Effectiveness of back massage on sleep among patients with major Orthopedic Surgery in selected Hospital, Nagercoil, Tamil Nadu.

Mr. P. Anila
Research scholar, JJTU,
Rajasthan, India

Abstract : Background: Now a day surgical treatments are common to alleviate some disease. Specially orthopedic surgery require special nursing care, due to immobilization and also patients are facing the problem of sleeplessness. So the researcher decided to assess the effectiveness of back massage on sleep among patients with major orthopedic surgery. *Objectives:* To assess the effectiveness of back massage on sleep among patients with major orthopedic surgery. *Design:* Quazi experimental design where pre and post test with control group. *Setting:* Krishna Kumar Orthopedic Hospital, Nagercoil, Tamil Nadu. *Participants:* Thirty patients with major orthopedic surgery, fulfilling the inclusion criteria were selected by purposive sampling technique. *Methods:* 15patients were control group and 15patients were experimental group. Only the experimental group patients received back massage. Pre and post test assessment done with Subjective assessment of quality of sleep scale for both groups. *Results:* From the findings of the study it can be concluded that the highest percentage of patients were in the age group above 50 years, most of the patients were males, majority of the patients had undergone open reduction and internal fixation and most of them had no previous history of any surgery. The area wise comparison between control and experimental post test mean percentage difference was 18%. Paired 't' test score was 15.48 for experimental group at the level of significant (P) = 0.05. Moderately significant difference was found between control and experimental group post test scores of patients in the areas of sleep. Unpaired 't' test score was 3.05 at the level of significant (P) = 0.05. No significant association between sleep among control and experimental group of patients with their demographic variables, i.e. age, sex, type of surgery and previous history of surgery Conclusion: Application of back massage on patients with major orthopaedic surgery enhances the level of sleep. Therefore, back massage can be used as a safe and effective tool to help to improve the sleep.

I. INTRODUCTION

Touch is a language spoken through the hands and understood by the heart. Together, intention and touch set the tone and provides the basis for healing. The act of touch is essential for the human body to keep it live all the more, when it is unstable. Back massage is an art of touch with just the bare human hands, which is a wonderful and therapeutic gift in this era of continuous stress, tension, sickness and sleep.

Massage therapy bring about generalized improvement in health by providing relaxation and improved sleep, Nurses can use this therapeutic and cost effective art to improve quality of sleep of post operative patients. Improved sleep quality will reduce many post-operative complications, reduce length of stay and improve quality of life. Polysomnographic studies of patients experiencing acute pain during post-operative recovery show shortened and fragmented sleep with reduced amounts of slow wave and Rapid Eye Movement (REM) sleep, and recovery is accompanied by normalization of sleep. Patients with orthopedic surgery reported that sleep disturbances are very common among these patients due to incision pain, stress, and difficulty in finding a comfortable position. The number of people opting for orthopedic surgery is growing whether it is UK, USA, India or any other nation. It is estimated that more than a million joint replacements are performed each year worldwide. Currently in the US more than 550,000 joint replacement procedures performed each year. The annual report of Department of Orthopedic Surgery showed totally 2318 major orthopedic surgeries done in the year 2012-2013 in Madras Medical College and Government General Hospital, Chennai, Tamilnadu. Although several investigators have conducted study on the effect of back massage on relaxation, not many studies are done to test the effectiveness of back massage on sleep among patients with major orthopedic surgery. Hence the investigator felt the need to perform an experimental study to assess its effectiveness.

A. Objectives of the Study

- To assess the sleep among control and experimental group of patients with major orthopedic surgery before and after back massage.
- To compare the effectiveness of back massage on sleep among patients with major orthopedic surgery in control and experimental group.
- To find out the association between post test scores of sleep among control and experimental group of patients with major orthopedic surgery and their demographic variables.

II. METHODS

A. Research Approach

Quantitative research approach was adopted for the study.

B. Design

Quasi experimental design more specifically pre and post test with control group design was used for the present study.

C. Setting of the Study

The study was conducted in Krishna Kumar Orthopedic Hospital, Nagercoil,.

D. Variables

- Independent variable - Back massage.
- Dependent variable - Sleep among patients with major orthopedic surgery.

