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Background Sounds and Noises in Hospital: A Proactive Analysis of Psychological Repercussions on Patients in the "Santissima Annunziata" Hospital, Taranto, Italy

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ABSTRACT

The aim of the research was to investigate the noise in its various variables, the sources and the repercussions on patients and on nursing care, trying to find useful ideas and possible solutions to propose to improve the well-being of hospitalized people and at the same time of the nursing.

An ad hoc anonymously questionnaire was administered. To nurses operating in resuscitation, first aid, women's medicine, general surgery, neurosurgery and orthopedics wards.

Data collected and analyzed provide two important pieces aspects: the assistance activities towards patients by nurses do not involve the reduction or interruption of sounds and noises in the hospital ward and the lack of knowledge of professionals highlighted about the psycho-physical repercussions caused by continuous exposure to sources of sounds and noises.

Keywords

Background sound, Noise, Nurse, Psychological Repercussions.

Introduction

Background noise is unmistakably present and persistent, rich in sounds of familiar and unknown origin. In all this, one should in no way consider background noise as an exclusively negative factor. Other sources of noise could be listed and sounds that can determine situations of annoyance or discomfort, but we will focus on the most common ones. As has already been mentioned, the human being is able to separate sounds and noises based on the source, selecting the most useful known information from the superfluous ones. By examining a specific case more carefully we would realize that even a familiar sound can unconsciously generate strong emotions: an example is the sound of a person running in the corridor, there is no need to see the individual running, but that's enough. The sound of footsteps taken faster and harder than normal to visualize the image in the mind. If in an environment outside the health facility a man running can attract our attention, without arousing obvious emotional states, in the hospital environment the effect could be extremely different; everything would lead to a state of urgency / emergency causing a state of agitation. It can be deduced that the individuals occupying the facility, such as the patients themselves and their relatives, care-givers or users who use the services offered by the health system, have a great impact on the amount of noise generated. Just think of the number of mobile phones (smartphones) that ring continuously or simply of their use; such as the use of multimedia

products with an excessive audio volume level or, to the individual who carries out a telephone conversation with a loud voice, and in an animated way, it follows that the disturbance caused to patients can be significant and not indifferent [1,2].

The nurse, after checking the correct functioning of the equipment, bearing in mind the various sources that add up, should minimize these episodes during the day given their negative impact on the patient. It frequently happens that the acoustic alarm of a multi-parametric monitor remains active for a long time due to the lack of staff and the numerous activities in which the operators are engaged [3,4].

Nursing activities, as for the rest of the healthcare staff, mainly include the use of the corridor to move from one area to another and not infrequently, communications take place in these environments, implementing the background noise that determines according to the patients some disorders including: malaise, state of anxiety and agitation, stress, sleep and rest disturbance [5].

Nursing responsibility must also concern this aspect, considering that all individuals and not only nurses can be affected by these disturbances caused by sounds and noises.

The nurse must interact with people within the hospital and sensitize them to a more correct use of smartphones and mobile phones, as well as to a reduction in the tone of voice, to a proper use of the electronic devices in their possession I know through the silencer, ensuring a more comfortable environment for patients and themselves [6,7].

The aim of the research was to investigate the noise in its various variables, the sources and the repercussions on patients and on nursing care, trying to find useful ideas and possible solutions to propose to improve the well-being of hospitalized people and at the same time of the nursing.

Materials and Methods

For quantitative research, an ad hoc questionnaire was administered. The questionnaire was anonymously administered and it consisted of 10-multiple-choice queries. A convenience sample was chosen, made up of nurses from the "Santissima Annunziata" Hospital in Taranto, in particular of the operating units of: resuscitation, first aid, women's medicine, general surgery, neurosurgery and orthopedics.

Results

The sample is represented by 55 nurses of which 38 were female and 17 were male. The data collected and analyzed provide two important pieces of information, on the one hand the assistance activities towards patients by nurses do not involve the reduction or interruption of sounds and noises in the hospital ward, on the other hand, the lack of knowledge of professionals is highlighted about the psycho-physical repercussions caused by continuous exposure to sources of sounds and noises.

Among the various sound sources were reported: inpatient room call systems (bells) in 32.7% ward intercoms in 23.7%, electro-medical devices 32.7%.

The remaining data refer to background noise generated by relatives or caregivers of patients for 14.5%, verbal communications made by emitting loud vocal sounds for 18.2%, personal phones (smartphones and cell phones) and ward phones for 18.2%.

From our data, it can be seen that patients within the wards of the health facility seek the health professional to interrupt sounds and noises recognized as a cause of prolonged disturbance, the main source of which is attributable to sound signals and alarms of multi-parametric monitors and infusion pumps (Table 1).

Table 1: Answers received.

