

Night-Time Noise and Sleep Quality in an Internal Medicine Ward in Portugal: An Observational Study

Ruído Noturno e Qualidade do Sono em uma Enfermaria de Medicina em Portugal: Um Estudo Observacional

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ABSTRACT

Introduction: Hospitals should provide a quiet environment to promote patient healing and well-being. However, published data indicates that World Health Organization's guidelines are frequently not met. The aim of the present study was to quantify night-time noise levels in an internal medicine ward and evaluate sleep quality, as well as the use of sedative drugs.

Methods: Prospective observational study in an acute internal medicine ward. Between April 2021 and January 2022, on random days, noise was recorded using a smartphone app (Apple® iOS, Decibel X). Night-time noise was recorded from 10 p.m. to 8 a.m. During the same period, hospitalized patients were invited to respond to a questionnaire regarding their sleep quality.

Results: A total of 59 nights were recorded. The average noise level recorded was 55 dB with a minimum of 30 dB and a maximum of 97 dB. Fifty-four patients were included. An intermediate score for night-time sleep quality (35.45 out of 60) and noise perception (5.26 out of 10) was reported. The main reasons for poor sleep were related to the presence of other patients (new admission, acute decompensation, delirium, and snoring), followed by equipment, staff noise and surrounding light. Nineteen patients (35%) were previous users of sedatives, and during hospitalization 41 patients (76%) were prescribed sedatives.

Conclusion: The noise levels detected in the internal medicine ward were higher than the levels recommended by the World Health Organization. Most patients were prescribed sedatives during hospitalization.

Keywords: Hospital Departments; Inpatients; Internal Medicine; Noise; Sleep Deprivation

RESUMO

Introdução: Os hospitais devem proporcionar um ambiente tranquilo para promover a recuperação e o bem-estar dos doentes. No entanto, dados publicados indicam que as diretrizes da Organização Mundial da Saúde permanecem frequentemente por cumprir. O presente estudo tem como objetivo quantificar os níveis de ruído noturno numa enfermaria de medicina interna e avaliar a qualidade do sono, bem como o uso de medicamentos sedativos.

Métodos: Estudo observacional prospetivo numa enfermaria de Medicina Interna. Entre abril de 2021 e janeiro de 2022, foi registado o ruído noturno, em dias aleatórios, com uma aplicação para *smartphone* (Apple® iOS, Decibel X). O registo ocorreu das 22 às 8 horas. No mesmo período, os doentes internados foram convidados a responder a um questionário sobre a qualidade do sono.

Resultados: Foram gravadas 59 noites. O nível médio de ruído foi de 55 dB com mínimo de 30 dB e máximo de 97 dB. Cinquenta e quatro doentes foram incluídos no estudo. Foi reportada uma pontuação intermédia para qualidade do sono noturno (35,45 em 60) e a perceção de ruído noturno (5,26 em 10). Os principais motivos para a má qualidade do sono foram relacionados com a presença de outros doentes (nova admissão, descompensação aguda, *delirium* e *roncopatia*), seguido do ruído produzido por equipamentos e pelos profissionais, e a luz ambiente. Dezanove doentes (35%) tomavam previamente sedativos, mas 41 doentes (76%) receberam prescrição de sedativos durante o internamento.

Conclusão: Os níveis de ruído detetados numa enfermaria são superiores aos recomendados pela Organização Mundial Saúde. A maioria dos doentes recebeu prescrição de sedativos durante o internamento.

Palavras-chave: Internamento; Medicina Interna; Privação do Sono; Ruído; Serviços Hospitalares

INTRODUCTION

Hospitals should provide a quiet and calm environment to promote patient rest, healing, and well-being. However, according to published data, the length and sleep quality in hospitalized patients differs from that of individuals sleeping at home, and that there are several potentially modifiable hospital-related factors that negatively impact patients' sleep.¹

