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Original Article

Relation between quality and quantity of sleep and psychological distress among hospitalized patients

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Abstract

Background Sleep is a fundamental component of good health, however its promotion in acute hospital settings does not appear to be a priority. Causes of sleep disruption are varied and include environmental and bio-cognitive factors, including pain, bright light, noise, anxiety and stress. The environmental and bio-cognitive consequences of sleep deprivation on the health and recovery of hospital inpatients are various. Inadequate sleep can lead to both psychological and physiological consequences. ***Objective*** This observational study was aimed at determining the pattern, quantity and quality of sleep and the prevalence, causes and effect of sleep deprivation / disturbance among patients hospitalized at the elective wards of a tertiary care hospital. ***Methods*** This observational study was conducted from August 2015 to January 2016, upon a sample of 50 patients admitted to Liaquat University Hospital (who had spent at least 4 weeks at the hospital). The sample of patients (chosen via simple random sampling), were interviewed consecutively every morning for 4 days and their mean response was evaluated to account for irregularities in experience. Data was collected using interview based structured questionnaire which included the 42 point DAS scale approved by Australian Center for Posttraumatic Mental Health. The data was analyzed in SPSS v. 17.0 and MS Excel 2013. ***Results*** During the stay at the hospital, DAS score of depression, anxiety and stress all rose. The most reported bothersome elements that disturbed sleep included, pain (30%), Noise (6%), and feeling of unease, irritation and panic (6%). Majority of the sample comprised of female (56%) respondents coming from rural areas (74%) with a low socioeconomic background (86%). The quantity of sleep dwindled between (but not more than) 5 to 6 hours. The quality too (self-rated by the respondents did not rise above a value of 6.5. ***Conclusion*** The conclusion is in line with our hypothesis. With the hustle and bustle happening at all hours in a hospital, patients have trouble getting adequate sleep, which has an evident the quality and quantity of sleep during their stay. Owing to the belief that sleep-deprived patients are less likely to be fully active participants in their care. It is recommended that steps should be taken to deal with this problem on a priority basis.

Keywords

Sleep, depression, anxiety, stress, psychological distress.

Introduction

Sleep is a fundamental component of good health, however its promotion in acute hospital settings does not appear to be a priority. Causes of sleep disruption are varied and include environmental and bio-cognitive factors, including pain, bright light, noise, anxiety and stress. The environmental and bio-cognitive consequences of sleep deprivation on the health and recovery of hospital inpatients are various. Inadequate sleep can lead to both psychological and physiological consequences.

Hospitalized patients, particularly those who are critically ill, are known to have severe sleep fragmentation and disturbed sleep. The sleep typical of an ill patient is characterized by a predominance of wakefulness and light sleep (sleep stages I and II), and a relative lack of rapid eye movement (REM) and deep sleep (delta sleep, formerly referred to as non-REM sleep stages III/IV) (Cooper AB. et al, 2000; Aurell J. et al, 1985; Freedman NS. et al, 2001; Gabor J. et al, 2003). Sleep deprivation is known to lead to several clinical, physiologic and psychological manifestations such as depression, anxiety and stress. Dement and Vaughan studied the effects of prolonged wakefulness, and observed that healthy volunteers who were sleep deprived would become confused, ill-tempered, and extremely sleepy; however, they never became either psychotic or hyperactively delirious (Dement WC. et al, 1999). The longest observed case of sleep deprivation involved an 18-year-old who stayed awake for 264 hours. At times during his long-term sleep deprivation, he would become angry that he was not

being allowed to fall asleep. He was not, however, reported to experience symptomatology consistent with hyperactive delirium or hallucinations (Gulevich G. et al, 1966). However, if ill patients are subjected to wakefulness of even disturbed sleep for a fraction of the above listed experience, they are more prone to develop psychological distress. This observational study was aimed at determining the pattern, quantity and quality of sleep and the prevalence, causes and effect of sleep deprivation / disturbance among patients hospitalized at the elective wards of a tertiary care hospital.

Methodology

This observational study was conducted from August 2015 to January 2016, upon a sample of 50 patients admitted to Liaquat University Hospital (who had spent at least 4 weeks at the hospital). The sample of patients (chosen via simple random sampling), were interviewed consecutively every morning for 4 days and their mean response was evaluated to account for irregularities in experience. Data was collected using interview based structured questionnaire which included the 42 point DAS scale approved by Australian Center for Posttraumatic Mental Health. The data was analyzed in SPSS v. 17.0 and MS Excel 2013.