Items	Agree answers (%)	Disagree answers (%)	In no way (%)
Have you ever experienced disturbances due to the noises present in the structure and / or operating unit?	67.3	32.7	0
Over the course of your career, have you noticed any types of sounds or noises that have caused or cause you to feel unwell or uncomfortable?	54.5	45.5	0
Have you ever received patient complaints about sounds and / or noises as a source of disturbance?	81.8	18.2	0
Have you ever considered it appropriate and / or essential to provide nursing care based on the interruption or reduction of sounds within the ward?	45.5	54.5	0
When the source of the disturbing sound was intercepted, was it resolved?	34.5	38.2	27.3
Have you ever intervened in situations of excessive noise caused by loud voices and / or confusion within the ward?	80.4	18.2	1.8
Have you ever found it necessary to isolate yourself / move away from noisy environments to improve your well-being?	52.7	43.7	3.6
Do you think it is important and necessary to reduce or stop the source of noise for the patients listed below?	81.8	14.6	3.6
Do you think that reducing or interrupting the source of noise for nurses can lead to better care?	76.4	9.1	14.5
Prompting	16.30	83.70	0

Suggestions for improvement

16.3% of nurses reported, as proposals for improvement, an increase in education and mutual respect, a reduction in the influx of family members into the wards, a reduction or modification of the frequencies of acoustic signals of various kinds, an increase in the staff with nurses and social health workers, guarantee the correct functioning of electro-medical equipment, increase silence to improve and guarantee better assistance.

In light of the data analyzed and the information gained, it is certainly possible to make improvements.

We could start by setting mobile phones and smartphones in silent mode, regulating the influx of patients and care-givers within the wards, entice all employees and capable patients to use a lower volume of the voice, increase the assistance activities aimed at controlling acoustic signals coming from devices, electro-medical instruments and call systems of the hospital rooms.

The investigation in this thesis has highlighted and emphasized the importance of care activities related to the environment around us.

Even the staff of the health facility, can feed the background noise, even just the performance of daily activities, contributes with a strong acoustic impact, from the simple movement of a patient through the corridors with the help of wheelchairs or beds, to their physical presence in a ward room during normal care [8]. An analysis carried out in a central hospital in Greece, after careful mapping of the noise inside and outside the facility, reported that the highest values were recorded in the blood donation unit and in the laundry, however, the values expressed in dB (decibel), in the hospital wards, first aid and outpatient departments, were all above the limits established by international guidelines, in hospital environments [9].

An interesting study conducted in Finland, found a correlation between the sounds perceived by individuals sensitive to noise and the negative emotions experienced by unwanted sounds. The study group initially formed by 71 subjects, of whom 34 men and 37 women, ranging in age from 19 to 51, were performed EEG (electroencephalogram) and MEG (magneto encephalogram) to measure the processing of neural sound characteristics in the central auditory system in relation to individual noise sensitivity. The subjects were subjected to auditory and visual stimuli, the auditory ones composed of piano tones, with comfortable volumes for the hearing of the subjects, suitably altered with programs for audio manipulation, the visual stimuli composed of a silent film with subtitles. The values obtained showed an association between the various sounds emitted and the alterations on the cerebral cortex. The objective of the study was to search for a correlation between excessive environmental noise and damage caused to the auditory system, in fact there is a relationship between environmental and professional noise and diseases caused to other organs of the body has been reevaluated as a risk factor for some diseases including: coronary heart disease, hypertension, myocardial infarction. These individuals are in fact more susceptible to sleep disturbances, impaired cognition and cardiovascular diseases [10].

The nurse carries out various activities during the work shift in the health facility, such as in home care, but often his attention is essentially directed to those activities that could be defined as routine, but not trivial; such as the administration of therapy, advanced dressings for surgical wounds, the compilation of documents such as the nursing record or more simply, the satisfaction of a simple request from the patient, such as moving the bedside table to a more comfortable position, to reach objects he needs.

Electro medical instruments are among the first to be accused by the patient as a source of disturbance, their intermittent and persistent alarms generate strong discomfort and stress throughout the day, not only to the user to whom the same instrument is connected but to all guests in the hospital room, up to invading the corridors and adjacent spaces.

A simple action by the nurse to solve the problem would be to turn off the same acoustic signal using the appropriate button. By analyzing the reason for which the device produced the alarm, a scheme or check list could be developed and made sure to limit or reduce the sound disturbance produced.

For each of the points highlighted, other cascade patterns can be analyzed which from a simple sound alarm will subsequently lead us to perform certain actions such as, for example, starting from point one, the observation of the patient regarding the appearance of the skin, respiratory rate and cardiac, state of consciousness.

From the activation of the sound alarm, to the intervention of the nurse, the decibels (dB) inside the room can vary from about 55dB to 88dB; based on DCPM 5th December 1997 - Determination of passive acoustic requirements of buildings' for category D: buildings used as hospitals, clinics, nursing homes and admissible', we refer to parameters between a minimum of 25dB and a maximum of 58dB.

The DCPM November 14, 1997 - Determination of the limit values of sound sources, in which the values to be respected in hospitals as belonging to Class I - Protected Structures are reported. In this text we refer to 50dB in the daytime band and 40db in the nighttime band but, taking into account an average between some values such as about 60dB of speech and about 75dB of the ringtone of a telephone, the result is beyond the permitted limits [11].

The WHO (World Health Organization) indicates 75dB as a threshold value for hearing damage and, as stated by Professor Giovanni Zambon in an article, importance is attached to the damage that can arise with even lower values such as malaise, irritation or stress [12].

It should be emphasized that the sound alarms are activated several times over the course of twenty-four hours.

The fundamental objective therefore becomes to ensure an ideal environment that on the one hand puts nursing professionals in the best conditions to provide effective, efficient, high-quality care, and on the other hand also guarantees beneficial effects for them.

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