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Burnout and sleep quality among community health workers during the pandemic in selected city of Andhra Pradesh

Tanuja Yella, Mackwin K. Dmello *

Department of Public Health, K S Hegde Medical Academy, Nitte (Deemed to be University), India

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ABSTRACT

Background: This pandemic has resulted in physical and emotional exhaustion among everyone, especially among community healthcare workers (CHWs), resulting in increased burnout and poor sleep quality. This pandemic has increased responsibilities for Accredited Social Health Activist (ASHA) workers and Auxiliary Nurse Midwife (ANM) at the grassroots. Previous studies have shown that infectious diseases like SARS and MERS directly affect sleep. With the COVID-19 pandemic, burnout and poor sleep among healthcare workers are expected to increase.

Aim: To determine the prevalence of burnout and sleep quality among community health workers

Settings: and Design: This Cross-sectional study was conducted from February to April 2020 in Urban Primary Health care centres of Guntur city, Andhra Pradesh.

Methods and material: Copenhagen Burnout Inventory scale (CBI) with a 5-point Likert scale and Pittsburgh Sleep Quality Index (PSQI) Questionnaire were used among four hundred and ten study participants. Descriptive statistics and the Chi-square test were used; a p-value of ≤0.05 is considered significant.

Results: The prevalence of personal burnout was 16.8%, while work-related and pandemic-related burnouts were 10.5% and 25.4%, respectively. The prevalence of poor sleep quality was 35.09%. Fear of contracting the virus was present among 38.3%. Fear of infecting the family members because of their exposure was reported by 36.6% of the respondents; 71.7% and 79.3% reported receiving support from the organisation and colleagues, respectively.

Conclusions: The provision of necessary equipment, regular check-ups and timely interventions will minimise the risk of stress and burnout.

1. Introduction

Community Health Workers (CHW) are the community members chosen to work closely with the people supported by the health system but are not necessarily a part of the organisation. The main advantage of having a CHW is that the people easily accept them. In India, the concept of CHW has a long and rich history; there are four cadres for CHW: ASHA (Accredited Social Health Activist), ANM (Auxiliary nurse midwife), Anganwadi worker and multi-purpose health assistant. CHW are assigned various responsibilities under national health programs. With the declaration of the COVID-19 pandemic, additional duties are assigned to ASHA workers and ANM, such as contact tracing, community surveillance, implementing home quarantine, and identification of high-risk groups (HRG) and probable cases.

Burnout is the emotional and physical exhaustion when one reaches their limits. Burnout in health care professionals can be more prevalent during the pandemic because of the increased workload. Good sleep, in terms of quality and quantity, is essential for optimal day-to-day functioning. Sleep problems can lead to changes in mental health, but mental health conditions can also worsen problems with sleep. It is essential to know the mental health status of the CHW and provide them with the necessary measures. There are several studies conducted on healthcare professionals (Physicians, Nurses etc.) working in a hospital, but very few on community health workers (ANM/ASHA) who were the focal point of contact to the community members during the COVID-19 pandemic. Hence, this study aims to determine the prevalence of burnout and sleep quality among community health workers during the pandemic. The study also determines the factors associated with burnout and sleep quality.

* Corresponding author. Department of Public Health, K S Hegde Medical Academy, Nitte (Deemed to be University), Mangalore, 575 018, India.
E-mail address: mackwin@nitte.edu.in (M.K. Dmello).

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2. Materials and methods

This Cross-sectional study was conducted in 13 urban primary health care centres (UPHC) in Guntur city from February to April 2020. A sample size of 410 was estimated, taking the prevalence as 50% and considering a 5% non-responsive rate. ASHA workers and ANMs present on the day of data collection and those who gave consent were included in the study. The complete enumeration of CHWs from all the UPHCs was done. A self-administered pre-structured questionnaire was used as a tool; it was translated to the Telugu language for easy understanding. The tool consisted of three parts: First part contains socio-demographic details (age, marital status, type of family, type of residence etc.) and work-related information (experience, hours of work, population covered, field visits and designation) of the participants.