Results

During the stay at the hospital, DAS score of depression, anxiety and stress all rose.

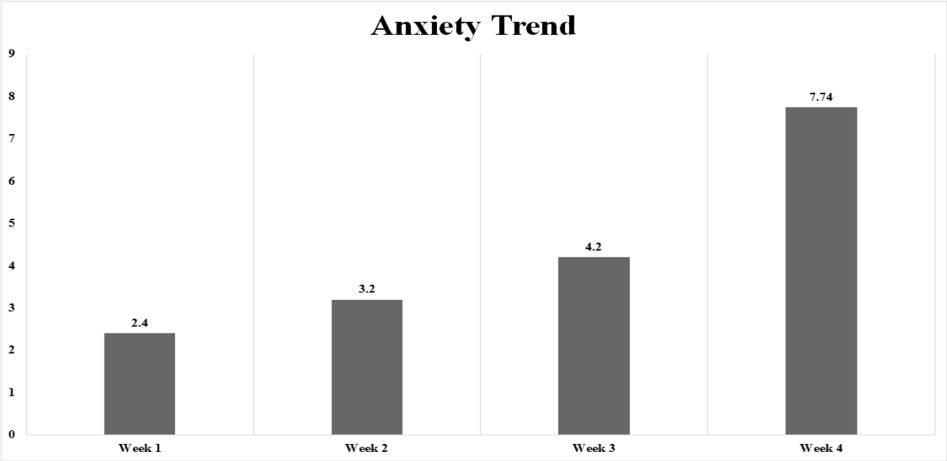


Figure 1: The mean stress levels rose continuously. Starting from 2.4 and reaching up to 7.74. (i.e. a 3-fold rise)

The increase in levels of stress was less marked, however the fact that it started from a higher baseline projected it well above anxiety.

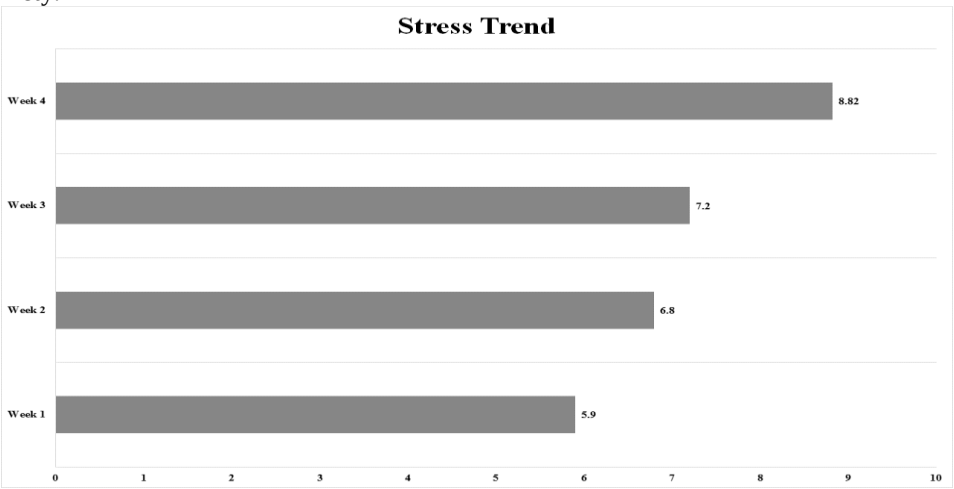


Figure 2: The levels rose from a mean value of 5.9 to 8.83.

