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Impact of nightly earplugs on Medical/Surgical patients' perceptions of noise level and quality of sleep

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Problem and Purpose

Sleep has been documented to be therapeutic for health, healing and recovery. External environmental factors such as light and noise play a major factor in relation to the quality and quantity of patients' sleep. Therefore, the purpose of this study is to assess the impact of foam nightly earplugs on patient's perception of quality of sleep and noise level at night on a Medical/Surgical unit.

Sample

Investigators were able to recruit a total of 50 patients but 4 of these patients dropped from the study with some of them voicing their discomfort with the use of the earplugs. This resulted in an attrition rate of 8% resulted which is acceptable

Methods

This pilot study is a quasi-experimental using a pre-post researcher developed survey on perceptions of quality of sleep and noise level at night.

Results

Table 2. Descriptive comparison of sleep quality and restfulness pre and post use of earplugs at night (n=46)

| Question | Pre-earplugs (n=50) | Post-earplugs (n=46) |
|---|---------------------|----------------------|
| Did you sleep well last night? | | |
| Yes | 28(56%) | 42(91%) |
| No | 22(44%) | 4(9%) |
| Did you have problems falling asleep last night? | | |
| Yes | 23(46%) | 9(20%) |
| No | 27(54%) | 37(80%) |
| Did your sleep get interrupted by noise last night? | | |
| Yes | 34(68%) | 4(9%) |
| No | 16(32%) | 42(91%) |
| Do you feel rested? | | |
| Yes | 26(52%) | 41(89%) |
| No | 24(48%) | 5(11%) |

Table 3. Participants' paired pre and post perception comparison of noise level pre and post use of earplugs at night (n=46)

| | Pre-earplugs (n=50) | Post-earplugs (n=46) |
|------------------------------|---------------------|----------------------|
| Noise level during the night | | |
| 1 (lowest) | 9 (18%) | 35 (76%) |
| 2 | 20 (40%) | 3 (7%) |
| 3 | 13 (26%) | 2 (4%) |
| 4 | 6 (12%) | 5 (11%) |
| 5 (highest) | 2 (4%) | 1 (2%) |

Table 4. Post only earplugs satisfaction of use (n=46)

| Question | Mean±SD |
|--|-----------|
| How satisfied are you with the use of earplugs? | 4.26±.905 |
| How likely are you to use the earplugs at night if admitted again in the hospital? | 3.89±1.45 |
| How likely would you recommend the use of earplugs to friends and family members who are admitted to the hospital? | 4.20±1.00 |

Participants rated the noise level, on average, to be low to moderate noise heard during the day (2.94±.978). Table 2 illustrates the unpaired participants' pre and post sleep quality responses. There was a clear increase in sleep quality post use of earplugs in all questions ranging from 80 to 90% reporting positive sleep quality and restfulness with earplugs compared to without earplugs which ranged from 32-54% with positive perceptions. When participants' responses were paired, the exact McNemar's test showed that there were statistically significant differences (p<.001-p=.012) in the proportion of positive perceptions of sleep quality pre and post the use of earplugs with all questions.

Furthermore, the one sample paired t-test showed that there was a statistically significant difference in participants' perception of noise level pre-earplugs (2.50±1.11) compared to post-earplugs (1.57±1.13) (p<.001).

Moreover, participants have been highly satisfied with the earplugs use (4.26±.905) as shown in Table 4. In addition, the likelihood of the participants to use the earplugs if admitted again in the hospital (3.89±1.45) and to recommend earplugs use to friends and family (4.20±1.00) have shown a significant positive response.

Conclusions and implications for practice

Final reports show positive outcome in the use of earplugs at night time. The pre- and post-survey results shows improved quality of sleep overall and decreased noise level with the use of earplugs. This shows that there is a direct relationship between noise level and quality of sleep. Results show the noise level decreased during the night the participants were wearing their earplugs, leading to uninterrupted sleep, which then resulted to increased rate of restful sleep. The results are very remarkable and encouraging. The earplugs use can be a very cost-effective and simple way of improving patient satisfaction score and patient recovery.

