



PREVALENCE & CORRELATES OF PSYCHOLOGICAL STRESS AMONG URBAN FIELD-LEVEL HEALTH WORKERS ACTIVELY INVOLVED IN COVID-19 SURVEILLANCE IN A MUNICIPALITY AREA IN WEST BENGAL.

Community Medicine

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ABSTRACT

Background: Psychological stress is rapidly becoming an occupational health epidemic. COVID-19 pandemic has the potential to significantly affect the psychological stress of healthcare workers (HCWs), who stand in the frontline of this crisis. It is, therefore, an immediate priority to monitor psychological stress in order to understand mediating factors and inform tailored interventions. The aim of this study is to elicit the prevalence of psychological stress among Health Care Workers in a municipality area during the Covid-19 outbreak.

Methods: This observational & descriptive epidemiological study with cross-sectional design was conducted from August to September, 2020 field level health workers actively involved in COVID-19 surveillance in urban areas. The sample size of 62 was calculated by 4PQL2 where P stands for prevalence of reference study. A predesigned, pretested self administered questionnaire containing validated General Health Questionnaire (GHQ-12) was used for data collection. The questionnaire was translated to two local languages i.e Bengali & hindi to so that participants can understand it by themselves.

Findings: A total of 75 urban Health workers participated in the study and 68 of them properly completed the questionnaire. According to GHQ-12 score 47.2% are found to be stressed. Stress is significantly higher in Muslim population & among widows. There is significant correlation between GHQ-12 score & per capita income but there is no significant correlation with income contribution by the health worker. There is highly significant association between stress & the perception of work place safety. It is also seen that those whose motivation of work is money only are significantly more stressed than those whose motivation is to perform some social work.

KEYWORDS

Urban health worker, Stress, Covid 19, Surveillance

INTRODUCTION:

In psychology, stress is a feeling of emotional strain & physical tension. It can come from any event or thought that makes someone feel frustrated, restless, anxious, nervous or indecisive. Stress is our body reaction to a challenge or demand. Positive stress helps improve active performance. It also plays a factor in motivation, adaptation, and reaction to the situation. Work related Psychological stress can be defined by the response people may have when presented with work demands and work pressures that are not matched to their knowledge and abilities and which challenge their ability to cope (1). Urban field level health workers are a neglected group, often presumed to be immune to occupational hazards, hence not adequately protected (1).

Psychological stress is rapidly becoming an occupational health epidemic (2). The need to deliver quality health-care services consistently is putting an unprecedented strain on the well-being of health-care workers and their productivity and negatively affecting organizational health indices. There is a positive association between work-related illness and exposure to psychological stress (2).

The study in the Lancet Psychiatry showed that in 2017, 197.3 million Indian (14.3% of total population) were suffering from mental disorder of whom 46 million had depression & 49.9 million anxiety disorders. The contribution of mental disorders to the total burden in India in terms of disability-adjusted life years (DALYS) increase from 2.5% in 1990 to 4.7% in 2017.

The World Health Organization declared a pandemic of coronavirus disease (COVID-19) on 11th March, 2020. The rapid spread of COVID-19 has heavily increased health care systems burden in India. At present scenario, the battle of COVID-19 is at different levels of intensity in each states & each city. The Government health facilities & workforce of West Bengal are currently indurated by the plethora of activities related to controlling of the pandemic. In doing so, West Bengal Health & Family Welfare Department (WBHFD) has district-wise divided the whole state & cities are divided according to Municipality areas. Focusing on COVID-19 related activities, the health department implemented active case surveillance programme in whole state. For 'Expert Qualitative Guidance', the Department decided to assign the Community Medicine Department of all Government Medical Teaching institutes in different parts of the West Bengal.

The investigators were working into the Howrah Municipality Area (HMA), under the Howrah Municipal Corporation (HMC), Howrah district since 6 months for 'Expert Qualitative Guidance'. It was seen that HMA was the second most affected area in the West Bengal (3). This area is also prevalence of Dengue infection during rainy season. So, the state health department has always special attention of this area. In this outbreak, the District Health Department started their work by reorganization of service delivery by proper facility mapping, planning, identify the hospitals for COVID-19 infected patients, area for quarantine centre, alternative ways for outreach area etc. During a Focus Group Discussion the investigators realized that the front line health workers' mental health may be disturbed. There have been few studies published on the prevalence of psychological stress among the health-care workers like doctors, junior doctors, nurses in different country, but investigators could not find any study regarding the psychological stress among the urban field level health-workers, actively involved in COVID-19 outbreak. So, the investigators decided to do a study among the urban field level health-workers, actively involved in COVID-19 outbreak.