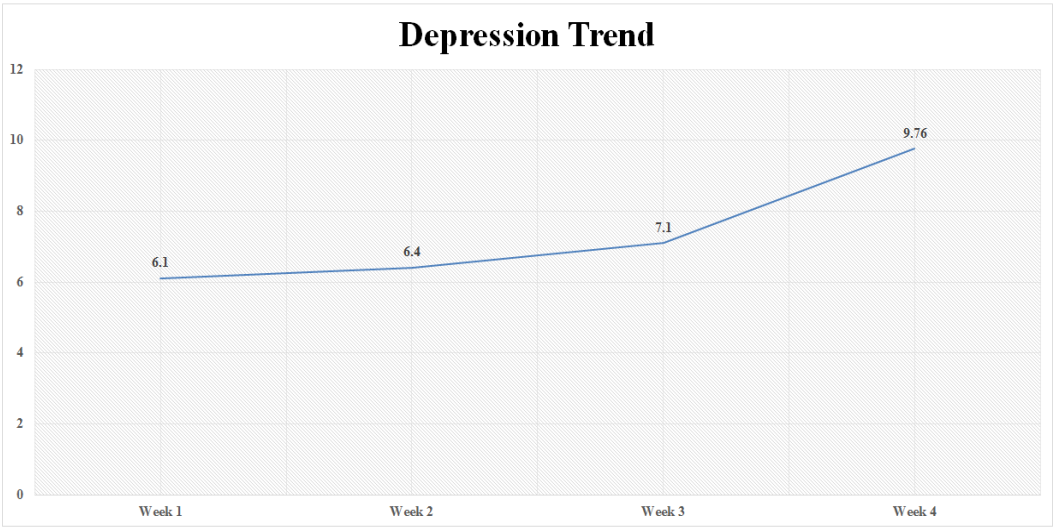


Figure 3: Depression reached the highest levels reported by either of the three factors gauged by the DAS scale. It started from 6.1 and went up till 9.76.

The most reported bothersome elements that disturbed sleep included, pain (30%), Noise (6%), and feeling of unease, irritation and panic (6%).

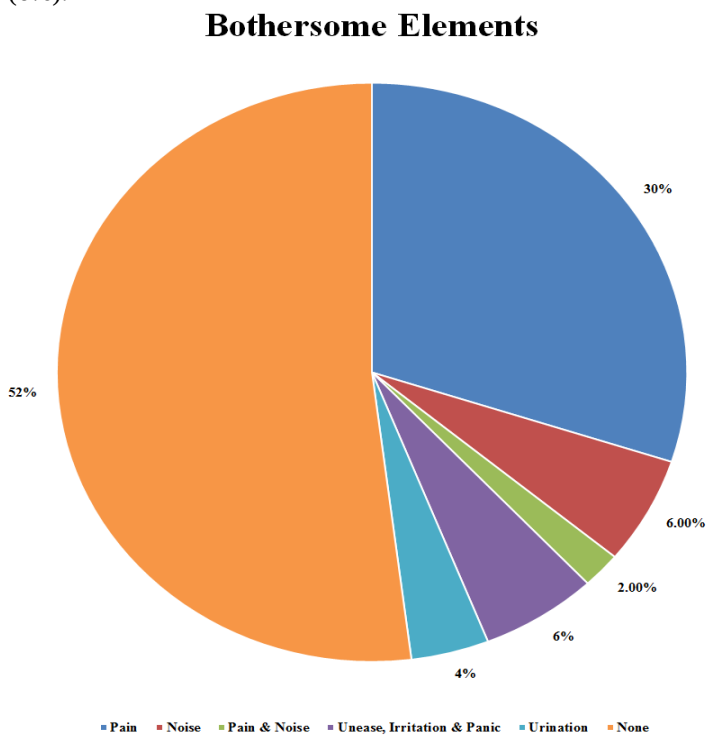


Figure 4: Interestingly, majority of the patients either refrained from reporting any bothersome elements or were affected to such a less extent by the elements that they did not recognize them as bothersome.

Majority of the sample comprised of female (56%) respondents coming from rural areas (74%) with a low socioeconomic background (86%). The quantity of sleep dwindled between (but not more than) 5 to 6 hours.