The World Health Organization's (WHO) guidelines on community noise levels recommend that noise levels in hospital wards should not exceed an average of 35 dB (similar to a quiet library) during daytime and should not

exceed an average of 30 dB (similar to whispering) and a maximum of 40 dB at night-time.² However, both national and international studies³⁻⁷ and the subjective perception of physicians suggest that these recommendations are not being met. This leads to worse sleep quality in inpatients and subsequently to an increasing number of complications – increased use of sedative drugs and drug iatrogenesis, extended hospital stay with associated complications (e.g., healthcare associated infections, pressure ulcers, immobility) and reduced capacity of acute disease recovery.² Some studies have suggested that staff noise is the main source

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of noise, and that many staff and equipment noise events could be mitigated or eliminated.⁴

We found no study evaluating the noise levels in internal medicine wards in Portugal. Therefore, the aim of the present study was to quantify night-time noise levels in an internal medicine ward and evaluate sleep quality, as well as the use of sedative drugs among hospitalized patients.

MATERIAL AND METHODS

Prospective observational study in an acute internal medicine ward (34 beds). The ward consists of a single hallway lined with bedrooms (one single room, one four-bedded room and five six-bedded rooms), a nursing station, and a medical office in the middle of the hallway (Fig. 1).

The present study was approved by the local Ethics Committee (Ref. 214/21).

Goal one: noise level in an acute ward

Between April 2021 and January 2022, and on random days (according to authors' availability), the noise level was recorded using a smartphone app (Apple® iOS, Decibel X).⁸ It has a standard measurement range from 30 to 130 dB, similarly to other recording devices⁹; ambient sound level was measured in A-weighted decibels (dBA), which represent sound levels as perceived by the human ear; and sound measurements were collected in 'fast mode' (200ms).

Night-time noise was recorded from 10 p.m. to 8 a.m. The recording device was placed in the middle of the hallway (Fig. 1), close to the wall, behind the nursing medication cart. Healthcare workers were not made aware of the device's presence.

Data was collected on average (LAeq), minimal (LAmín) and maximum (LAMax) noise values, as reported by the app for each recording period.⁷

Goal two: quality of sleep and Sedative / hypnotic prescription pattern

During the same period, a convenience sample of hospitalized patients were invited to participate in the study by answering a questionnaire (Appendix 1: <https://www.actamedicaportuguesa.com/revista/index.php/amp/article/view/19042/15310>). Patients were invited preferably close to their discharge day (or when clinically stable and after spending at least three nights in hospital). After signing an informed consent form, patients responded to a questionnaire with: demographic and clinical data; Richards Campbell's sleep questionnaire (RCSQ) and Pittsburgh sleep questionnaire (PSQI) to assess sleep quality¹⁰; Patient's subjective perception of night-time source of noise (equipment noise, noise from staff, noise from other patients, procedures performed, surrounding light, medication administration, positioning, anxiety related to the clinical situation, uncontrolled pain, others). Questionnaires have been mainly applied in the morning, after breakfast and personal hygiene, so patients can easily recall their experience in the previous night.

The RCSQ is a validated survey of five items to assess sleep quality and one item to night-time noise that is measured on a 100 mm analog scale; it refers to the previous night of sleep and ranges from 0 to 60, where 0 indicates better sleep quality and 60 indicates poorer sleep quality. The PSQI is a questionnaire of 19 items, with a total range score from 0 (no sleep difficulty) to 21 (severe sleep difficulty), refers to the previous month of sleep and a score above 5 corresponds to bad sleep quality.¹⁰

Both previous and current prescriptions of hypnotic/sedative drugs were reviewed from electronic medical records. They were classified as regular/daily, if they were prescribed for everyday and *pro re nata* (PRN), if prescribed



'as needed'. Drugs were classified in classes: benzodiazepines (short, intermediate, and long acting), hydroxyzine, neuroleptics (e.g., risperidone, olanzapine, quetiapine), Z-drugs (zolpidem), sedative antidepressants (e.g., trazodone, mirtazapine) or others.

A descriptive analysis of the data was made using STATA13.0 (Stata Corporation®, College Station, TX, United States of America). The Skewness and Kurtosis test was used to assess normality of distribution. A statistical analysis was performed using chi-square for categorical variables and t-test or Mann-Whitney for continuous variables, according to the normality of the distribution.