The second part was the Copenhagen Burnout Inventory (CBI) which consisted of 3 domains: personal burnout, work-related burnout, and pandemic-related burnout. The personal and work-related burnout were taken from CBI, pandemic related burnout was adapted from a study in India. The responses are 5-point Likert scale (1: always; 2: often; 3: sometimes; 4: seldom; 5: never). The total scores were categorised as No Burnout (less than 50), Moderate Burnout (50–74) and High Burnout (75–99). To calculate the prevalence of burnout was calculated by adding moderate and high burnout, low level was considered to be normal burnout and hence ignored. The third part of the tool was Pittsburgh Sleep Quality Index (PSQI). The scores of PSQI ranged from 0 to 21. As there are no standard cut-off values to determine the level of sleep quality, quartiles were used to classify the same. Scores below 5, 5th to 75th and above 75th percentile were considered to categorise sleep quality into good, moderate, and poor, respectively. A score below 6 as good sleep quality, 6–8 as moderate sleep quality, and above 9 as poor sleep quality.

A pilot study was conducted before the original research in a similar survey setting to check the feasibility of the study and reliability of the study tools. The Institutional Ethics Committee approved the study, and formal approval was taken from the District Health Officer of the study area. The data were coded, entered, and analysed using SPSS (Statistical Package for Social Science) version 15. Socio-demographic variables were described as frequency and percentage. To find the association Chi-square test was used, level of p ≤ 0.05 was taken as statistically significant.

3. Results

A total of 410 CHWs participated in the study, out of which 221 were ASHAs, and 189 were ANMs. Table 1 represents the distribution of respondents based on socio-demographic and work related characteristics. The mean age of study participants is 34 ± 5 years, and all the participants were females. The majority, 305 (74.4%) of the study participants live in a nuclear family; 360 (87.8%) were married. Among married, 261 (69.4%) had more than one child. The level of education for ANMs is ANM/GNM nursing for 94.7% of the respondents, whereas ten respondents have done BSC Nursing. For work experience, the mean is 5 ± 4 years. The minimum number of working hours is reported as 8 h and the maximum as 12 h; the number of weekly field visits ranges between 5 and 7 days.

Table 2 represents the distribution of participants based on burnout and sleep quality. 83.2% of the respondents were classified under a low level of personal burnout, while 2.7% reported having high burnout. The pandemic had little effect on community health workers showing 24.9% had moderate pandemic-related burnout. 35.9% of the community health worker had poor sleep quality. The prevalence of personal burnout is 16.8%, work-related burnout is 10.5%, and pandemic-related burnout is 25.4%. Among ASHA workers, 21.3% had personal burnout, 12.7% had work-related burnout, and 29% had pandemic-related burnout. Among ANMs, 11.6% had personal burnout, 6.9% had work-related burnout, and 21.2% had pandemic-related burnout.

Table 3 represents the distribution of respondents according to pandemic-related burnout. The respondents feared getting infected with the COVID-19 virus for themselves and family while working during the pandemic (mean score = 50.7 ± 38.0 and 47.9 ± 38.2, respectively). The respondents reported that their colleagues supported them during the pandemic and did not fear death due to COVID-19 (mean score = 11.0 ± 25.6 and 11.8 ± 26.7, respectively).

Table 4 illustrates the distribution of respondents according to personal and work-related burnout. The mean score of personal burnout is 35 ± 18; for work-related burnout, the mean score is 34 ± 15; and for
Table 3
Distribution of Respondents according to Pandemic related burnout.