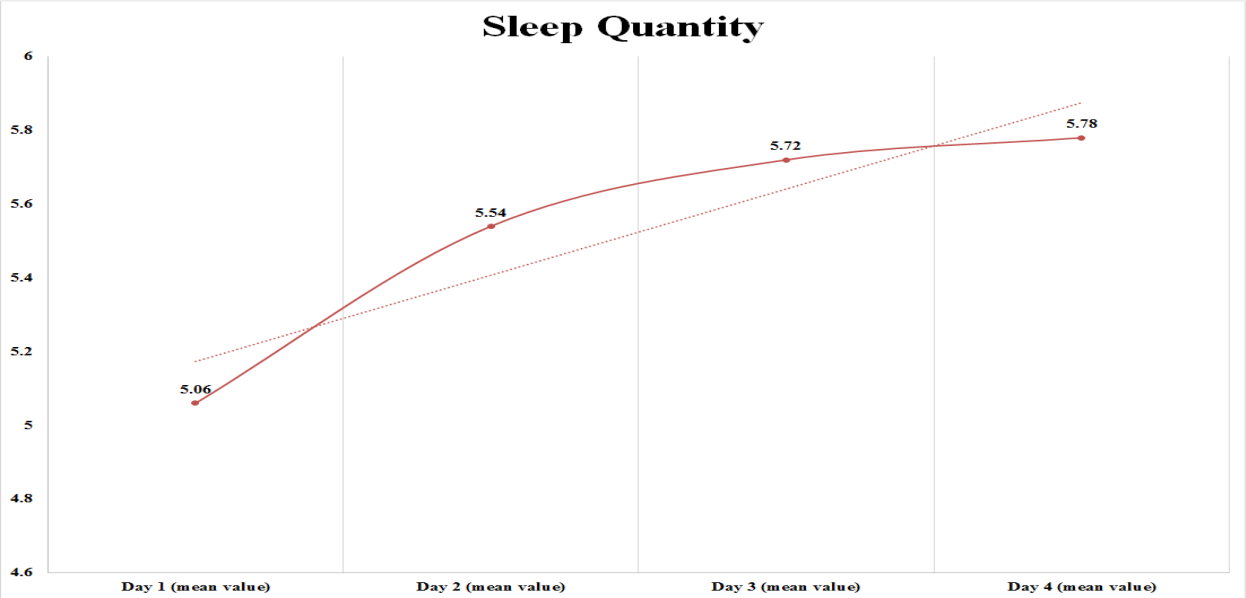
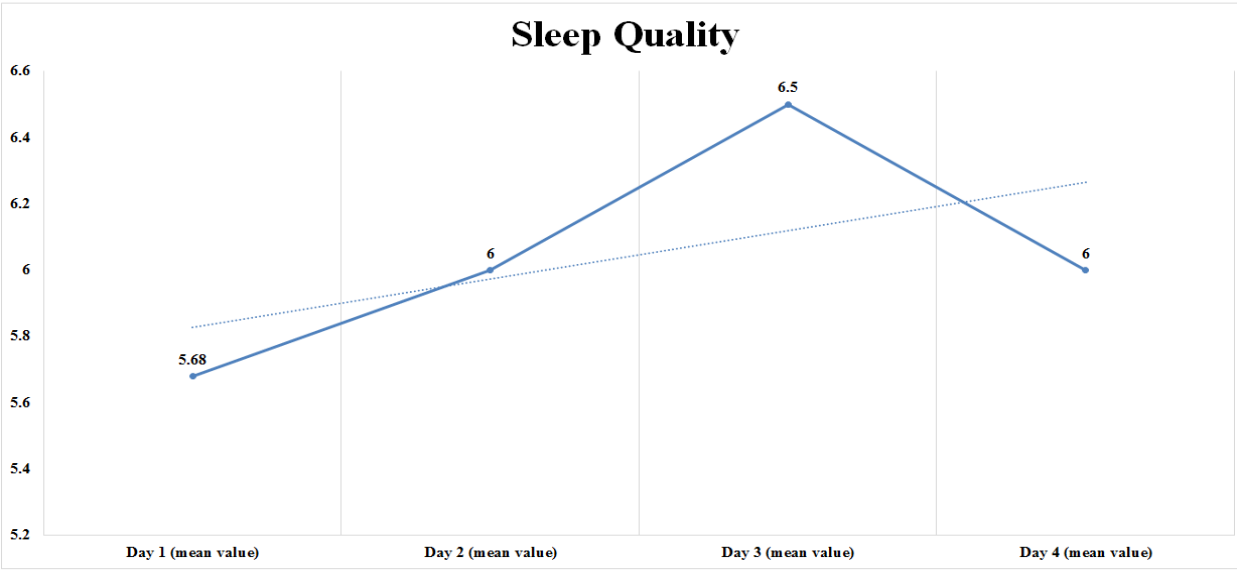


Figure 5: The WHO recommended sleep mark of 8 hours per 24 hours was from what the patients expected to get. Even the best of the patients did not rise above 6 hours while the still less fortunate ones struggled to get 5 hours at best.