E. Population

The population for the present study was Patients with major orthopedic surgery.

F. Sample

In this study the sample is selected patients with major orthopedic surgery admitted in Krishna Kumar Orthopedic Hospital, Nagercoil, during the period of data collection.

G. Sample Size

The total sample size was 30 samples, out of which 15 were experimental group and 15 were control group.

H. Sampling Technique

Purposive sampling technique was selected for the this study.

I. Development of The Tool

The tool which consist of two sections. They were,

- Section A. It consists of demographic variables of patients with major orthopedic surgery ie, Age, Sex, Type of Surgery, and Previous history of surgery.

- Section B. Modified Subjective assessment of quality of sleep scale.

J. Data Collection Procedure

- Permission from the concerned authority

Prior to collection of data, permission was obtained from the medical superintendent of Krishna Kumar Orthopedic Hospital, Nagercoil,.

- Period of data collection

The data was collected from 14.06.15 to 16.07.15. The investigator collected the data from both experimental group and control group.

K. Pre test

Pre test was conducted on the patients with major orthopedic surgery in the hospitals by using modified subjective assessment of quality of sleep scale to assess the sleep pattern of patients with major orthopedic surgery. In a day average of 2 - 3 patients were assessed. The time for assessment varied from 20 – 30 minutes.

L. Implementation of Back massage
Immediately after pre-test the back massage was applied both the hands at the duration of 30 minutes twice a day for 5 days.

M. Evaluation of Back massage

Post assessment was made on after completion of five days back massage (30 minutes) post test done on every next day morning for five days by using modified subjective assessment of quality of sleep scale.

N. Plan For Data Analysis

- Assess the level of sleep among control and experimental group of patients with major orthopedic surgery before and after back massage is analyzed by using frequency and percentage.
- Determine the effectiveness of back massage on sleep among patients with major orthopedic surgery in control and experimental group is analyzed by using mean, standard deviation, mean percentage, paired 't' test and unpaired 't' test.
- Find out the association between post test scores of sleep among control and experimental group of patients with major orthopedic surgery and their demographic variables are analyzed by using chi-square test.

O. Ethical Consideration

The research proposal was approved by the Institutional Human Ethics Committee of Krishna Kumar Orthopedic Hospital, Nagercoil, Tamil Nadu. A written permission was obtained from the principal and ethical committee. The investigator explained about the study to the patients and obtained written consent prior to the data collection.

III. RESULTS AND DISCUSSION

Table– 1: Frequency and percentage distribution of control and experimental groups of patients with major orthopedic surgery according to their demographic variables.

Demographic variables	Control group		Experimental group	
	N	%	N	%
1.Age				
a) 20-30 years	1	7%	4	27%
b) 31-40 years	-	-	3	20%
c) 41-50 years	2	13%	-	-
d) Above 50 years	12	80%	8	53%
2.Sex				
a) Male	10	67%	11	73%
b) Female	5	33%	4	27%
3.Type of surgery				
a) ORIF	9	60%	7	47%
b) Hemiarthroplasty	1	7%	2	13%
c) Arthroplasty	-	-	-	-
d) DHS fixation	5	33%	6	40%
4.Previous history of surgery				
a)Present	7	47%	6	40%
b)Absent	8	53%	9	60%