RESULTS

Noise records

A total of 59 nights were recorded with a mean of 10 hours per night (Table 1). The average noise level recorded was 55 dB with minimum of 30 dB and maximum 97 dB (Fig. 2). No statistically significant difference was detected between night-time noise recorded during weekend or workdays (Table 1).

Noise distribution was higher at beginning of the night and in the early morning period, from 6 a.m. (Fig. 3).

Patients' questionnaire and prescribing pattern

Fifty-four patients voluntarily accepted to respond to the

Table 1 – Noise levels recording in an acute medical ward

Noise records	Total (n = 59)	Weekend (n = 17)	Workday (n = 42)	p-value
Record duration (hours)	10.01 +/- 1.07	9.98 +/- 1.25	10.03 +/- 1.00	0.88
Average noise (dB)	55.00 +/- 2.52	54.44 +/- 2.83	55.22 +/- 2.39	0.29
Minimum noise (dB)	29.81 +/- 2.29	29.79 +/- 2.12	29.82 +/- 2.39	0.96
Maximum noise (dB)	97.48 +/- 4.56	97.16 +/- 4.79	97.61 +/- 4.69	0.74

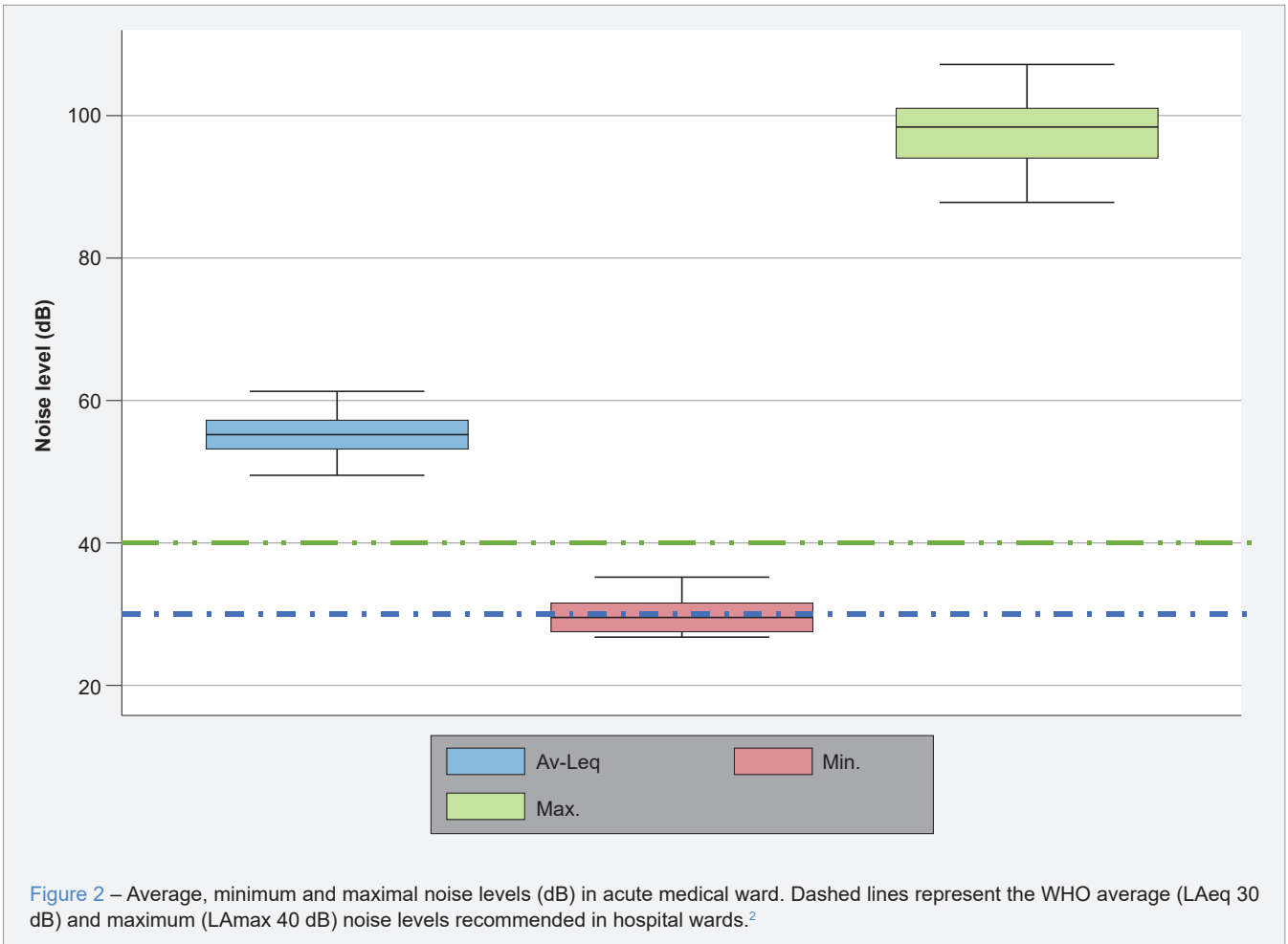
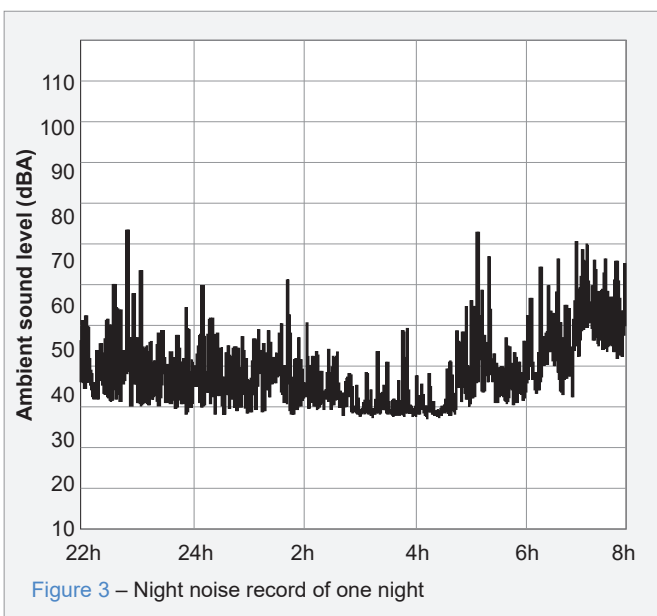