| Questions                                           | Always n (%) | Often n (%) | Sometimes n (%) | Seldom n (%) | Never n (%) | Mean score |
|-----------------------------------------------------|--------------|-------------|-----------------|--------------|-------------|------------|
| Feeling hard to work in the current scenario        | 14 (3.4)     | 24 (5.9)    | 102 (24.8)      | 148 (36.1)   | 122 (29.8)  | 29.2 ± 25.7|
| Drain more of my energy to work during the current scenario | 20 (4.9)    | 39 (9.5)    | 86 (21)         | 115 (28)     | 150 (36.6)  | 29.5 ± 29.2|
| Finding fruitful while performing my work during the current scenario | 191 (46.6)  | 46 (11.2)   | 51 (12.4)       | 45 (11)      | 77 (18.8)   | 36.0 ± 39.7|
| Feeling of giving more than what you get back while working in the current scenario | 37 (9)       | 26 (6.3)    | 78 (19.1)       | 76 (18.5)    | 193 (47.1)  | 27.9 ± 32.7|
| Hesitation to work during this current scenario     | 19 (4.6)     | 20 (4.9)    | 68 (16.6)       | 68 (16.6)    | 235 (57.3)  | 20.7 ± 28.7|
| Depressed due of the current scenario               | 21 (5.1)     | 19 (4.6)    | 64 (15.6)       | 66 (16.2)    | 240 (58.5)  | 20.4 ± 29.1|
| Feeling that my patience is tested while working in the current scenario | 31 (7.6)     | 24 (5.8)    | 58 (14.1)       | 72 (17.6)    | 225 (54.8)  | 23.4 ± 31.6|
| Fear of catch of COVID-19 infection while working in the current scenario | 114 (27.8)  | 43 (10.5)   | 91 (22.2)       | 66 (16.1)    | 96 (23.4)   | 50.7 ± 38.0|
| Fear of family members catching COVID-19 infection because of my work exposure | 103 (25.1)   | 47 (11.5)   | 81 (19.8)       | 71 (17.3)    | 108 (26.3)  | 47.9 ± 38.2|
| Feel welcomed by the community because I’m HCW and working in the current scenario | 202 (49.3)   | 51 (12.4)   | 57 (13.9)       | 28 (6.8)     | 72 (17.6)   | 32.4 ± 28.6|
| Fear of death while working in the current scenario | 25 (6.1)     | 5 (1.2)     | 18 (4.4)        | 44 (10.7)    | 318 (77.6)  | 11.8 ± 26.7|
| Feel you are being properly protected by the organisation while working in the current scenario | 294 (71.7)   | 59 (14.4)   | 21 (5.1)        | 10 (2.4)     | 26 (6.4)    | 14.3 ± 28.0|
| Feel you are being supported by colleagues during the current scenario | 325 (79.3)   | 37 (9)      | 20 (4.9)        | 8 (2)        | 20 (4.8)    | 11.0 ± 25.6|
| Total mean score                                     |              |             |                 |              |             | 42 ± 13.08 |

Table 4
Distribution of Respondents according to Personal burnout and work related burnout.

| Questions                                             | Always n (%) | Often n (%) | Sometimes n (%) | Seldom n (%) | Never n (%) | Mean score |
|-------------------------------------------------------|--------------|-------------|-----------------|--------------|-------------|------------|
| Personal Burnout                                      |              |             |                 |              |             |            |
| Feel tired                                            | 11 (2.7)     | 76 (18.5)   | 164 (40)        | 123 (30)     | 36 (8.8)    | 44.0 ± 23.5|
| I’m physically exhausted                               | 10 (2.4)     | 65 (15.9)   | 151 (36.8)      | 132 (32.2)   | 52 (12.7)   | 40.7 ± 24.3|
| I’m emotionally exhausted                              | 14 (3.4)     | 47 (11.5)   | 118 (28.8)      | 157 (38.3)   | 74 (18)     | 35.9 ± 25.5|
| I think "I can’t take it anymore?"                    | 5 (1.2)      | 40 (9.8)    | 109 (26.6)      | 130 (31.7)   | 126 (30.7)  | 29.7 ± 25.4|
| Feeling worn out (extremely tired)                    | 6 (1.5)      | 35 (8.5)    | 115 (28)        | 131 (32)     | 123 (30)    | 29.8 ± 25.2|
| Feeling weak and susceptible to illness               | 17 (4.1)     | 30 (7.3)    | 107 (26.1)      | 112 (27.3)   | 144 (35.1)  | 29.5 ± 27.9|
| Total mean score                                      |              |             |                 |              |             | 35 ± 18.15 |

Work-related burnout

| Questions                                             | Always n (%) | Often n (%) | Sometimes n (%) | Seldom n (%) | Never n (%) | Mean score |
|-------------------------------------------------------|--------------|-------------|-----------------|--------------|-------------|------------|
| Feeling that my work is emotionally exhausting        | 6 (1.5)      | 15 (3.6)    | 138 (33.7)      | 191 (46.6)   | 60 (14.6)   | 32.6 ± 20.4|
| Do you feeling completely physical and mental burn-out due of my work | 13 (3.2)     | 9 (4.6)     | 134 (32.7)      | 161 (39.3)   | 83 (20.2)   | 32.8 ± 23.7|
| My work frustrate me                                  | 14 (3.4)     | 22 (5.4)    | 117 (28.5)      | 133 (32.4)   | 124 (30.3)  | 29.8 ± 25.9|
| Feel worn out at the end of the working day           | 46 (11.2)    | 47 (11.5)   | 101 (24.6)      | 90 (22)      | 126 (30.7)  | 37.6 ± 33.2|
| I’m exhausted in the morning at the thought of another day at work | 10 (2.4)     | 8 (2)       | 57 (13.9)       | 109 (26.6)   | 226 (55.1)  | 17.5 ± 23.7|
| Feeling that every working hour is tiring for me      | 12 (2.9)     | 12 (2.9)    | 65 (15.9)       | 97 (23.7)    | 224 (54.6)  | 18.9 ± 25.3|
| Have enough energy for family and friends during leisure time | 197 (48)     | 72 (17.6)   | 63 (15.4)       | 33 (8)       | 45 (11)     | 29.0 ± 34.6|
| Total mean score                                      |              |             |                 |              |             | 34.3 ± 15.1|