The quality too (self-rated by the respondents did not rise above a value of 6.5.

Figure 6: The quality standards too were below the recommended levels and poor even to below average standards.



Discussion

Although previous investigators evaluating sleep patterns in hospitalized patients have demonstrated altered sleep architecture and sleep deprivation (Richards K. et al, 1988; Broughton R. et al, 1978; Aurell J. et al, 1985; Hilton B. et al, 1996), little is actually known about the effects that this casts on the psychological wellbeing of the patients. Most of our current knowledge is based on studies evaluating only nocturnal sleep, rather than over 24-h periods (Richards K. et al, 1988; Broughton R. et al, 1978). Two studies have monitored polysomnography continuously for ⩾ 24 h, albeit in only a total of 19 patients (Aurell J. et al, 1985; Hilton B. et al, 1996). Hilton B. et al, 1996, demonstrated a mean total sleep time per 24-h period of 5.5 ± 3.4 h (range 0.1–13.3) in 10 patients with respiratory insufficiency. Aurell and Elmquist (1985) found the mean total sleep time

per 24-h, to be 4.6 ± 1.6 h (range 0–7) in 9 postoperative patients. In addition to the reduction in total sleep time, these studies demonstrated altered sleep architecture with a predominance of stage 1 and 2 sleep, decreased or absent stage 3, stage 4, and rapid eye movement (REM) sleep, shortened REM periods, and sleep fragmentation. Sleep distribution was also abnormal, as up to 50% of the total sleep time occurred during the day.

The etiologies of these sleep disturbances in the hospital are presumed to be multifactorial, although little is actually known about the mechanisms responsible for sleep–wake cycle disturbances in the hospital. Environmental stimuli are proposed to be the most disruptive factors to achieving sleep in the hospital (Aaron J. et al, 1996; Bentley S. et al, 1977; Meyer T. et al, 1994; Topf M, 1992; Topf M. et al, 1993; Cropp A. et al, 1994; Woods N. et al, 1974). The environmental stimulus most often cited in the literature to disturb sleep is noise (Bentley S. et al, 1977; Meyer T. et al, 1994). Several studies have shown that noise levels in the hospital are substantially higher than the Environmental Protection Agency (EPA) recommendations for maximum hospital room noise levels, both at night and during the day (Bentley S. et al, 1977; Meyer T. et al, 1994; Woods N. et al, 1974, Gowan N, 1979; Falk S. et al, 1973)

Polysomnographic studies evaluating the effect of nocturnal ICU noise on sleep in normal individuals in a sleep laboratory demonstrated decreased total sleep time, total REM time, and sleep efficiency, and increased REM latency and arousal index (number of arousals per hour of sleep). However, nocturnal polysomnographic studies of ICU patients have only indirectly linked noise to sleep disruption by attempting to correlate environmental noise levels with arousals from nocturnal sleep. These studies had small sample sizes and were not designed to determine the specific etiologies of the sleep disruption.

Literature has demonstrated that although hospital patients subjectively experienced significantly poorer sleep quality in the hospital than at home, Hospital noise was not perceived as the most disruptive environmental stimulus (Freedman N. et al, 1973). Hospital patients perceived frequent interruptions from vital signs and diagnostic testing to be as disruptive to achieving quality sleep as noise, although statistically no single environmental factor was perceived as significantly more disruptive than any other (Freedman N. et al, 1973). Our data however, shows pain to be a factor too, despite its absence from existing literature. This may be due to poorer care placed at relieving pain of the patients by the hospital.

Conclusion

The conclusion is in line with our hypothesis. With the hustle and bustle happening at all hours in a hospital, patients have trouble getting adequate sleep, which has an evident the quality and quantity of sleep during their stay. Owing to the belief that sleep-deprived patients are less likely to be fully active participants in their care. It is recommended that steps should be taken to deal with this problem on a priority basis.

Conflict of interest

All the authors disclosed that there is no conflict of interest associated in the preparation of this article.

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