Figure 2 – Average, minimum and maximal noise levels (dB) in acute medical ward. Dashed lines represent the WHO average (LAeq 30 dB) and maximum (LAmox 40 dB) noise levels recommended in hospital wards.²



questionnaire. The mean age was 70 years old; half were men and were hospitalized for an average of nine days.

The average sleep quality rating of the previous night (RCSQ) was 35.45 mm (out of 60), and the rating for noise questions was 5.26 mm (out of 10). The main reasons for poor sleep were related to the presence of other patients, specifically related to admission of new patients (n = 3), acute decompensation (n = 10), delirium (n = 9) and snoring (n = 3). Other reasons mentioned were equipment, staff noise and surrounding light (Table 2).

The Pittsburgh scale questionnaire regarding sleep quality in the previous month reported good sleep in 20 patients (38%) and prior use of sedative/hypnotics was present in 19 patients (35%). The most frequent medicines used were short acting benzodiazepines (Table 3).

A third of patients were previously prescribed with sedatives/hypnotics (n = 19; 35%). During hospitalization, most patients (n = 41; 76%) were prescribed with *pro re nata* (PRN) and/or regular sedatives/hypnotics ($p < 0.001$) - Table 2. The most frequent were short acting benzodiazepines and zolpidem (Table 3).

Table 2 – Patient characterization and sleep quality

	n = 54
Age , average (SD)	70.23 (12.91)
Man , n (%)	27 (50)
Length of stay , average (SD)	9.04 (7.83)
Richard Campbell scale questionnaire , average (SD)	35.45 (18.65)
RCSQ_ noise (item 6) , average (SD)	5.26 (3.84)
Pittsburg sleep questionnaire , average (SD)	7.49 (4.33)
PSQI ≤ 5 – good sleep , n (%)	20 (37.74)
Reasons for bad sleep (last night)* , n (%):	
None	12 (15)
Equipment noise	14 (17.5)
Noise from staff	8 (10)
Noise from other patients	25 (31.25)
Procedures performed	8 (10)
Surrounding light	8 (10)
Medication administration	1 (1.25)
Positioning	2 (2.50)
Anxiety related to clinical situation	2 (2.50)
Uncontrolled pain	0
Others	0
Prior use of any sedatives/hypnotic , n (%)	19 (35.19)*
Sedatives/hypnotic prescribed during hospitalization , n (%)	
PRN	29 (53.70)
Regular	22 (40.74)
PRN and/or Regular	41 (75.93)*

RCSQ Richard Campbell scale questionnaire; PSQI Pittsburgh sleep questionnaire; PRN *pro re nata*;

*: paired t-test: p -value < 0.001

Table 3 – Sedatives/hypnotics used prior and during hospitalization (more than one drug per patient)

Sedatives/hypnotic previously used, n (%)		Sedatives/hypnotic prescribed during hospitalization, n (%)		
			PRN	Regular
Benzodiazepines – short acting	8, 14.55%	Benzodiazepines – short acting	9, 16.98%	8, 13.79%
Benzodiazepines – intermediate acting	3, 5.45%	Benzodiazepines – intermediate acting	5, 9.43%	3, 5.17%
Benzodiazepines – long acting	2, 3.64%	Benzodiazepines – long acting	2, 3.77%	0
Hydroxyzine	0	Hydroxyzine	0	0
Neuroleptics	2, 3.64%	Neuroleptics	2, 3.77%	3, 5.17%
Zolpidem	1, 1.82%	Zolpidem	9, 16.98%	6, 10.34%
Trazodone	1, 1.82%	Trazodone	0	2, 3.45%
Mirtazapine	2, 3.64%	Mirtazapine	0	3, 5.17%
Other	1, 1.82%	Other	1, 1.89%	1, 1.72%
None	35	None	25	32

PRN: *pro re nata*

DISCUSSION

The main findings of our study were: (1) the noise levels detected in the internal medicine ward were higher than the levels that are recommended by the WHO (LAeq 55 vs 30 dB; LAmx 97 vs 40 dB); (2) the most frequent disturbing source of noise during the night was related to other patients in the same room, followed by noise from staff or equipment; (3) most patients were prescribed sedatives/hypnotics during hospitalization (from 35% previously users to 76%).

Despite the high noise levels detected, patients reported an average score in RCSQ of 35 (out of 60) and a score of 5 (out of 10) to night-time noise, which are intermediate values. However, the quality and quantity of sleep that patients experience at home is an important factor to consider, since this could change the perception of poor/good sleep quality during hospital stay. In our study, 62% of patients reported previous poor sleep quality. Although higher numbers are reported in the literature,¹¹ this could have led to the devaluation of sleep quality in the “last night sleep” questionnaire. Additionally, the timing of the application of the questionnaires could also have influenced the result. Questionnaires were applied in the last days of hospitalization; on the one hand, patients were less sick and could report better quality of sleep by comparison with the first days of hospitalization, but on the other hand, the longer length of stay could have increased patient intolerance/tiredness regarding hospital routines.

The source of noise was frequently associated with other patients, which is understandable, since most patients in our department share their room with other five elderly patients, who are frequently dependent and cognitively im-

paired. Besides the general assumption that single rooms are quieter than multi-bedrooms, there are conflicting data regarding the correlation of noise levels and number of patients per room^{1,2,12}; this could also be related with the criteria of giving single beds to the sickest patients, which are expected to need more frequent care, even during night-time.