Table 1 Reveals the frequency and percentage distribution of patients with major orthopedic surgery according to their demographic variables .Distribution of control and experimental group samples according to their age group depicts that the highest percentage (80% and 53%) of patients were in the age group of above 50 years (Fig: 1). With regard to sex, control and experimental group samples reveals that, the highest percentage (67% and 73%) of patients were males in both the groups (Fig.2). Distribution of control and experimental group of patients according to their type of surgery shows that highest percentage (60% and 47%) of the patients had open reduction and internal fixation in control and experimental group. (Fig.3). Distribution of control and experimental group of patients according to their previous history of surgery depicts that most (53% and 60%) of the patients had no previous history of surgery in control and experimental group, (Fig 4).
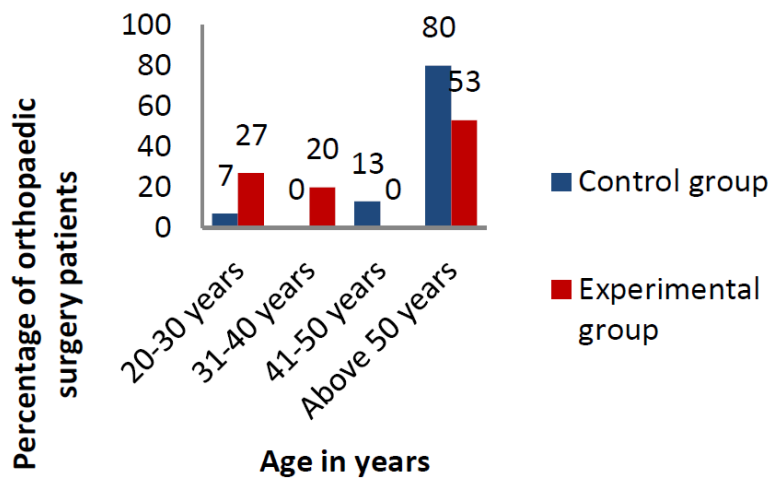

Fig.1: Bar diagram showing the distribution of control and experimental group samples according to their Age group.
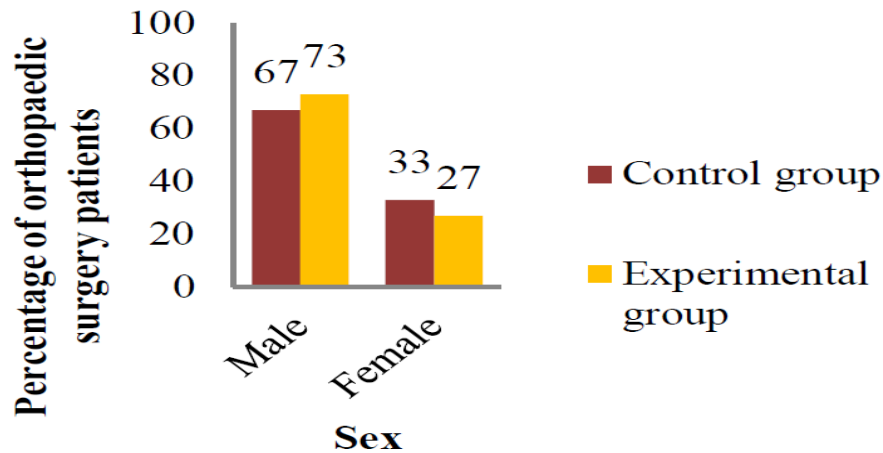
Fig.2: Bar Diagram showing the distribution of Control and experimental group samples according to their Sex.
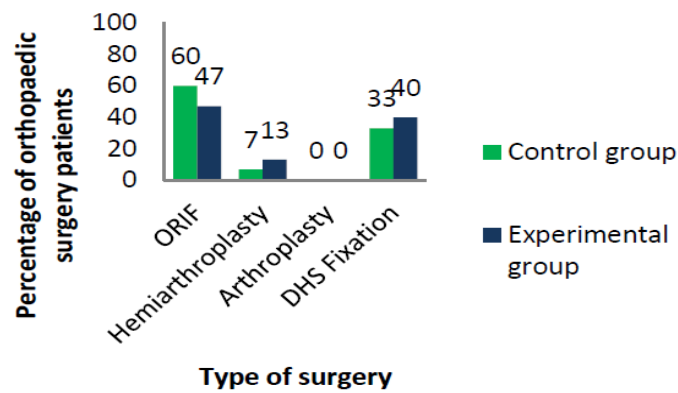

