

# Health Status and Stress Levels of Nurses Working In a Tertiary Care Hospital in Mumbai.

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## ABSTRACT

**Background:** Nurses are a vital component of our healthcare system. Their health would directly affect the delivery of healthcare to our patients. We designed a study to look at the health status and stress levels of staff nurses in our hospital. **Methods:** After ethics committee approval, we enrolled 100 staff nurses working at Topiwala National Medical College & BYL Nair Charitable Hospital, Mumbai. A pretested semi-structured questionnaire with questions pertaining to their age, years of working experience and time taken to travel to work, and past medical history was administered. A brief clinical examination, routine investigations were performed. Cohen's Perceived Stress Scale (PSS-14) was administered. **Results:** Maximum respondents were in the age group of 41 to 50 years, majority of them had an experience of 15-20 years working in this hospital. When asked about their preferred choice of contraceptive, tubectomy was the most common response (49.5%). 3% were suffering from asthma, 12% had tuberculosis at some point in time and 8% had needle-stick injury. Their past medical history gave us an insight into various medical conditions they were suffering from. As per Cohen's Perceived Stress scale, 88% of the nurses were under stress. Though all those with diseases such as hypertension, diabetes, asthma and anaemia as well as greater proportion of those with complicated pregnancies and obesity, were under stress, we could not document statistically significant relationship between perceived stress scores and the above. **Conclusion:** This study gives us data about the health status of nurses working in our hospital. A high proportion of the staff nurses were stressed out. Future research should focus on effective interventions to reduce the stress levels amongst nurses.

**Keywords:** healthcare, nursing, epidemiology, health status, perceived stress scale.

## INTRODUCTION

Nurses are the integral component of today's health care delivery system. A nurse is a healthcare professional who in collaboration with other members of health care team, is responsible for; treatment, safety & recovery of acutely or chronically ill individuals, health promotion & maintenance within families, communities & populations and treatment of life threatening emergencies in wide range of healthcare settings. Nurses perform a wide range of clinical and non clinical function necessary to the delivery of health care, and may also be involved in medical and nursing research. Nurse's roles and education were first defined by Florence Nightingale, following her experiences caring for wounded in the World War.<sup>[1]</sup> The Nurses' Health Study was established by Dr. Frank Speizer in 1976 with funding from National Institutes of Health is considered the 'grandmother' of women's health studies and represents the single largest cohort study of women.<sup>[2]</sup>

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The primary motivation in starting the NHS was to investigate the potential long term consequences of the use of oral contraceptives, a potent drug that was being prescribed hundreds of millions of normal women. Our study focuses on stress levels based on perceived stress scale index and various medical problems in our nursing staff.<sup>[3]</sup> Through this study we aimed to conduct a detailed medical examination of nursing staff in Nair Hospital in Mumbai, to determine the prevalence of chronic disorders such as diabetes mellitus, hypertension, obesity, metabolic syndrome, past tuberculosis, etc, to determine whether presence of health issues correlated with the stress levels.

## MATERIALS AND METHODS

In this observational cross-sectional study we included all nursing staff employed in Nair hospital who gave informed written consent to be included in the study. This study was conducted at Topiwala National Medical College & BYL Nair Charitable Hospital, Mumbai. We designed a pretested semi-structured questionnaire to be administered to the study population to collect data. A convenience sample of 100 nurses was taken. During the study period we collected detailed medical history including past medical, surgical and gynaecological history, including past admissions. Routine blood investigations like complete blood count, liver enzymes, kidney function test, lipid profile & chest x-ray & ECG were done. We used the Perceived Stress Scale (PSS-14) (Refer Annexure 1) for assessing the mental health status of the study population. Collected data were analysed in SPSS version 16 for descriptive analysis and other appropriate statistical analysis. We used a cut-off of 28 on PSS-14, based on previous studies.<sup>[4,5]</sup>