Similarly to other studies,^{4,5} modifiable sources of noise were reported, such as equipment, staff noise and surrounding light. The awareness of healthcare professionals regarding non-pharmacological treatments of insomnia is often low and should be a focus point for improving healthcare in medical wards.¹¹ Although our study focused on night-time noise, we have already explored daytime noise and concluded that it was also substantially increased compared with to the WHO recommendations. The 24-hour recording found a LAeq of 60.6 dB (LA min 27.2 dB and LA max 102.0 dB).⁷ To the human ear, the gain of 10dB is perceived as being twice as loud due to logarithmic scale of dB,¹³ so in addition to the negative consequences for patients, working in a noisy ward day and night is also exhausting.¹¹

Hospitals, and particularly internal medicine departments, are frequently occupied by elderly and frail patients. All sick people benefit from a restful night, but in this vulnerable population, it is essential to guarantee that nights are peaceful and quiet. It has been demonstrated that sleep fragmentation leads to changes in daytime alertness, cognitive functioning, and psychological functioning.⁹ To these important problems, we should add the negative consequences of increasing number of prescriptions of sedatives, as suggested by our results. It is essential that every hospital department develop protocols for the non-pharmacological

treatment of insomnia, which already have proven benefit.¹¹ Door closing, ear plugs, flashlights to check patients, avoiding conversations in hallways, headphones for people wanting the TV on, staff education, pagers on vibrate (sound off), dim hall lights, noise sensitive traffic lights (yellow over 40 dB and red over 50 dB) are effective strategies that could be implemented to reduce night noise, improve sleep quality and increase patient satisfaction.¹¹ This protocol should be included in a bigger change in hospital routine and habits, as suggested by the Hospital Elder Life Program,¹⁴ which has been extrapolated to the Portuguese reality and should be published soon.¹⁵

Although noise level goals could seem unrealistic/unachievable, there are departments where it has been achieved and this should motivate healthcare professionals to reduce their own department's noise level. Studies conducted in the United States of America (USA), where wards tend to comprise single rooms and there are financial rewards for hospitals that reduce environmental noise levels, frequently present better results with reduced noise levels.¹¹

A closer reality, in Portugal, from a pediatric unit in a tertiary hospital reported night-time mean values in hallway mostly below 50 dB (ranging from 44 and 50.7 in four of the five wards analyzed), only one ward presented higher values (53.5 dB).¹³ To the best of our knowledge there are no other studies in Portugal reporting night-time noise levels, but it would be important to explore these numbers and raise awareness among healthcare teams.

Our results regarding sedatives/hypnotic medicines showed that most patients frequently start these medications during hospitalization, which is undesirable, and values reached are higher than the 8% reported by White *et al* in the USA.¹⁰ In their study, the most commonly prescribed drug was melatonin (70.5%), followed by benzodiazepines (9.6%) and zolpidem (8.4%).¹⁰ Although melatonin is an interesting drug to be used, it is not available in our hospital.¹⁶

A positive point to notice is that hydroxyzine is no longer used prior and during hospitalization in elderly patients, since previous data from our department showed that hydroxyzine was a frequent inappropriately prescribed drug.¹⁷ However, antihistamines (e.g., diphenhydramine) are still prescribed to improve sleep during hospitalization in other hospitals, as reported by White *et al*, regardless of their negative effect of delirium and anticholinergic signs and symptoms.^{10,16}

Despite the interesting results of our study, there are some limitations. First, the device used to record noise was not conceived for professional use, but it is a simple, accessible, and reproducible method that could be easily replicated in other departments. Furthermore, smartphone sound measurement applications have been studied and authors have concluded that apps for Apple® smartphones may be

considered accurate and reliable to assess occupational noise exposure.⁸ Phone positioning could also have influenced the results – and we believe the sound could have been muffled due to the device's location, so the real magnitude of sounds might be even higher than recorded.

Another pitfall is the non-systematic noise recording and patient recruitment; more than a single recording during hospitalization would be better. However, the small magnitude of the noise standard deviation suggests that there was not a high variability among each night. The reduced number of patients invited may have led to a selection bias but was partly due to the type of patients admitted to this internal medicine department – patients with many comorbidities and high dependence status which precludes the collaboration in answering the questionnaires. Sleep quality assessment was subjective, since it was easier, more accessible and was not the main outcome of our study; however, objective data regarding sleep quality (e.g., actigraphy or polysomnography) would have provided more robust information. Finally, the single center methodology, prevents the generalizability of the results obtained.