METHODS:

This observational & descriptive epidemiological study was cross-sectional in design, was conducted from August to September, 2020 on urban field level health worker actively involved in COVID-19 surveillance. After obtaining approval from Institutional Ethics Committee and written consent from each health worker, the study was conducted with a self administered questionnaire.

Situated on the opposite side of the metropolitan city of Kolkata, India on the west bank of river Ganges, Howrah Municipal Corporation comprises of an area of 63.55 km² & population of nearly 7.8 lakhs & divided into 66 wards.(4)15 Urban Primary Health Centre (UPHC) is established there to cover the total population.(5) During this period, the contributing authors worked with the urban health workers at field level, trained them for the COVID-19 surveillance, solving their problems. While preparing for this study, the authors have broad knowledge about this area and demographics of the population and workers.

'The field level Health Worker actively involved in COVID-19 surveillance' was defined here the urban supervisors & their associated

team members. As for inclusion criteria health workers and supervisors working at least 3 months at the time of data collection were considered eligible.

The sample size was calculated by $4PQL^2$ where P stands for prevalence of stress from a reference study; Q is calculated by $(100 - P)$ & L is calculated by 20% of P.

P was taken as 61.97% from a previous paper (6) and minimum desired sample size came as 62. Taking into account the non response rate sample size was increased by 20% and 75 subjects were considered for the study.

Stratified Random Sampling method was done by using random number table from the list of supervisors and health workers and their representativeness in the study was as per population proportionate to size (PPS).

A predesigned, pretested self-administered questionnaire containing validated General Health Questionnaire (GHQ-12) (7) was used for data collection. The questionnaire was translated to two local languages i.e. Bengali & Hindi (8,9) to so that participants can understand it by themselves. To reduce the bias, anonymity was maintained while filling up the questionnaire.

Apart from stress data was collected on different demographic variables like age, sex, marital status, income etc and work related factors like years of service, motivation of service etc.

The senior faculty of the Community Medicine Department & Psychiatry Department of Medical College Kolkata have independently reviewed to ensure the face- validity of the other parts of the questionnaire.

With this questionnaire, the authors independently collected the data according to their plan. The participant individually answered the questionnaire. To reduce the bias, the authors made the questionnaire anonymity. Data was compiled in Microsoft Excel 2007 epi info (10) & analysed using SPS version 11 software.

RESULTS:

A total of 75 urban Health workers participated in the study and 68 of them properly completed the questionnaire. 53 of them were health surveillance workers and 15 were health supervisors. 78.2% of them were married, 9.1% were unmarried & 9.1% were widows. The age range of the respondents was 25 to 58 years. The mean age was 39.96 years. Most of them were more than 35 years of age. Majority of the health workers were Hindu (92.7%) & 7.3% health worker were Muslim. 60% health workers were living in nuclear family & 40% were in joint family. Median number of family member was 4 with one health worker having 10 family members. 90.1% of health workers having no under 5 year children & 9.1% of health workers have under 5 year children. 40% of this under 5 year children have comorbidity. 36.4% of the health workers had above 60 years aged person in their family & among those elderly population 50% having comorbidity. Among the health workers 21.8% having chronic illness such as HTN, DM, Migraine, Spondylosis. Monthly income of the health workers are fixed. The supervisors get Rs. 3500/- & Team -member get Rs 3000/- per month. Per capita family income ranged from 1090 to 10500 rupees. Income contribution of health workers to the family income ranged from 20% to 100%. 36.4% health workers were Madhyamik pass, 23.6% completed higher secondary examination, 3.6% health Workers were graduate. (Table1)

Table 1: Distribution of study subjects as per socio-demographic variables (n=68)

Variables		Frequency	%
Age (Years)	25-34	8	11.8
	35-44	33	48.5
	45-54	23	33.8
	>=55	4	5.9
Religion	Hindu	63	92.7
	Muslim	5	7.3
		0	
Marital Status	Unmarried	6	9.1
	Married	53	78.2
	Widow	6	9.1