## RESULTS

In this study we had maximum staff in the age group of 41 to 50 years and maximum members had an experience of 15-20 years working in this hospital. Majority of the study respondents (51%) reported that they had to travel for more than an hour to reach the work place [Table 1]. Their preferred choice of contraception was tubal ligation (49.5% of 93). During laboratory testing we found that 3% were suffering from asthma, 12% had tuberculosis at some point in time during their nursing career and 6% had history of accidental needle stick injury [Table 2]. Tuberculosis had developed at some time in their career in 12%. None of them reported to have multi-drug-resistant tuberculosis. Their past medical history gave us an insight into various medical conditions they were suffering from. Details are tabulated in Table 3. We diagnosed 18% of the sampled nursing staff with anaemia. In this study four cases of thyroid disorder were found. Out of four, one of them was having multi-nodular euthyroid goiter, one was hypothyroid secondary to radiation & one of them was not taking treatment since last 1 year & symptomatic for the same. In addition, our sample of nurses had 5 known diabetics and 7 were detected with impaired fasting glucose. Or study revealed, that as per the WHO definition (using BMI), 18 nurses were obese and 37 were overweight. However, using waist-hip ratio, 91% had abdominal obesity. Thus a high proportion of nurses had significant cardiovascular risk factors. In our study, 6 staff nurses had needle-stick injury, of which two cases to which they were exposed were HIV positive. Only 1 took complete course of post-exposure prophylaxis for 28 days. In this study 40 staff was HIV nonreactive at present.

**Table 1:** Baseline characteristics of nurses enrolled in the study (n=100)

Age distribution	
21-30 years	18
31-40 years	33
41-50 years	39
51-60 years	10
Working experience in years	
<5	17
6-10	7
11-15	10
16-20	28
21-25	17
26-30	21
Time taken to travel to work	
<30 minutes	8
>30 minutes to 1 hour	41
> 1 hour to 1.30 hours	4
>1.30 hours	47

**Table 2:** Clinical information of nurses enrolled in the study (n=100)

Thyroid dysfunction	
Hypothyroidism	3
Euthyroidism	1
Asthmatics	
	3
Tuberculosis history	
Pulmonary tuberculosis	2
Tubercular lymph node axillary	1
Tubercular lymph node cervical	4
Pleural effusion	1
Abdominal tuberculosis	1
Undefined site	3
Needle stick injury	
	6
Choice of contraceptive in 93 nurses	
Tubectomy	46
Vasectomy	13
Copper T	17
Withdrawal	8
Condom	2
Pills	1
None	6

**Table 3:** Past medical history (other than TB) as reported by nursing staff enrolled in the study

Details of Past Illness	n out of 100 nurses
Road traffic accident	1
Carcinoma Breast, Mastectomy	1
Cerebral Malaria	1
Cholecystectomy Done	1
Dengue	1
Laparotomy	1
Gastritis	1
History of abortion,	1
Kidney Stones	2
Malaria	1
NE	5
Infertility	1
Renal Calculi	2
Spondylosis	1
Thyroid Nodule	1
Total Radical Lymph node Desection	1
Typhoid	1
Urinary Calculi	1
Upper respiratory tract infection	3
Total	27

