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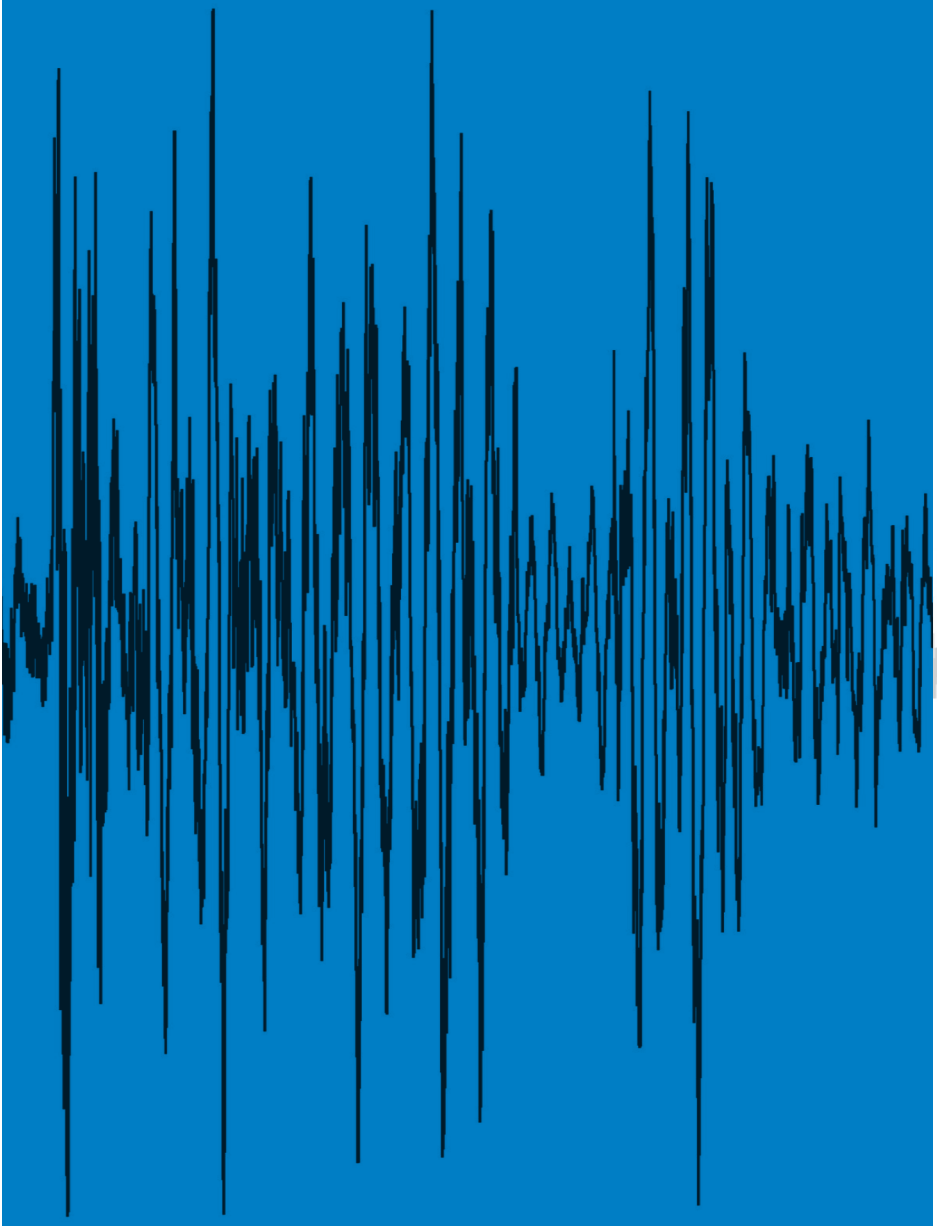

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Multi-center study of noise in patients from hospitals in Spain: A questionnaire survey

