

Awareness regarding noise in the hospital and its health effects among staff working in a tertiary care hospital in New Delhi, India

P1-H5

Aritrik Das¹, Jugal Kishore², Yukti Bhandari¹

¹Post Graduate Institute of Medical Education and Research, Chandigarh, India; ²Vardhman Mahavir Medical College and Safdarjung Hospital

- Sizeable proportion lacked knowledge regarding the effects of hospital noise on human health (29.1%). Less than half of the study participants identified effects of hospital noise apart from annoyance and hearing impairment.
- Almost half (48.7%) perceived their current workplace to be noisy and identified patient and visitor conversations to be the most significant contributor to hospital noise.
- Education, socioeconomic status and area of work were significantly associated with knowledge and perceptions regarding hospital noise.

BACKGROUND

According to the Indian legislation, “any abnormal sound which irritates human being is called as noise pollution”.¹

Knowledge regarding noise pollution has been increasing over the years, but awareness of the problem in the context of hospital noise is necessary among the general population and the staff alike, to make noise reduction in hospitals a priority.

OBJECTIVES

To determine the awareness regarding hospital noise and its health effects among staff working in a tertiary care hospital in North India.

MATERIALS AND METHODS

- Cross-sectional study conducted in a 1600-bedded tertiary care hospital in New Delhi, India from January 2021 to February 2021 among Staff.
- Based on 66.7% prevalence of knowledge regarding hospital noise among staff,² accounting for a 10% relative error, 80% power and design effect of 2, after adding 15% non-response rate, a sample size of **450** was obtained.
- Staff list for each site was obtained and 15 participants were recruited per site using stratified random sampling and staff members who did not have any night duties during duration of this study were excluded.
- A pre-designed, pre-tested, semi-structured questionnaire³ which was self-administered was used for data collection.
- Ethical approval was obtained from the Institute Ethics Committee. Prior written informed consent was obtained from each participant.

RESULTS

- Median age of the study participants was 30 years [IQR= 27-35].
- Information on noise pollution and its effect on health was predominantly gathered from medical professions, internet, newspapers, and journals or magazines.

Figure 1: a) Does hospital noise have an impact on human health? (b) Are you aware of any hospital noise legislations or recommendations? (N=450)