	Divorced/separated	3	4.6
Per capita family income (INR)	1000-5000	46	67.7
	5000-10000	20	29.4
	>10000	2	2.9
Contribution to family income	20 %-59%	22	32.4
	60%-99%	31	45.5
	100%	15	22.1

Around 13.2% of study subjects worked for 7 years or more followed by 51.5% health worker who had worked for 3-6 Years. 60.3% of health workers motivation for working is money. 5.9% stated that they are working for social work & 33.8% of health workers were working for both money & social welfare. 29.4 % of the health workers are not feel protected in workplace & 70.6% feel safe in the work field. (Table-2)

Table 2: Distribution of study subjects according to work related variables (n=68)

Variables		Frequency	%
Type of Work	Health worker	53	78.2
	Health Supervisor	15	21.8
Years of service	1-3	24	35.3
	4-6	35	51.5
	>=7	9	13.2
Motivation of work	Money	41	60.3
	Social work	4	5.9
	Both	23	33.8
Perception about safety in work place	Safe	48	70.6
	Unsafe	20	29.4

According to GHQ-12 score 47.2% are found to be stressed. There is no significant association of stress with type of family, presence of under 5 year child, presence of comorbidity of under 5 year child, presence of persons of more than 60 years, presence of comorbidity of health worker, type of work, years of work.

Stress is significantly higher in Muslim population (p=0.04 as per Fisher-Exact Test), among widow (p=0.045). There is significant correlation between GHG-12 score & per capita family income (Pearson correlation coefficient= 0.194, p=0.049) but there is no significant correlation with income contribution by the health worker (p=0.202). There is highly significant association between stress & the perception of work place safety (p= 0.01 as per Fisher-Exact Test). It is also seen that those whose motivation of work is money only are significantly more stressed than those who motivation is to perform some social work (p=0.025).

DISCUSSION:

Present study has revealed that psychological stress was highly prevalent among the urban health workers of Howrah Municipal Corporation who are involved in rendering house to house services in the challenging times of Covid 19 pandemic. Furthermore few demographic variables measured were found to significantly affect psychological stress levels. Similar observations were also noticed in the area of psychological stress evaluation.

In many studies it was seen that the prevalence of the psychological stress is higher in the female than male sex. In this study, this comparison could not be elicited as all participates are female. 47.2% scored higher than the cut off value in the GHQ-12 indicating presence of psychological stress. Alhassan and Poku found that Ghanaian health-care workers had a psychosocial stress prevalence rate of 17% (11). Ndejjo *et al.* established the psychosocial stress prevalence rate for Ugandan health-care workers at 21.5% (12) and Haq *et al.* for Pakistan health-care workers found the psychosocial stress prevalence rate at 26%,(13) which are not consistent with our findings. The differences in psychosocial stress levels could be due to health-care management systems and remuneration, social security etc.

Most importantly all the above mentioned studies were conducted before Covid19 pandemic which may be an important stressor. In a Meta analysis conducted in Germany during pandemic, 14 studies on healthcare workers in Departments of Infectiology, Internal Medicine, and Fever wards including intensive care wards as well as surgery and psychiatry, were included. An extensive strain was reported due to stress experience as well as depression and anxiety symptoms. Severe degrees of those symptoms were found in 2.2 % to 14.5 % of all participants.(14) In a study conducted among medical residents in

China reported that 52.1% of participants felt horrified and apprehensive due to the pandemic. (15)

This pandemic has created a grave situation among the whole population especially among health care providers. The complete lockdown, containment zone etc. added extra edge. During this scenario, the urban health worker continued their work despite of all resistance. Probably that's why the prevalence of the psychological stress is high among them.

Our study revealed that the Muslim health workers experienced significantly higher levels of psychological stress than Hindu health workers. This may be because of their large family size. In our study, there was few number of Muslim health worker & they all lived in joint family. Beside this, earning members of their family did not earn enough money to run their family due to pandemic and lockdown. That can also contribute to high stress level among the Muslims.

We equally noticed high stress among widow health workers than others. The reason of this finding may be, they were the only earning member of their family. Adekola²² had argued that family life tends to strengthen one's emotional wellbeing, human contacts and interpersonal skills. He further argued that married women whose husbands help in housework and family responsibilities and support their carrier development are less prone to stress than women who do not have such assistance. This may explain why widow women have higher levels of stress than the others in this study.