Pilar Marqués, Dolores Calvo[1], Mari Paz Mompart[2], Natalia Arias, Enedina Quiroga[3]

Department of Nursing and Physiotherapy, University College of Health Sciences, University of León (Ponferrada Campus), [1]Department of Nursing, University College of Nursing and Physiotherapy, University of Salamanca, [2]Invited Professor-Master of Nursing Management, UNE (National University of Distance Education), [3]Old People´S Hospital, Flores del Sil, Ponferrada, León, Spain

Abstract

To identify the most annoying noises in the hospital environment. One hundred and ninety-three patients took part in the study. A questionnaire collected the perceptions of patients from four hospitals in Spain, with three distinct units. The most annoying noises were the repetitive ones and the most unbearable source was the people who talk loudly. The daily hours were the noisiest and the most annoying, especially when patients wanted to rest and indicated that noise was annoying for them to get to sleep. Our results demonstrate how sensitive patients are toward noise in Spain. We also suggest some strategies to reduce the noise and the harmful physiological effects of increased sound levels in order to improve the quality of life in a healthcare environment.

Keywords: *Hospital, noise, patients, perception, questionnaire*

Introduction

Noise is an undesirable sound and acoustic pollution with auditory and extra auditory effects. Vulnerability to sound might be increased in persons with, among others, lack of sleep, stress and anxiety.

Patient's perception of noise in the acute care hospital may be of importance to patient outcomes and satisfaction with their hospital experience, and deserves careful attention.

The first study that has been performed in this field is dated in 1948, when McBride[1] indicated that hospital noise could be reduced. In the present study, we evaluated the patient's perception of noise in hospitals in Spain with the aims of identifying the type of noises that are perceived as the most annoying. We also suggest some strategies to reduce the noise and the harmful physiological effects of increased sound levels, as the environment at hospitals should be calm in order to allow patients to recover.

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Methods

Design

The present study was a multi-center study that included the following hospitals located in different regions of Spain: University of the Princess Hospital (540 beds, high complexity, with university component, Madrid), El Bierzo Hospital (340 beds, medium complexity, Ponferrada), León Hospital (850 beds, high complexity, León) and University of Salamanca Hospital and Clinic (700 beds, high complexity, with university component, Salamanca). Three relevant assistance units of intense activity were chosen: Intensive Care Unit (ICU), Surgery Unit and Paediatric Unit.

Procedure

In order to evaluate the patient's perception of noise, a questionnaire was designed, comprising dichotomised questions and multiple choice questions and also including a small group of open questions that allow the persons interviewed to express themselves freely.

Participants were given the questionnaire to fill out on their own. Each person had 2 days to complete the questionnaire.

Participants

A total of 193 patients responded to the questionnaire (University of the Princess Hospital: 58; El Bierzo

Hospital: 36; León Hospital: 54; University of Salamanca Hospital and Clinic: 45).

The group of patients that completed the questionnaire was comprised by students, housewives and retired workers (64.4%), with basic education (65%), living in cities (63.2%) and without auditory problems (83.4%), which described the environmental noise they usually perceive in their normal lifestyle (at home, at school, etc.) as medium or low, and that sleep well.

Results

The characteristics of noise disturbances found in our study are illustrated in Table 1.

Table 1: Patient's perceptions of noise and characteristics of noise disturbances

Does the noise stop you getting to sleep?		
Yes: 68.9%	No: 28.5%	No answer: 2.6%
What's the noise like in the hospital?		
Bearable: 84.5%	Unbearable: 13.4%	No answer: 2.1%
When is the noisiest time in the hospital?		
21–9 h: 16.1%	9–21 h: 76.6%	No answer: 7.3%
At what time is noise more disturbing?		
Daily hours: 47.1%	At night: 40.9%	No answer: 11.4%
When is noise more disturbing?	(%)	
When I want to rest	38.3	
When I am in pain	31.1	
When I am nervous	9.8	
In all the above	10.4	
No answer	3.1	
Others*	7.3	
What type of noise is the most annoying?	(%)	
Noise that is very loud	28.5	
Noise that lasts for a long time	24.4	
Repetitive noises	35.2	
All the above	9.8	
No answer	2.1	
What type of noise is the most unbearable?	(%)	
Bells	7.8	
People talking loudly	64.8	
Alarms	9.8	
Footsteps	2.1	
All the above	7.3	
No answer	6.7	
Others**	1.6	