The prevalence of personal burnout was 16.8%, work-related burnout was 10.5%, and pandemic burnout was 25.4%. Sleep quality was moderate among 36.05%. Personal burnout in the current study was significantly associated with sleep quality. The problem of keeping up the enthusiasm to get things done was present among 46.8% of the respondents, and trouble staying awake while engaging in any activity was present among 24.6% of the respondents. Burnout did not show a significant association with sleep quality (Table 6).

4. Discussion

The prevalence of personal burnout was 16.8%, work-related burnout was 10.5%, and pandemic burnout was 25.4%. Sleep quality was moderate among 36.05% of the participants and poor among 36.05%. Personal burnout in the current study was associated significantly with the designation of the respondents. In contrast, studies conducted in Ethiopia and China found that nurses had the highest prevalence of burnout.

The number of working hours in a day was significantly associated...
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Association of burnout with socio-demographic and work-related variables.

Table 5

| Variables                          | Level of personal burnout | Total | Low (%) | Moderate (%) | High (%) | p-value |
|-----------------------------------|---------------------------|-------|---------|-------------|----------|---------|
| Designation                       |                           |       |         |             |          |         |
| ASHA                              | 221                       | 174   | 40 (18.1)| 7 (3.2)     |          | 0.033*  |
| ANM                               | 189                       | 167   | 18 (9.5 )| 4 (2.1)     |          |         |
| Marital status                    |                           |       |         |             |          |         |
| Unmarried                         | 34                        | 30    | 4 (11.8) | 0           |          | 0.522   |
| Married                           | 360                       | 297   | 12 (4.4) | 11 (3.1)    |          |         |
| Widowed/ Divorced                 | 16                        | 14    | 2 (12.5) | 0           |          |         |
| Number of children (n=376)        |                           |       |         |             |          |         |
| No children                       | 17                        | 17    | 0       | 0           |          |         |
| One child                         | 98                        | 86    | 11 (12.2)| 1 (1)       |          | 0.028*  |
| More than one                     | 261                       | 208   | 43 (16.5)| 10 (3.8)    |          |         |
| Level of work-related burnout     |                           |       |         |             |          |         |
| Designation                       |                           |       |         |             |          |         |
| ASHA                              | 221                       | 193   | 22 (10) | 6 (2.7)     |          | 0.017*  |
| ANM                               | 189                       | 174   | 15 (7.9 )| 0           |          |         |
| Years of work experience          |                           |       |         |             |          |         |
| <5                                | 215                       | 196   | 19 (8.8) | 0           |          | 0.011*  |
| 5–1                               | 117                       | 107   | 8 (6.8)  | 2 (1.7)     |          |         |
| >10                               | 78                        | 64    | 10 (12.8)| 4 (5.1)     |          |         |
| Number of working hours (in a day)|                           |       |         |             |          |         |
| 8                                 | 212                       | 190   | 17 (8)  | 5 (2.4)     |          | 0.208   |
| >8                                | 198                       | 177   | 20 (10.1)| 1 (0.5)     |          |         |
| Number of field visits (in a week)|                           |       |         |             |          |         |
| 5                                 | 61                        | 59    | 1 (1.6)  | 1 (1.6)     |          | 0.092   |
| >5                                | 349                       | 308   | 36 (10.3)| 5 (1.4)     |          |         |
| Level of pandemic-related burnout |                           |       |         |             |          |         |
| Population covered               |                           |       |         |             |          |         |
| <3500                             | 62                        | 39    | 23 (37.1)| 0           |          | 0.050*  |
| >3500                             | 348                       | 267   | 79 (22.7)| 2 (0.6)     |          |         |
| Number of working hours           |                           |       |         |             |          |         |
| 8                                 | 212                       | 152   | 59 (27.8)| 1 (0.5)     |          | 0.358   |
| >8                                | 198                       | 154   | 43 (21.7)| 1 (0.5)     |          |         |

*p-value ≤0.05.

Association of sleep quality with socio-demographic and work-related variables.

