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Effectiveness of structured teaching programme regarding sleep hygiene and sleep disorders on knowledge of students in a selected pre-university college at Bengaluru

Abstract

Background: Sleep plays an important role in maintaining good physical and mental health throughout the life. Timely and adequate sleep will improve quality of life, protect mental and physical health. The present study was conducted to evaluate the effectiveness of structured teaching programme regarding sleep hygiene and sleep disorders on knowledge of pre-university students in a selected college at Bengaluru. **Methodology:** A pre-experimental research was conducted with 60 pre-university students; samples were selected using simple random sampling technique, and the data was collected using structured socio-demographic proforma and knowledge questionnaire on sleep hygiene and sleep disorders. Structured teaching programme on sleep hygiene and sleep disorders was given on the same day. Posttest was conducted after seven days. **Results:** There was a statistically significant difference in pre- and post-test knowledge scores ($t=26.71$, $p<0.001$) of pre-university students with respect to sleep hygiene and sleep disorders. Association between socio-demographic variables and pre-test knowledge scores showed that there was significant association between religion and pre-test knowledge scores. **Conclusion:** Findings conclude that structured teaching programme regarding sleep hygiene and sleep disorders was effective in increasing knowledge score among pre-university students.

Keywords: Mental Health. Quality of Life. Religion.

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Introduction

Globally, sleep problems are common among adolescents.[1] Sleep is a basic biological need and essential to all human beings. Lack of adequate sleep causes serious physiological problems, daytime sleepiness, substance abuse, mood disorders, increased aggressive behaviour, learning problems, obesity, and cardiovascular diseases.[2-6]

Lack of sleep, especially among adolescents, results in physical (decrease in memory and decline in immune function) and psychological problems (lack of concentration). Adequate sleep is essential for feeling awake and alert, for maintaining good physical and mental health. Previous studies have shown that adolescents who had adequate sleep performed better on memory and motor activities compared to adolescents who had deprived sleep.[7] There are data that lack of sleep leads to learning and memory impairment as well as decreased attention and watchfulness.[8] Among adolescents and middle school children, factors like self-reported shortened sleep time, erratic sleep/wake schedules, late bed and rise times, poor quality sleep were found to be negatively associated with school performance.[8] Adolescents require nine to ten hours of sleep each night. Recent studies show that over a quarter of high school and college students were found to be sleep deprived. A complex and bidirectional relationship exists between pubertal development and sleep.[9]

Background of the problem

Meta-analysis was conducted on 41 studies regarding sleep pattern estimation among adolescents; study results showed that 53% of study subjects reported sleep duration less than eight hours, and most of the studies showed that bedtimes were later than what was necessary for sufficient sleep. The finding also showed that existence of a worldwide delayed sleep-wake behaviour pattern was consistent with symptoms of delayed sleep phase.[1] Most of the students are unaware of the negative consequences of sleep deprivation on psychological wellbeing,[7,8] and on academic performance.[10,11]

Two Australian sleep education programmes (Improving Adolescent Well-Being [IAWB]: day and night and Australian Centre for Education in Sleep program [ACES]) focused on knowledge and behaviour of 11-year-old students. These

programmes were classroom-based courses, consisting of four sessions, each with duration of 50 minutes. Both the studies showed an increase in knowledge scores with respect to sleep hygiene. More than 90% of students self-reported a need for ongoing sleep education within the school curriculum.[12,13]

In Japan, at a design engineering unit, a randomised controlled trial was conducted to evaluate the effectiveness of sleep hygiene education programme combined with behavioural approach programme on sleep quality among employees. Sleep quality was assessed using Athen Insomnia Scale. Employees were assigned to intervention and control groups. The intervention group attended a short term programme lasting for 30 minutes. This programme included sleep hygiene education and behavioural approaches to improve quality of sleep. The study results indicated that the quality of sleep among intervention group workers improved significantly compared to control group workers.[14]