CONCLUSION

The noise levels detected in the internal medicine ward of our hospital were higher than the levels recommended by the WHO. Our results support the notion that it may be difficult for a patient to have a good night of rest in our hospital. Physicians should become aware of this problem and of its consequences to hospitalized patients to facilitate the development of protocols that could reduce night-time noise and the prescription of sedatives.

AUTHOR CONTRIBUTIONS

MA: Conceptualization, investigation, methodology, formal analysis, supervision and writing of the manuscript.

EM, MN, CT, FS, IMM: Investigation, critical review and editing of the manuscript.

NG: Investigation, supervision, critical review and editing of the manuscript.

TF, GNS: Supervision, critical review and editing of the manuscript.

PROTECTION OF HUMANS AND ANIMALS

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association updated in 2013.

DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

COMPETING INTERESTS

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REFERENCES

- Wesselius HM, Van Den Ende ES, Alisma J, ter Maaten JC, Schuit SC, Stassen PM, et al. Quality and quantity of sleep and factors associated with sleep disturbance in hospitalized patients. *JAMA Intern Med.* 2018;178:1201-8.
- Berglund B, Lindvall T, Schwela DH. Guidelines for community noise. Geneva: WHO; 1999.
- McLaren E, Maxwell-Armstrong C. Noise pollution on an acute surgical ward. *Ann R Coll Surg Engl.* 2008;90:136-9.
- Hulland T, Su A, Kingan M. Noise in an inpatient hospital ward in New Zealand. *Build Acoust.* 2020;27:299-309.
- Shield B, Shiers N, Glanville R. The acoustic environment of inpatient hospital wards in the United Kingdom. *J Acoust Soc Am.* 2016;140:2213-24.
- Santos J, Carvalhais C, Xavier A, Silva M. Assessment and characterization of sound pressure levels in Portuguese neonatal intensive care units. *Arch Environ Occup Health.* 2018;73:121-7.
- Alves M, Távora C, Silva JF, Gomez N, Fonseca T. To how much noise are we exposing hospitalized elderly patients during sleep? *Acta Med Port.* 2021;34:711-2.
- Kardous CA, Shaw PB. Evaluation of smartphone sound measurement applications. *J Acoust Soc Am.* 2014;135:EL186-92.
- Yelden K, Duport S, Kempny A, Playford ED. A rehabilitation unit at night: environmental characteristics of patient rooms. *Disabil Rehabil.* 2015;37:91-6.
- White B, Snyder HS, Patel MV. Evaluation of medications used for hospitalized patients with sleep disturbances: a frequency analysis and literature review. *J Pharm Pract.* 2021;089719002110178.
- Garside J, Stephenson J, Curtis H, Morrell M, Dearnley C, Astin F. Are noise reduction interventions effective in adult ward settings? a systematic review and meta analysis. *Appl Nurs Res.* 2018;44:6-17.
- Yelden K, Duport S, Kempny A, Playford ED. A rehabilitation unit at night: environmental characteristics of patient rooms. *Disabil Rehabil.* 2015;37:91-6.
- Oliveira L, Gomes C, Bacelar Nicolau L, Ferreira L, Ferreira R. Environment in pediatric wards: light, sound, and temperature. *Sleep Med.* 2015;16:1041-8.
- Hshieh TT, Yang T, Gartaganis SL, Yue J, Inouye SK. Hospital elder life program: systematic review and meta-analysis of effectiveness. *Am J Geriatr Psychiatry.* 2018;26:1015-33.
- Madeira Marques P, Silva MS, Lambelho AR, Bartissol B, Gorjão Clara J. Plano hospitalar para idosos - prevenção do delirium e do imobilismo e otimização da assistência. Lisbon: Lidel; 2022.
- Alves M, Macedo IM, Távora C, Silva JF, Fonseca T. Sleep disturbances management in elderly hospitalized patients. *J Pharm Pract.* 2021;8971900211053287.
- Alves M, Miranda AN, Lopes FT, Dias AR, Narciso MR, Fonseca TP, et al. Polypharmacy is still a problem in Portuguese old patients. What is the effect of hospital admission in modification of potentially inappropriate chronic medication prescription? *Eur Geriatr Med.* 2013;4:S29.