Table 6

| Variables                          | Level of sleep quality | Total | Good n (%) | Moderate n (%) | Poor n (%) | p-value |
|-----------------------------------|------------------------|-------|------------|---------------|------------|---------|
| Designation                       |                        |       |            |               |            |         |
| ASHA                              | 221                    | 62    | 85 (38.5)  | 74 (33.4)     |            | 0.512   |
| ANM                               | 189                    | 46    | 70 (37)    | 73 (38.6)     |            |         |
| Age (in years)                    |                        |       |            |               |            |         |
| <30                               | 120                    | 46    | 42 (35)    | 32 (26.7)     |            | 0.001*  |
| >30                               | 290                    | 62    | 113 (39)   | 115           |            | (39.7)  |
| Type of family                    |                        |       |            |               |            |         |
| Nuclear                           | 305                    | 77    | 123 (40.3) | 105           |            | 0.199   |
| Extended                          | 105                    | 31    | 32 (30.5)  | 42 (40)       |            |         |
| Marital status                    |                        |       |            |               |            |         |
| Unmarried                         | 34                     | 17    | 8 (23.5)   | 9 (26.5)      |            | 0.018*  |
| Married                           | 360                    | 87    | 139 (38.6)| 134           |            |         |
| Widowed/ Divorced                 | 16                     | 4     | 5 (20)     | 4 (20)        |            |         |
| Type of housing                   |                        |       |            |               |            |         |
| Own house                         | 241                    | 50    | 96 (39.8)  | 95 (39.5)     |            | 0.008*  |
| Rented house                      | 169                    | 58    | 59 (34.9)  | 52 (30.8)     |            |         |
| Years of work experience          |                        |       |            |               |            |         |
| <5                                | 215                    | 68    | 79 (36.7)  | 68 (31.7)     |            | 0.039*  |
| 5–10                              | 117                    | 25    | 50 (42.7)  | 42 (35.9)     |            |         |
| >10                               | 78                     | 15    | 26 (33.3)  | 37 (47.5)     |            |         |
| Number of working hours in a day  |                        |       |            |               |            |         |
| 8                                 | 212                    | 54    | 88 (41.5)  | 70 (33)       | 0.259    |         |
| >8                                | 198                    | 54    | 67 (33.8)  | 77 (38.9)     |            |         |

*p-value ≤0.05.

China and India also found that poor sleep quality increased with age, whereas a study conducted in Tripura did not find any association. The type of housing was significantly associated with sleep quality in the present study, similar to a survey in Tripura. The designation of the respondents was not associated with sleep quality in the current study. In contrast, a study in China among healthcare professionals during the pandemic revealed that being a nurse was related to poor sleep quality.

The total population covered by ASHA workers is not per norms, which may lead to an increased workload and, in return, occupational stress. Most respondents feared contracting the virus and infecting their family members because of their exposure. The majority of respondents reported a feeling of non-acceptability by the community and a lack of time to spend with family and friends. Early identification of the factors causing burnout is necessary to improve the overall well-being.

4.1. Strength and limitations

The strength of the current study was that the questionnaires used (CBI and PSQI) are tested and validated in various national and international studies. Also, a pilot study was conducted to check for the reliability of the questionnaire. However, the study’s weakness was relying on the participants’ self-reporting. Being a cross-sectional study may limit our ability to identify causal relationships between burnout and sleep quality.

5. Conclusions

The present study showed that designation, level of education, and years of experience were associated with work-related burnout. The number of children and designation of the respondents were determining factors for personal burnout. For sleep quality, age, marital status, and type of housing were found to be determining factors. The total population covered by ASHA workers is not per norms which may

with personal burnout among healthcare professionals in a tertiary healthcare setting in Kerala. In contrast, no association was found in the current study. The present study found that years of work experience were significantly associated with work-related burnout; the studies conducted in Delhi and Andhra Pradesh among nurses and clinicians found that respondents with low years of expertise reported high levels of burnout.

According to studies in India and Andhra Pradesh, the pandemic burnout was more among the age group of 31–40. In contrast, age did not correlate with pandemic burnout in the current study. There is no association between the number of working hours and years of experience with pandemic burnout in the present study, which is similar to the findings of a multinational study. In contrast, a study conducted in North India in a tertiary healthcare setting found that the average number of working hours was associated with burnout during the pandemic.

In the current study, age was significantly associated with sleep quality. The finding is similar to a study in Iran which found that respondents above 45 years had poor sleep quality. Studies conducted in

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lead to increased workload. The provision of necessary equipment, regular check-ups and timely interventions will benefit in minimising the risk of stress and burnout. Subsequently, more in-depth assessments are needed for a better understanding of the mental health of CHWs.