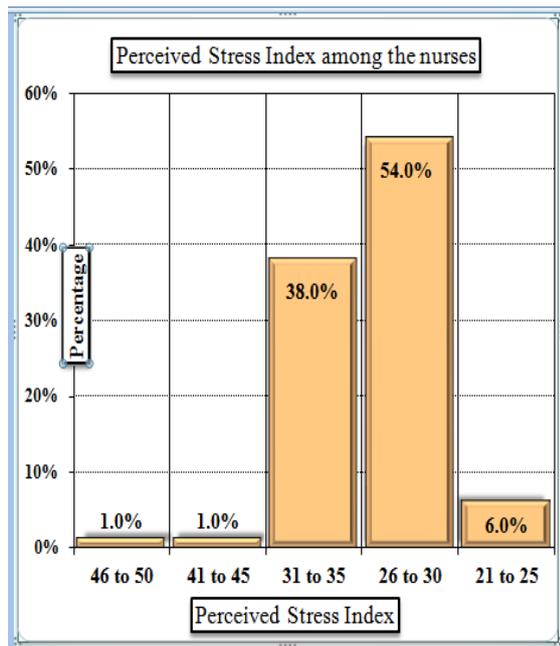


Figure 1: Perceived Stress Scale scores

Others denied consent for HIV Elisa testing. The reasons for denial being fear of detecting the infection & separate procedure required for the test. On the Cohen's Perceived Stress Scale, 88 scored more than 28, indicating presence of perceived stress [Figure 1]. All those who was hypertensive, diabetic, with impaired glucose tolerance; asthmatic, anaemic, hypothyroid, unmarried belonged to the stressed group. Using Pearson's correlation coefficient, we found no statistically significant correlation between the perceived stress score and age, years of service, travel-time to work, BMI, waist-hip ratio, haemoglobin, fasting sugars, cholesterol, triglyceride levels or uric acid levels [Table 4]. There was no statistically significant association between perceived stress and age  $\leq 40$ , marital status, presence or absence of diabetes, hypertension, anaemia or hypothyroidism, obesity / overweight or not, by Fisher's exact test; though there seemed to be statistically significant association with travel time greater or less than an hour [Table 5].

Table 4: Correlation between various parameters and PSS-14 scores.

Parameter	Correlation coefficient with PSS-14 scores	p value
Age (years)	-0.135	0.180
No. of years working	-0.167	0.097
Time of Travel (hrs)	-0.080	0.430
BMI	-0.135	0.180
Waist/Hip ratio	-0.002	0.980
Hemoglobin (gm %)	-0.048	0.653
FBS (mg/dl)	-0.009	0.929
Total Cholesterol (mg%)	0.083	0.410
Triglycerides (mg%)	-0.122	0.230
Uric acid (mg%)	-0.153	0.130

Table 5: Association between various categories and PSS-14 scores by Fisher's exact test.

Category	Stressed	Not Stressed	Two-tailed value	p
Age <40	41	9		
Age $\geq 40$	47	3	0.121	
Married	81	12		
Unmarried	7	0	0.594	
Working <15 yrs	27	7		
Working >15 yrs	61	5	0.1	
travel $\leq 1$ hr	47	2		
travel >1 hr	41	10	0.028	
HT	4	0		
non HT	84	12	1	
DM/IGT	12	0		
non DM	76	12	0.351	
abn W-H ratio	82	10		
N W-H ratio	6	2	0.245	
BMI >30	18	0		
BMI $\leq 30$	70	12	0.117	
Complicated pregnancies	47	4		
Uneventful pregnancies	76	13	0.291	

## DISCUSSION

Present study aimed at studying a group of staff nurses on whether they were more at risk to lifestyle diseases or occupation related diseases as compared to general population. Higher figures as compared to general population were anticipated in staff nurses due to possible higher levels of stress.<sup>[6]</sup> Nurses, as primary care providers for TB patients, have increasingly been involved in the delivery of these programs as the first contacts for patients and thus are at risk of potential TB transmission. We found 12% of the respondents were diagnosed with tuberculosis at some point in their career, all took complete course of anti-tubercular regime. Coming into close contact with active TB or MDR-TB patients, without necessary precautions, increase the risk of transmission from patients to staff.

Amongst the 134 pregnancies in our study group, 85 (63.4%) had a complicated course and some attribute it to overwork in pregnancy period.

The World Health Organization (WHO) has projected that the global prevalence of type 2 DM will more than double from 135 million in 1995 to 300 million by the year 2025.<sup>[7]</sup> Commonly women are considered at lower risk of CHD morbidity and mortality than men. It is widely believed that diabetes erases this female advantage and increases the risk of CHD to a greater extent than in men. The meta analysis of ten international studies having sufficient data adjusted for other cardiac risk factors shows that the relative risk of coronary death from diabetes was 2.58 for women and 1.85 for men.<sup>[8]</sup> Twelve percent of our nurses had diabetes or impaired glucose tolerance; 4% were hypertensive and 91% had an abnormally high waist-hip ratio.