A study was conducted to evaluate the effectiveness of supplementary internet-based sleep learning module to improve knowledge on sleep hygiene among psychology students. The internet-based education programme included information on sleep physiology and sleep hygiene techniques. Level of knowledge was assessed before and after exposure to the website content and at the end of the semester. The results showed that participants in supplementary sleep group had improvement in knowledge test scores. This study concluded that supplementary internet-based sleep learning module enhanced sleep knowledge scores and change of behaviour among students.[15]

Even though evidence shows that lack of sleep has effect on health and performance,[9] only few studies have examined the effectiveness of interventions on sleep outcome. Community awareness regarding sleep hygiene and consequences of lack of sleep are low; the only solution to address this issue is conducting sleep education programmes in schools and colleges.[10,11]

Aim

The present study was conducted with an aim to find out the effectiveness of structured teaching programme regarding sleep hygiene and sleep disorders on improving knowledge among pre-university students.

Research methodology

Research design

A pre-experimental design was adopted and 60 pre-university students participated in the study.

Setting

The current study was conducted at the National Pre-University College, Basavangudi, Bengaluru, Karnataka.

Recruitment of participants

The study obtained ethical permission from institutional ethical committee. Sixty pre-university college students who were studying second year pre-university course and willing to participate were selected by using simple random sampling technique. Students who were absent and suffering with any chronic medical or psychiatric illness (assessed by verifying attendance register and by asking general questions on sleep, appetite, activity level, health complaints) were excluded from the study. Written informed consent was obtained from students before proceeding with the study. The participants were informed about assessments, intervention, and their roles.

Data collection procedure

Participants were selected based on the set inclusion and exclusion criteria. The pre-test was administered to 60 pre-university students regarding knowledge on sleep hygiene and sleep disorders by using structured knowledge questionnaire. Respondents took 45 minutes to complete the structured knowledge questionnaire. After pre-test, subjects were given structured teaching programme on sleep hygiene and sleep disorders on the same day for 90 minutes by using lecture and group discussion method. The structured teaching programme included topics on physiological changes during sleep, age, and recommended amount of sleep, importance of sleep, sleep hygiene tips, sleep disorders and its management. Post-test was conducted after seven days.

Tools

Information was obtained on participants' socio-demographic status, level of knowledge on sleep hygiene and sleep disorders. Socio-demographic details included age, gender, stream of education in pre-university course, religion, type of family, education status of the parents, father's occupation, mother's occupation, monthly income of the family, number of hours of daily sleeping and napping details. The structured knowledge questionnaire on sleep hygiene and sleep disorder was developed by the investigators. The questionnaire consists of 40 multiple choice questions, related to general information on sleep, sleep hygiene, and sleep disorders. For each correct answer, the score was one and for wrong answer, score was zero; the total score was 40. Score ranges from zero to 40. Adequate knowledge score is 31 and above (75-100%), moderate knowledge score 21-30 (50-74%), and inadequate knowledge score below 20 (below 50%). The content validity of the knowledge questionnaire was established by obtaining suggestions from seven experts in the field of psychiatric nursing. The reliability was established using split half method; the Spearman's Brown prophecy value was 0.98.

Data analysis

The collected data were analysed using descriptive and inferential statistics. Frequencies and percentages were used to analyse the socio-demographic characteristics. The differences between pre- and post-test knowledge scores were analysed using paired t test; the association between socio-demographic variables with posttest knowledge scores was analysed using chi-square test.

Results

Table 1 shows demographic details of the subjects.