*Others: When want to be in calm, when I want to read and watch the television, **Others: Noise from medicine trolley wheels, doors, building works (noise from drills at night were described)

Discussion

Table 1 shows that, in general, noise is disturbing when trying to get to sleep. 13.4% of the participants considered noise to be unbearable at the hospital. It is important to note that the daily hours were the noisiest and the most annoying, especially when patients wanted to rest. It is also relevant that the type of noises that are most annoying for patients were not the highest but the repetitive ones and the noise made by people who talk loudly. An anecdotal result from the open-ended questions was that the noise from the wheels of the medication trolleys and those from building works, even at night time, were very annoying.

In all the scientific literature reviewed, we only found one multi-center study that was carried out in three children's hospitals in Nigeria.[2] High noise levels were recorded (in the game room area, the school and some rooms with not very seriously ill patients), mainly from staff conversations and the use of hospital equipment.

Our results in hospitals in Spain are in concordance with the ones of these authors as well as with the previous of Statham,[3] which found that in a hospital located in London, the chief noise was being made by the voices of fellow patients or staff, particularly at night and in the early morning, and with the report of Berlet and Binet,[4] which observed that the noise that people make and noise from ventilation and alarm systems altered sleep.

A recent investigation performed in Brazil found that the sound level was considerably above the recommended maximum. Thus, in the neonatal ICU, the noise level was caused mainly by staff talk, in the emergency room reception area because of the continuous flow of people, while in ICU the noise was because of staff conversations and equipment with sound alarms.[5]

Noise is a pollutant factor of our environment, and a serious problem exists in hospitals throughout the world. High levels of noise were also detected in an Indian Hospital[6] and in neonatal ICUs in the US.[7]

In view of our findings, we suggest that there is a need for implementing strategies at Spanish hospitals regarding the architectural and instrumental design as well as addressing the levels of habit in order to reduce noise pollution.

Probably, some of these strategies would not even be costly, as it could be getting close to pass on information instead of shouting or using earplugs. An increased awareness of the staff is also recommended in order to decrease the sound levels, with interventions such as the prompt silencing of alarms. Other strategies can be applied to architectural engineering and instrumental design, as could also be the use of sound-absorbing materials in the hospital's physical structure.

The hospital organization could also work in controlling unnecessary noises, such as the excess number of visitors, the background sounds of televisions (even when not being watched), ringing phones, etc. On the other hand, at night time, noise sources must be totally controlled; except very few exceptions, noises coming from drills, at night, in areas close to the patient's room are unacceptable.

Our results demonstrate how sensitive patients are toward noise. Noise influences the sleeping patterns of people. Sleeping disorders were documented in nurses[8] and parents that stay overnight with their children in the hospital.[9] The present study demonstrated the same effects in patients.

Conclusion

The environment at hospitals should be calm in order to allow patients to recover. Noise is a pollutant factor of our environment, and a serious problem exists in hospitals throughout the world. Our results demonstrate how sensitive patients are toward noise at hospitals in Spain. We also suggest some strategies to reduce the noise and the harmful physiological effects of increased sound levels in order to improve the quality of life in a healthcare environment.

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Address for correspondence:
Dr. Pilar Marqués,
Department of Nursing and Physiotherapy,
University College of Health Sciences,
University of León (Ponferrada Campus), Spain.
E-mail: pilar.marques@unileon.es

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