Fig.3: Bar diagram showing the distribution of control and experimental group samples according to their Type of Surgery
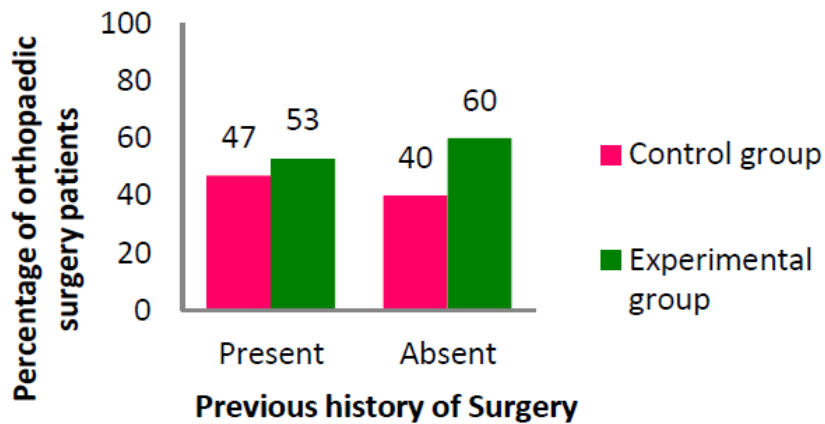

Fig.4: Bar Diagram showing the distribution of control and experimental group samples according to their previous history of Surgery.

Table-2: Frequency and percentage distribution of the control and experimental group pre and post test scores of sleep among patients with major orthopaedic surgery.

Level of sleep	Control group				Experimental group			
	Pre test scores		Post test scores		Pre test scores		Post test scores	
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)
Adequate sleep	-	-	-	-	0	0%	3	20%
Fairly adequate sleep	-	-	4	27%	0	0%	12	80%
Inadequate sleep	2	13%	11	73%	11	73%	0	0%
Highly inadequate sleep	13	87%	-	-	4	27%	0	0%

(N=15)

Frequency and percentage distribution of control and experimental group pre test and post test scores of sleep among patients with major orthopedics surgery depicts that, in control group pre test majority (87%) of patients had highly inadequate sleep, whereas in post test most (73%) of patients had inadequate sleep and only 27% of patients had fairly adequate sleep. It seems that without intervention, there was not much improvement in the level of sleep among patients with major orthopedic surgery. In experimental, pre test majority (73%) of patients had inadequate sleep, whereas in post test majority (80%) of the patients had fairly adequate sleep and 20% of patients had adequate sleep. It seems that back massage was effective in patients with major orthopedic surgery to improve the level of sleep.

Table – 3: Paired 't' test value of pre and post test scores of experimental group

Areas	Paired 't' value	Table value	Level of significant (P)
Sleep	15.48	2.15	P < 0.05 significant

Df=14   **Table value=2.15**   **P<0.05 significant**

Paired 't' test was calculated to analyze the effectiveness between pre and post test scores of experimental group on sleep among patients with major orthopedic surgery. From the above table, the calculated value of 't' is greater than (15.48) the tabulated value of 't' (2.15) at 5% level of significance.

This shows that there was a significant difference in the pre and post test sleep within the experimental group. Therefore the investigator concluded that the back massage was effective in improving the sleep of the patients with major orthopedic surgery.

Table – 4: Area wise comparison of mean, SD, and mean percentage of control and experimental group pre and post test scores.

Areas	Max Scores	Control group						Experimental group					
		Pre Test			Post Test			Difference in mean %	Pre Test			Post Test			Difference in mean %
		Mean	SD	Mean %	Mean	SD	Mean %		Mean	SD	Mean %	Mean	SD	Mean %	
Sleep	15	1.8	1.37	12%	6.53	1.84	44%	32%	2.13	1.35	14%	9.33	1.63	62%	48%

Comparison of mean, SD, and mean percentage of control and experimental group pre and post test scores reveals that, in control group pre test the mean score was (1.8± 1.37), which is 12% whereas in post test the mean score was (6.53 ± 1.84), which is 44% showing a difference of 32% on the level of sleep. It seems that there was a change in level of sleep

without intervention of back massage. In experimental group pre and post test scores reveals that, in pre test the mean score was (2.13 ± 1.35), which is 14%, whereas in post test the mean score was (9.33 ± 1.63), which is 62%. It shows a