Here per capita income inversely related with stress, which is surprising. Due to COVID19 pandemic there was unavailability of goods, inflations also played important role to create psychological stress. As it is seen that when motivation of work is earning money only it significantly increases stress level also points out indirectly to this finding.

Work place safety is huge issues among the urban health workers. Perhaps this is due to huge population they covered for this surveillance. They visited house to house daily during this pandemic period. From beginning, they did not have proper knowledge about this disease, did not get proper training and most importantly they did not get sufficient quantity of protective equipment. This all may be increases their psychological stress level.

CONCLUSION:

This study has revealed high prevalence of psychological stress among the urban health workers in Howrah Municipality Corporation area. Some demographic variables like religion, marital status and per capita income, work place safety have been shown to be significantly associated with high psychological stress.

Limitations:

As no stress related data is available on the same population before pandemic it is hard to firmly put to the argument that this high level of stress is due to the Covid 19 pandemic situation. A longitudinal study conducted through the pandemic period and some period after this pandemic situation is over may point out this feature more clearly.

Conflict of interest: None

REFERENCES:

1. Gebeyehu, S., Zeleke, B. Workplace stress and associated factors among healthcare professionals working in public health care facilities in Bahir Dar City, Northwest Ethiopia, 2017. *BMC Res Notes* 12, 249 (2019). <https://doi.org/10.1186/s13104-019-4277-1>
2. T. Pisljar, T. van der Lippe, and L. den Dulk, "Health among hospital employees in Europe: a cross-national study of the impact of work stress and work control," *Social Science and Medicine*, vol. 72, no. 6, pp. 899–906, 2011.
3. WB Health Portal. Available from: <https://www.wbhealth.gov.in> last accessed on 15.08.20
4. "Area, population, decennial growth rate and density for 2001 and 2011 at a glance for West Bengal and the districts: provisional population totals paper 1 of 2011: West Bengal". Registrar General & Census Commissioner, India. Archived from the original on 7 January 2012. Retrieved 26 January 2012.
5. www.hmcgov.in/hmcweb/pdf/Mission%20and%20Vision.pdf last accessed on 09.08.20
6. Onigbogi CB, Banerjee S. Prevalence of Psychosocial Stress and Its Risk Factors among Health-care Workers in Nigeria: A Systematic Review and Meta-Analysis. *Niger Med J*. 2019;60(5):238-244. doi:10.4103/nmj.NMJ_67_19
7. <http://europepmc.org/backend/ptpmrender.fcgi?accid=PMC2967114&blobtype=pdf> last accessed on 12.08.20
8. Islam MN, Iqbal KF. Mental health and social support. *Chittagong Univ J Biol Sci*. 2013 Jan 19;95–107.
9. (PDF) Standardization of Hindi version of Goldberg's General Health Questionnaire [Internet]. ResearchGate. [cited 2020 Aug 31]. Available from: <https://www.researchgate.net/publication/51651444> Standardization of_Hindi version of Goldberg's General Health Questionnaire

10. Epi Info™ | CDC [Internet]. 2017 [cited 2017 Dec 17]. Available from: <https://www.cdc.gov/epiinfo/index.html>
11. Alhassan RK, Poku KA. Experiences of frontline nursing staff on workplace safety and occupational health hazards in two psychiatric hospitals in Ghana. *BMC Public Health*. 2018;18(1):701. Published 2018 Jun 6. doi:10.1186/s12889-018-5620-5
12. <https://doi.org/10.1155/2015/913741> last accessed on 10.09.20
13. Haq Z, Iqbal Z, Rahman A. Job stress among community health workers: a multi-method study from Pakistan. *Int J Ment Health Syst*. 2008;2(1):15. Published 2008 Oct 28. doi:10.1186/1752-4458-2-15
14. Bohlken J, Schömig F, Lemke MR, Pumberger M, Riedel-Heller SG. COVID-19-Pandemie: Belastungen des medizinischen Personals [COVID-19 Pandemic: Stress Experience of Healthcare Workers - A Short Current Review]. *Psychiatr Prax*. 2020;47(4):190-197. doi:10.1055/a-1159-5551
15. Zhang Y, Ma ZF. Impact of the COVID-19 Pandemic on Mental Health and Quality of Life among Local Residents in Liaoning Province, China: A Cross-Sectional Study. *Int J Environ Res Public Health*. 2020;17(7):2381. Published 2020 Mar 31. doi:10.3390/ijerph17072381