Sources of support
Nil

Declaration of competing interest
Nil

References
1 Lehmann Uta, Sanders David. A report on Community health workers: WHO [Internet] [cited 2021 June 12]. Available from: https://www.who.int/hrh/documents/community_health_workers.pdf 2007.
2 COVID-19 Book of Five. Response and containment measures for ANM, ASHA, AWW [Internet] [cited 2021 June 12]. Available from: https://www.mohfw.gov.in/pdf/3Pocketbookof5_Covid19_27March.pdf 2020.
3 Queen D, Harding K. Societal pandemic burnout: a COVID legacy. Int Wound J. 2020 Aug;17(4):873–874.
4 D C Hs S, Singh A. Sleep pattern, sleep problems and comorbidities among resident doctors at a tertiary care institution in India: a cross-sectional study. Int J Community Med Public Health. 2017 Nov 23;4(12):4477–4484.
5 Khasne RW, Dhakulkar BS, Mahajan HC, Kulkarni AP. Burnout among healthcare workers during COVID-19 pandemic in India: results of a questionnaire-based survey. Indian J Crit Care Med Peer-Rev Off Publ Indian Soc Crit Care Med. 2020 Aug;24(8):664–671.
6 Buysse DJ, Reynolds CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index (PSQI): a new instrument for psychiatric research and practice. Psychiatr Res. 1989;28(1):193–213.
7 Žutautienė R, Radišauskas R, Kaliniene G, Ustinaviciene R. The prevalence of burnout and its associations with psychosocial work environment among Kaunas region (Lithuania) hospitals’ physicians. Int J Environ Res Public Health. 2020 Jan;17(1):37–39.
8 Hu H-X, Liu L-T, Zhao F-J, Yao Y-Y, Gao Y-X, Wang G-R. Factors related to job burnout among community nurses in changshun, China. J Nurs Res. 2015 Sep;23(3):172–180.
9 Binub K. Burnout among health professionals in a tertiary medical college of northern Kerala, India. Int J Community Med Public Health. 2018 Dec 24;6(1):229–233.
10 Negi Y, Bagga R. Burnout among nursing professionals in tertiary care hospitals of Delhi. J Health Manag. 2015;17(12):163–177.
11 Chepure RL, Lotheni SK, Bhimarasetty DM. Burnout among clinicians in a tertiary care setting. Int J Community Med Public Health. 2018 Feb 24;5(3):1157–1161.
12 Vinnakota A, Srikrishna N, Srivivas S, Shetha G, Abhilash GV, Vidya S. Burnout and its impact on the mental health of physicians during the COVID-19 pandemic: a cross-sectional study from South India. Telangana J Psychiatry. 2021 Feb 28;6(2):160–165.
13 Grover S, Sahoo S, Bhalla A, Avanthi A. Psychological problems and burnout among medical professionals of a tertiary care hospital of North India: a cross-sectional study. Indian J Psychiatr. 2018;60(2):175–188.
14 Denning M, Goh ET, Tan B, et al. Determinants of burnout and other aspects of psychological well-being in healthcare workers during the Covid-19 pandemic: a multinational cross-sectional study. PLoS One. 2021 Apr 16;16(4), e0238666.
15 Ghalichi Leila, Pournik Omid, Ghaffari Mostafa, Vingard Eva. Sleep quality among health care workers. Archives of Iranian Medicine. Feb. 2013;16(2):100–103.
16 Nag K, Datta A, Karmakar N, Chakraborthy T, Bhatcharjee P. Sleep disturbance and its effect on work performance of staffs following shifting duties: a cross-sectional study in a medical college and hospital of Tripura. Med J Dr Pauli Vidyapeeth. 2019 May 1;12(3):211–216.
17 Zhou Y, Yang Y, Shi T, et al. Prevalence and demographic correlates of poor sleep quality among frontline health professionals in liaoning province, China during the COVID-19 outbreak. Front Psychiatr. 2020;11:520.
18 Yang Y, Zha J, Yang S, et al. Prevalence and associated factors of poor sleep quality among Chinese returning workers during the COVID-19 pandemic. Sleep Med. 2020 Sep;73:47–52.
19 Aryal S, D’mello MK. Occupational stress and coping strategy among community health workers of Mangalore Taluk, Karnataka. Indian J Publ Health. 2020;64:351–356.