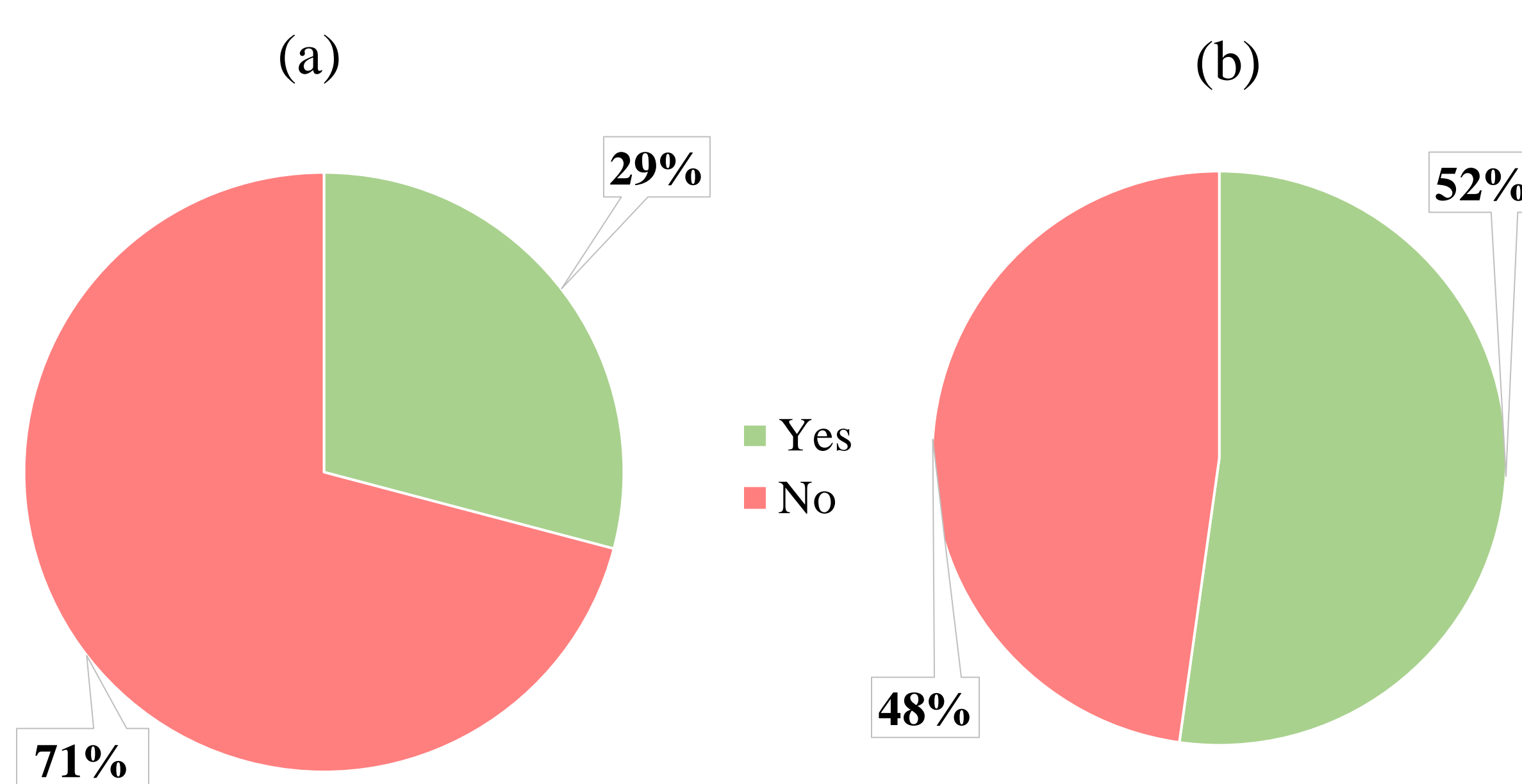


Table 1: Hospital noise sources identified by study participants in their current workplace (N = 450)*

| Category | Sources of Noise | n (%) |
|-------------------|----------------------------------|------------|
| Patient-related | Patient and Visitor Conversation | 292 (64.9) |
| | Patient Movement | 97 (21.6) |
| | Mobile Phones | 100 (22.2) |
| | Treatment related noise | 10 (2.2) |
| | Staff Conversation | 96 (21.3) |
| Staff-related | Trolleys | 53 (11.8) |
| | Telephone Ring | 8 (1.8) |
| | Use of whistles | 10 (2.2) |
| | Machine alarms, monitors | 37 (8.2) |
| Equipment-related | Cooling vents and AC ducts | 7 (1.6) |
| | Generators | 1 (0.2) |
| | Others | |
| Others | Vehicular traffic | 90 (20) |
| | Ambulance Siren | 34 (7.6) |
| | Loudspeaker announcement | 12 (2.7) |
| | Street vendors | 6 (1.3) |
| | Construction Work | 6 (1.3) |
| | Design of building | 1 (0.2) |

*Multiple responses were applicable for the question

Figure 2: Knowledge of the effect of hospital noise on staff and patients in the hospital (N=450)