Table 1: Frequency and percentage of socio-demographic data of pre-university students (N=60)

Variables	Number	Percent
Age group (years)		
16	10	16.66
17	40	66.66
18 and above	10	16.66
Gender		
Male	32	53.33
Female	28	46.66
Religion		
Hindu	58	96.66
Muslim	1	1.66
Christian	1	1.66
Type of family		
Nuclear	46	76.66
Joint	10	16.66
Extended	4	6.66
Stream of education		
Science	44	73.33
Arts	16	26.66
Fathers' educational status		
No formal education	5	8.33
Primary school	11	18.33
Secondary school	5	8.33
Pre-university course	22	31.66
Degree and above	17	28.33
Mothers' educational status		
No formal education	9	15.00
Primary school	8	13.33
Secondary school	19	31.66
Pre-university course	16	26.66
Degree and above	8	13.33
Father's occupation		
Government employee	11	18.33
Private employee	14	23.33
Business/self-employment	16	26.66
Agriculturist	10	16.66
Daily wages	9	15.00
Mother's occupation		
Government employee	4	6.66
Private employee	7	11.66
Business/self-employment	4	3.33
Daily wages	6	10.00
Homemaker	39	65.00
Agriculturist	2	3.33
Family monthly income (Rs)		
1000-4000	5	8.30
4001-9000	10	16.60
9001-14000	18	30.00
14001 and above	27	45.00
Number of hours per day sleeping		
4 to 5	2	3.33
5 to 6	19	31.66
6 to 7	16	26.66
7 to 8	16	26.66
8 to 9	7	11.66
Habit of day time sleeping		
No	44	73.33
Yes	16	26.66

Table 2 showed that there was a significant difference between pre- and post-test knowledge scores of pre-university students regarding sleep hygiene and sleep disorders after attending the structured teaching programme. The mean pre-test knowledge score was 15.18±4.38 and post-test score was 32.01±2.23. The calculated paired test t=26.71; it was significant at 0.001 level.

Table 3 depicts that in pre-test, 88.3% (53) of respondents had inadequate knowledge (≤50%), 11.6% (seven) of respondents had moderate knowledge (51-75%), and none of them had adequate knowledge (>75%). In post-test, none of respondents had inadequate knowledge (≤50%), 23.3% (14) respondents had moderate knowledge (51-75%), and 76.6% (46) respondents had adequate knowledge (>75%).

The association between demographic variables and pre-test knowledge scores showed statistically significant association between religion and pre-test knowledge scores (χ^2=7.80) (Table 4).

Discussion

The objectives of the present study were to assess knowledge regarding sleep hygiene and sleep disorders, implementing and evaluating structured teaching programme regarding sleep hygiene and sleep disorders among pre-university students. The present study confirms that the overall mean knowledge score in pre-test was 15.18±4.38 (maximum score 37). This shows that there is lack of knowledge regarding sleep hygiene and sleep disorders among the pre-university students. The majority (88.3%) of them had inadequate knowledge (≤50%) regarding sleep hygiene and sleep disorders. This study is supported by a similar study conducted on knowledge, beliefs, and practice of sleep among medical undergraduates of Tamil Nadu, India; 615 final-year medical undergraduates were given a self-administered, anonymous questionnaire to test their basic knowledge, prevailing beliefs regarding sleep including sleep hygiene, and their sleep practices. Results showed that medical undergraduates have insufficient knowledge with more misconceptions regarding sleep.[16]

Table 2: Mean, standard deviation, and paired t test values of pre- and post-test knowledge scores of pre-university students regarding sleep hygiene and sleep disorders

Aspects	Maximum score	Respondents' knowledge				Paired t test
		Mean	SD	Mean (%)	SD (%)	
Pre-test	37	15.18	4.38	38	7.30	26.71*
Post-test	37	32.01	2.23	80	3.73	
Enhancement	37	16.83	2.87	42	4.79	

*Significant at 0.001 level

Table 3: Overall classification of respondents on knowledge level on sleep hygiene and sleep disorders (N=60)

Knowledge level	Category (%)	Classification of respondents			
		Pre-test		Post-test	
		Number	Percent	Number	Percent
Inadequate	≤50 score	53	88.3	0	0
Moderate	51-75 score	7	11.6	14	23.3
Adequate	>75 score	0	0	46	76.6
Total		60	100.0	60	100.0