difference of 48% on level of sleep. It depicts that back massage was effective in improving the level of sleep. The findings are graphically represented in Fig: 5
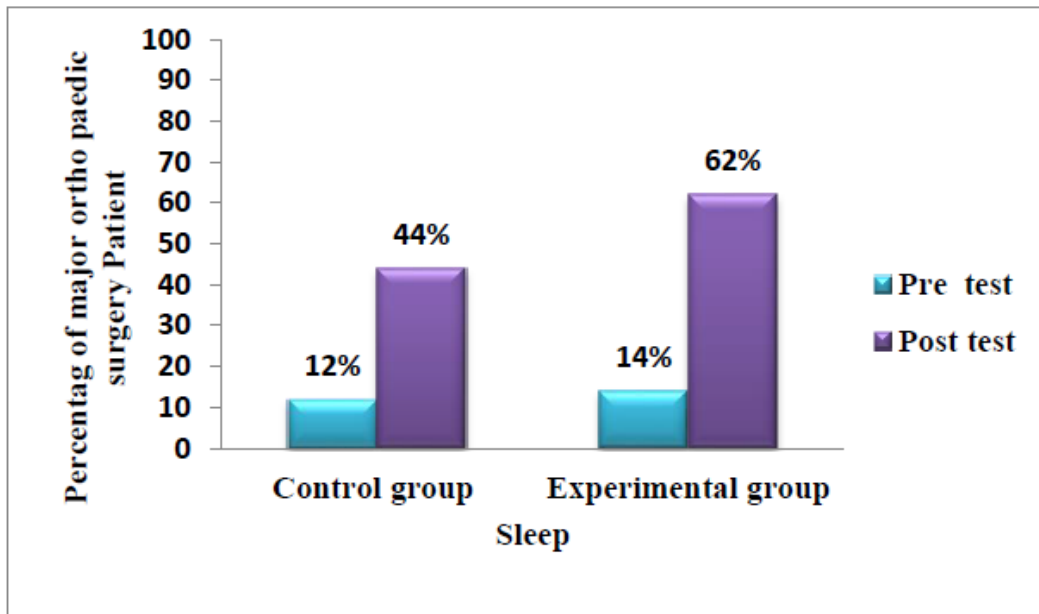

Fig.5: Bar Diagram showing the distribution of Control and Experimental group pre and post test scores of sleep among patients with major orthopedic surgery

Table - 5: Unpaired 't' test value of control and experimental group post test scores

Areas	Unpaired 't' value	Table value	Level of significant (P)
Sleep	3.05	2.05	P < 0.05 significant

Df=29　　　　　　　**Table value=2.05**　　　　　　**P<0.05 significant**

Unpaired 't' test was calculated to analyze the effectiveness between control and experimental groups post test scores on sleep among patients with major orthopedic surgery. The

obtained score was 3.05 when compared to 't' value (2.05) is high. It seems that back massage was effective on sleep among patients with major orthopedic surgery.

Table – 6: Chi square value of association between control and experimental group post test scores with their demographic variables.

Demographic variables	Post test				Table Value	Level of significance
	Control group		experimental group			
	Df	χ^2	Df	χ^2		
Age	3	3.27	3	0.22	7.82	P > 0.05 Not significant
Sex	1	0.5	1	0.21	3.84	P > 0.05 Not significant
Type of surgery	3	3.74	3	0.96	7.82	P > 0.05 Not significant
Previous history of surgery	1	0.05	1	0.16	3.84	P > 0.05 Not significant

Chi-square was calculated to find out the association between control and experimental group post test scores on sleep

among the patients with major orthopedic surgery and their demographic variables regarding back massage.

It reveals that there was no significant association between the post test scores of control and experimental group when compared to age, sex, type of surgery and previous history of surgery, (P > 0.05). Hence the differences observed in the mean scores values were only by chance and not true difference. It seems that back massage was effective to all the patients with major orthopedic surgery irrespective of their demographic variables.

IV. DISCUSSION

A. Objective 1

To assess the sleep among control and experimental group of patients with major orthopedic surgery before and after back massage. The findings are

In control group pre test majority (87%) of patients had highly inadequate sleep, whereas in post test most (73%) of patients had inadequate sleep and only 27% of patients had fairly adequate sleep. It seems that without intervention, there was not much improvement in the level of sleep among patients with major orthopedic surgery. In experimental, pre test majority (73%) of patients had inadequate sleep, whereas in post test majority (80%) of the patients had fairly adequate sleep and 20% of patients had adequate sleep. It seems that back massage was effective in patients with major orthopedic surgery to improve the level of sleep.

