45)	-1.47 (-3.29 – 0.35)	-
General	-2.3 (-4.48 – -0.12)	-1.79 (-3.97 – 0.40)	-0.36 (-3.57 – 2.84)	-	-4.72 (-7.78 – -1.66)	-5.64 (-8.63 – -2.65)	-0.97 (-2.71 – 0.77)	-
Cohabitation status								
Single	Ref	-	Ref	-	Ref	Ref	Ref	-
Married	-0.08 (-0.96 – 0.80)	-	-1.06 (-2.34 – 0.23)	-	1.48 (0.24 – 2.73)	1.1 (-0.30 – 2.51)	-0.31 (-1.00 – 0.39)	-
Education								
General Nursing and Midwifery	Ref	Ref	Ref	-	Ref	-	Ref	-
Bachelor of Science - Nursing	1.11 (0.19 – 2.03)	0.9 (-0.08 – 1.87)	0.14 (-1.22 – 1.50)	-	1.25 (-0.07 – 2.56)	-	0.48 (-0.26 – 1.22)	-
Master of Science - Nursing	0.4 (-1.99 – 2.78)	0.6 (-1.80 – 2.99)	-1.22 (-4.74 – 2.30)	-	0.31 (-3.09 – 3.71)	-	-0.12 (-2.03 – 1.78)	-

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	Perceived stress Beta coefficient (95% CI)		Emotional exhaustion Beta coefficient (95% CI)		Personal accomplishment Beta coefficient (95% CI)		Depersonalization Beta coefficient (95% CI)	
Exposure	**Unadjusted β (CI)**	**Adjusted β (CI)**	**Unadjusted β (CI)**	**Adjusted β (CI)**	**Unadjusted β (CI)**	**Adjusted β (CI)**	**Unadjusted β (CI)**	**Adjusted β (CI)**
Position								
Staff Nurse	Ref	-	Ref	Ref	Ref	Ref	Ref	-
Senior Nurse	0.95 (-0.49 – 2.39)	-	-3.07 (-5.15 – -0.98)	1.03 (-0.64 – 2.71)	4.45 (2.45 – 6.45)	3.99 (1.72 – 6.26)	-0.8 (-1.95 – 0.34)	-
Total experience								
2 years or less	Ref	-	Ref	-	Ref	Ref	Ref	Ref
3 to 5 years	-0.54 (-1.57 – 0.49)	-	1.23 (-0.28 – 2.73)	-	0.44 (-1.02 – 1.89)	0.2 (-1.28 – 1.69)	0.92 (0.11 – 1.73)	1.26 (0.47 – 2.05)
6 years or more	-0.1 (-1.20 – 1.01)	-	-0.04 (-1.66 – 1.58)	-	1.67 (0.10 – 3.23)	-0.03 (-1.90 – 1.84)	-0.25 (-1.13 – 0.62)	0.47 (-0.42 – 1.36)
Total experience in P BM Hospital								
2 years or less	Ref	-	Ref	-	Ref	-	Ref	-
3 years	-0.91 (-1.98 – 0.16)	-	0.95 (-0.62 – 2.52)	-	0.05 (-1.48 – 1.57)	-	0.26 (-0.59 – 1.12)	-
4 years or more	-0.69 (-1.72 – 0.35)	-	-0.31 (-1.83 – 1.20)	-	-0.18 (-1.65 – 1.30)	-	0.1 (-0.72 – 0.93)	-
Working Hours								
6 hours	Ref	Ref	Ref	-	Ref	-	Ref	-
8 hours or more	0.99 (0.11 – 1.88)	1.36 (0.42 – 2.31)	-0.62 (-1.92 – 0.67)	-	0.23 (-1.01 – 1.48)	-	-0.27 (-0.97 – 0.43)	-

	Perceived stress Beta coefficient (95% CI)		Emotional exhaustion Beta coefficient (95% CI)		Personal accomplishment Beta coefficient (95% CI)		Depersonalization Beta coefficient (95% CI)	
Exposure	**Unadjusted β (CI)**	**Adjusted β (CI)**	**Unadjusted β (CI)**	**Adjusted β (CI)**	**Unadjusted β (CI)**	**Adjusted β (CI)**	**Unadjusted β (CI)**	**Adjusted β (CI)**
Number of night duties per month								
Not at all	Ref	Ref	Ref	Ref	Ref	-	Ref	Ref
7 or less days	1.57 (0.14 – 3.00)	1.16 (-0.33 – 2.64)	1.09 (-0.97 – 3.15)	1.52 (0.14 – 2.89)	0.13 (-1.91 – 2.18)	-	1.91 (0.81 – 3.02)	1.89 (0.80 – 2.98)
8 or more days	1.3 (0.13 – 2.48)	1.76 (0.52 – 3.00)	3.26 (1.57 – 4.96)	1.6 (0.42 – 2.77)	-0.1 (-1.79 – 1.58)	-	2.45 (1.54 – 3.36)	2.55 (1.61 – 3.49)
Number of children								
One child	Ref	-	Ref	-	Ref	-	Ref	-
2 or more children	-0.02 (-0.94 – 0.90)	-	-0.83 (-2.18 – 0.51)	-	-0.8 (-2.10 – 0.51)	-	0.17 (-0.56 – 0.90)	-
Number of family members								
3 or less	Ref	-	Ref	Ref	Ref	-	Ref	Ref
4 or more	-0.68 (-1.63 – 0.27)	-	-1.81 (-3.23 – -0.40)	-0.77 (-1.73 – 0.18)	-1.16 (-2.54 – 0.21)	-	-0.99 (-1.75 – -0.22)	-0.78 (-1.52 – -0.03)
Monthly household income								
20,000 - 30,000	Ref	-	Ref	Ref	Ref	Ref	Ref	-
30,001 - 40,000	-0.16 (-1.23 – 0.91)	-	-1.79 (-3.37 – -0.22)	-0.24 (-1.28 – 0.80)	-2.44 (-3.94 – -0.94)	-2.46 (-3.96 – -0.97)	-0.71 (-1.57 – 0.14)	-
40,001 - 50,000	2.28 (0.90 – 3.66)	-	0.16 (-1.88 – 2.20)	2.32 (0.98 – 3.67)	-0.89 (-2.83 – 1.05)	-0.74 (-2.65 – 1.18)	0.51 (-0.60 – 1.62)	-
More than 50,000	1.05 (-0.12 – 2.23)	-	-1.55 (-3.30 – 0.19)	0.9 (-0.30 – 2.10)	1.92 (0.27 – 3.58)	1 (-0.71 – 2.72)	0.25 (-0.70 – 1.20)	-