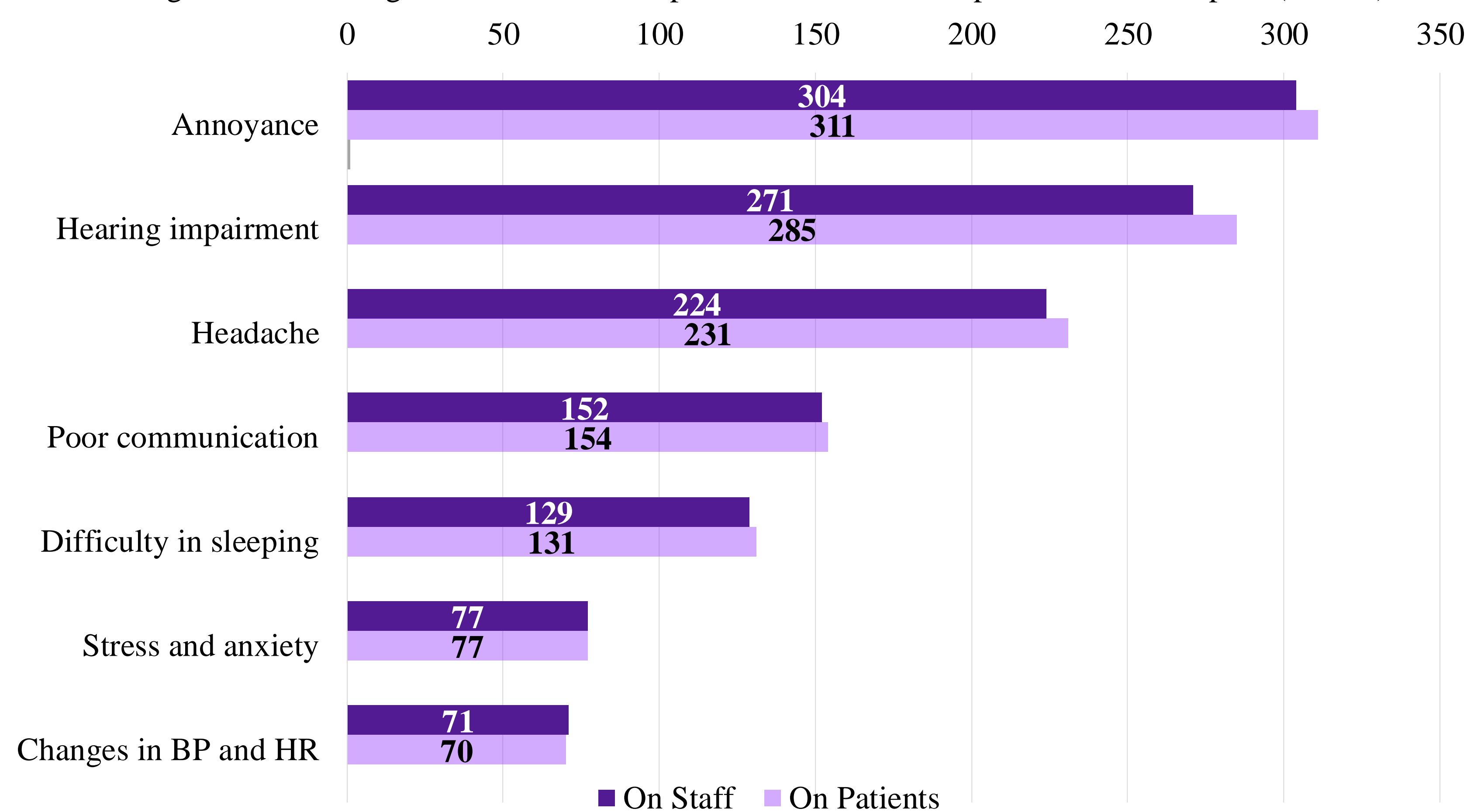


Table 2: Association of information about hospital noise with sociodemographic characteristics (N=490)

| Sociodemographic Characteristics | | Believes hospital noise does NOT affect health | | Is unaware of legislations related to hospital noise | |
|----------------------------------|------------------------------|--|--------------------------|--|--------------------------|
| | | n (%) | aOR [95% C.I.]* | n (%) | aOR [95% C.I.]* |
| Education of participant | Postgraduate (n=37) | 0 | - | 0 | - |
| | Graduate (n=196) | 6 (3.1%) | 0.04 [0.02-0.78] | 24 (12.2%) | 0.08 [0.02-0.58] |
| | High School (n=19) | 6 (31.6%) | 0.28 [0.08-0.60] | 14 (73.7%) | 0.14 [0.03-0.78] |
| | Secondary School (n=42) | 15 (35.7%) | 0.23 [0.08-0.66] | 31 (73.8%) | 0.15 [0.03-0.52] |
| | Middle School (n=69) | 48 (69.6%) | 0.79 [0.22-2.02] | 62 (89.9%) | 0.41 [0.20-8.60] |
| | Primary School (n=47) | 30 (63.8%) | 0.73 [0.25-2.07] | 46 (97.9%) | 1.40 [0.04-4.61] |
| | Illiterate (n=39) | 25 (64.1%) | Ref | 37 (94.9%) | Ref |
| Socioeconomic Status | Upper (n=110) | 1 (0.9%) | Ref | 0 | - |
| | Upper Middle (n=148) | 16 (10.8%) | 2.33 [1.29-4.23] | 48 (32.4%) | 0.20 [0.08-0.69] |
| | Lower Middle (n=102) | 51 (50%) | 9.25 [3.83-15.14] | 81 (79.4%) | 0.44 [0.15-0.89] |
| | Upper lower (n=90) | 63 (70%) | 15.43[3.74-19.20] | 86 (95.6%) | Ref |
| Area of Work | Surgery (n=45) | 12 (26.7%) | Ref | 32 (71.1%) | Ref |
| | Emergency (n=60) | 12 (20%) | 0.52 [0.13-1.95] | 13 (28.9%) | 6.72 [1.26-11.28] |
| | Gynaecology (n=90) | 20 (22.2%) | 0.55 [0.16-1.86] | 21 (35%) | 8.04 [3.70-11.96] |
| | Medicine (n=45) | 8 (17.8%) | 0.47 [0.22-0.98] | 36 (40%) | 5.18 [0.72-13.07] |
| | Orthopaedics (n=45) | 15 (33.3%) | 1.20 [0.41-3.50] | 15 (33.3%) | 3.38 [0.53-11.65] |
| | OPD (n=30) | 7 (23.3%) | 0.83 [0.33-2.07] | 14 (31.1%) | 2.80 [1.40-7.70] |
| | Sports Injury Complex (n=15) | 6 (40%) | 1.59 [0.58-4.38] | 15 (50%) | 7.65 [0.74-19.19] |
| | Super Specialty Block (n=15) | 6 (40%) | 1.29 [0.57-2.95] | 7 (46.7%) | 4.60 [0.46-45.47] |
| | Outdoor (n=105) | 45 (42.9%) | 1.42 [0.57-3.56] | 10 (66.7%) | 2.32 [1.46-11.75] |

*Adjustment was done for age, gender, marital status, education, socioeconomic status and area of work.

CONCLUSIONS

- Knowledge regarding hospital noise and its effects was lacking among 25-50% of the staff working in the hospital.
- More than half of the identified hospital noise sources were either completely or partially avoidable through staff sensitization, strategic procedural changes to mitigate noise and strict implementation of patient and visitor rules.
- Further research into exploring hospital noise at various levels of healthcare in the Indian setting, in addition to creating awareness, can help make this problem an occupational and public health priority.

References

1. Central Pollution Control Board. Noise Pollution Regulations in India. Ministry of Environment & Forests, Govt. of India, 2001.
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3. Das A, Kishore J. Annoyance among Staff and Noise Level in a Tertiary Care Hospital in New Delhi, India: A Pilot Study. *International Journal of Preventive, Curative & Community Medicine* (E-ISSN: 2454-325X). 2020;6(3):10-6.