Table 4: Association between demographic variables and pretest knowledge scores (N=60)

Variables	χ^2 value	df	p-value
Age group (years)			
16	0.080	2	0.96
17			
18 and above			
Gender			
Male	1.042	1	0.30
Female			
Religion			
Hindu	7.801	2	0.02*
Muslim			
Christian			
Type of family			
Nuclear	0.639	2	0.72
Joint			
Extended			
Stream of education			
Science	2.881	1	0.08
Arts			
Fathers' educational status			
No formal education	1.856	4	0.76
Primary school			
Secondary school			
Pre-university course			
Degree and above			
Mothers' educational status			
No formal education	7.141	4	0.12
Primary school			
Secondary school			
PUC			
Degree and above			
Father's occupation			
Government employee	2.556	4	0.63
Private employee			
Business/self employment			
Agriculturist			
Daily wages			
Mother's occupation			
Government employee	4.027	4	0.40
Private employee			
Business/self-employment			
Daily wages			
Homemaker			
Agriculturist			
Family monthly income (Rs)			
1000-4000	1.132	3	0.76
4001-9000			
9001-14000			
14001 and above			
Source of health information			
Curriculum/syllabus	2.142	4	0.70
Books/Magazines/Journals			
Health personnel			
Friends and neighbours			
Mass media			
Number of hours per day sleeping			
4 to 5	6.940	4	0.13
5 to 6			
6 to 7			
7 to 8			
8 to 9			
Habit of day time sleeping			
No	1.062	1	0.30
Yes			

*Significant at 0.05 level

Voinescu and Szentagotai-Tatar[17] measured the sleep hygiene awareness and self-reported quality of sleep among three age groups (young adults, adults, and middle aged adults). The study results showed that sleep hygiene awareness was moderate on the whole and significantly worse in young adults.[17]

The second objective of the present study was to assess effectiveness of structured teaching programme regarding sleep hygiene and sleep disorders on knowledge

of pre-university students. Study results showed statistically significant difference between pre- and post-test knowledge scores (t=26.71, df=59, p=0.001). This finding is supported by a study which was conducted to evaluate the effectiveness of supplementary internet-based education programme on improving sleep literacy in college psychology students. The internet-based supplementary learning module contained sleep physiology and hygiene information. Study concludes that use of a supplementary internet-based sleep learning module has the potential to enhance sleep literacy and change behaviour among students.[15] A randomised controlled trial was conducted to evaluate the effectiveness of a school-based intervention to increase knowledge on sleep hygiene and decrease in adolescent sleep problems. The programme improved sleep knowledge and motivated adolescents to change sleep practices.[18]

A pilot sleep education programme in New Zealand high school students resulted in increased weekend sleep duration among participants in the intervention group at five and ten weeks compared to control group school students. The study concluded that sleep education programme appeared to increase weekend sleep duration in the short term.[19]

Educational interventions for pre-university students are a novel method for addressing a prevalent problem. For any comprehensive programme, colleges seem to be the most suitable location; this is so because of the fact that the society is influenced to the maximum by the attitude and values of these college students.[20]

Limitations

The study was limited only to students pursuing pre-university education at the National Pre-University College, Basavangudi, Bengaluru. The study did not use control group. Only a single domain, which is knowledge, was considered in the present study. The sample size for the study was limited to 60 students.

Conclusion

The main aim of the present study was to assess the knowledge and educate the students of pre-university college regarding sleep hygiene and sleep disorders. The study revealed that sleep education programme increased overall knowledge scores among pre-university college students regarding sleep hygiene and sleep disorders. It indicates that efforts should be taken by healthcare professionals in educating the students regarding sleep hygiene and sleep disorders, so as to impart knowledge and to create awareness about this problem. The healthcare professionals can contribute in increasing the awareness regarding sleep hygiene and sleep disorders, change of daily practices to maintain good sleep and accomplish optimum health, and make the nation healthy.

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