This meant they were at greater risk for cardiovascular events. Erratic meal times, missing meals because of overwork & faulty eating & excessive consumption of tea & coffee during the night shift may be some of the factors contributing to this.

Furthermore, we found 87% of nurses to be stressed; they all scored more than 28 on the Cohen's Perceived Stress Scale. Workplace stress should decrease with age & experience & development of skill. This fact was satisfactorily supported in our study, sister in charge are less stressed than junior staff nurse. Many staff interviewed complained of job dissatisfaction & sick leave caused by poor working conditions. A high proportion of staff reported overwork, mainly during weekends & festival season. There is urgent need for proactive stress management, especially preventive strategies, as are encouraged in the industry and IT sector. There is need for coping techniques like team building, counselling, learning assertiveness, and communication skills, which should be taught to all nurses, even incorporated in their training curriculum.<sup>[9]</sup> Effective solutions can be found, like increasing skills, enriching work, and increasing the participation of nurses in the organization. The nursing profession is in the middle of most crippling nursing shortage in history by 2020, workforce will be 20% below requirement.<sup>[10]</sup> Adequate staffing, which reduces job stress and overtime, could lead to improved efficiency along with cost effectiveness.<sup>[11]</sup> Kane studied stress among 106 working nurses in Maharashtra, by administering a questionnaire with leading questions, regarding work related stressors, home stressors, physical symptoms and emotional symptoms.<sup>[12]</sup> He found 73.59% of the nurses suffer from significant stress varying in severity. The study reported that not completing work in time was the most common cause of work related stress among nurses and having dependent relatives was the most common cause of home based stress. He showed that psychosomatic problems like back-ache, acidity, etc were associated with higher stress levels.

Similar to our study, Bhatia et al also reported very high levels of stress among the sample of 87 nurses they studied.<sup>[13]</sup> The prevalence of occupational stress amongst nurses was 87.4%. 'Time Pressure' was found to be the most stressful. Other highly stressful sources were: handling various issues of life simultaneously with occupation such as caring for own children/parents, own work situation and personal responsibilities.

Another Indian study by Lakshmi, et al of Chennai, showed that a majority of nurses are working through-out week and 53% are struggling to achieve work-life balance.<sup>[14]</sup> They also made comparisons between nurses from the public and private set-up.

In a study by Gulavani, et al, at Karad, Maharashtra, a majority of 100 nurses reported there is frequent occurrence of stress associated with Uncertainty by

concerning treatment (49%), dealing with patient and families (48%), workload (59%), conflict with doctors (49%), death and dying (50%), conflict with supervisors (52%), where as inadequate emotional preparation (68%), discrimination (48%), conflict with peers (53%) as occasionally stress inducing causes as reported by nurses.<sup>[15]</sup>

Wu, et al from China, showed that role boundary and role insufficiency are the 2 factors with the highest association with occupational stress amongst nurses (n=2613 from 20 hospitals).<sup>[6]</sup> A similar study carried out in Addis Ababa, Ethiopia by Salilih, et al showed 37.8% of 343 nurses of a public hospital, experienced occupational stress.<sup>[16]</sup> This shows nurses abroad are better off than our nurses.

A small sample size and lack of age matched women from the general population as controls are limitations of this study.

## CONCLUSION

We found the nursing staff at our hospital belonging to older age group, with majority of them having more than 15 years of working experience with long commutes to work. The nurses included in the study were suffering from various medical and surgical conditions, which depicted their general health status. A majority had abdominal obesity. We found a large proportion of our nurses to be stressed. We need more research to get insights into the causes and possible remedies for the stress experienced by the nurses. Interventional programmes need to be chalked out and incorporated into the routine of nurses for the purpose of stress management. These may include Yoga, relaxation techniques, counselling sessions, etc. as well as appointment of adequate staff nurses. Further studies with larger sample size and a control group would give better insight into nurses' health.

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