- *Hypothesis:1*

There is a significant level in sleep among control and experimental group of patients with major orthopedic surgery before and after back massage, so the hypothesis is accepted.

B. Objective 2

To compare the effectiveness of back massage on sleep among patients with major orthopedic surgery in control and experimental group. The results are:

- In Paired 't' test, the calculated value of ' t'is greater than(15.48) the tabulated value of 't'(2.15) at 5% level of significance. This shows that there was a significant difference in the pre and post test sleep within the experimental group. Therefore, back massage was effective in improving the sleep among patients with major orthopedic surgery.

- In control group, the pre test mean score on sleep was (1.8± 1.37), which is 12% whereas mean score for post test was (6.53 ± 1.84), which is 44% showing a difference of 32% on the level of sleep. In experimental group, the pre test mean score on sleep was (2.13 ± 1.35), which is 14%, whereas mean score for post test was (9.33 ± 1.63), which is 62%. It shows a difference of 48% on level of sleep. This shows that there was a significant improvement in

sleep among the control group of patients with major orthopedic surgery.

- In Unpaired 't' test, the score was 3.05 when compared to 't' value (2.05) is high. This shows that there was a significant difference in the post test scores of sleep among the experimental group than the control group. It seems that back massage was effective on sleep among patients with major orthopedic surgery.

- *Hypothesis 2:*

There is a significant effectiveness of back massage on sleep among patients with major orthopedic surgery in experimental group than control group, so the hypothesis is accepted.

C. Objective 3

To find out the association between post test scores of sleep among control and experimental group of patients with major orthopedic surgery and their demographic variables

- Chi-square value reveals that there was no significant association between the post test scores of control and experimental group when compared to age, sex, type of surgery and previous history of surgery, (P > 0.05). Hence the differences observed in the mean scores values were only by chance and not true difference. It seems that back massage was effective to all the patients irrespective of their demographic variable

Hypothesis 3

There is a significant association between post test scores of sleep among experimental and control group of patients with major orthopedic surgery and their demographic variables, so the hypothesis is rejected.

V. CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

A. Conclusion

From the findings of the study it can be concluded that the highest percentage of patients were in the age group above 50 years. Most of them were males and had open reduction and internal fixation. Majority of the patients had no previous history of surgery. Back massage was highly effective on sleep. Significant difference was found between control and experimental group in sleep. No significant association was observed between control and experimental groups post test scores of patients with major orthopedic surgery and their demographic variables.

VII. NURSING IMPLICATIONS

A. Nursing practice
- Nurses can adopt back massage as a simple nursing intervention to promote the well being and to prevent the complications of the patients with major orthopedic surgery.
- Nurses can develop back massage as an integral part of their routine care to induce relaxation.
- Nurses can make hospitalization as a pleasant experience for the patients by decreasing stress through complimentary therapies like back massage.

B. Nursing education
- Nurse education on back massage can be emphasized through conferences, workshops and seminars, which can be held for nurses to impart knowledge on back massage as a nursing intervention.
- Nursing curriculum can be updated with inclusion of topics on complimentary therapies like back massage.

C. Nursing administration
- Nursing administrator can foster the use of back massage as a complimentary therapy in clinical setting.
- Nursing administrator can organize conferences, seminars, and workshops for nurses working in the hospital to encourage a positive attitude on back massage and to teach various techniques of back massage.
- Nursing administrator can support the nurses for conducting research on various complimentary therapies.

D. Nursing Research

This study is a preliminary set up for exploring the concept of effect of back massage on sleep among patients with major orthopedic surgery. The results of this study encourage the nurses to adopt this as a part of their nursing interventions in providing a holistic care to their patients.

RECOMMENDATIONS

Based on the findings of the study the following recommendations have been made for the study.
- A large scale study can be carried out to generalize the findings.
- A comparative study can be undertaken to compare the effectiveness of back massage with other complimentary therapies like music, yoga, aromatherapy, progressive muscle relaxation and guided imagery.
- A comparative study can be conducted to see the effectiveness of individual massage techniques like effleurage, petrissage, kneading, tapotement and friction.
- A similar study can be carried out to identify the effectiveness of back massage on other physiological variables such as pain, pulse rate, blood pressure, respiratory rate and psychological variables like anxiety and depression

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