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A Study to Assess the Effectiveness of Multifactorial Intervention on Sleep Quality among Elderly Adults in Old Age Home, Puducherry

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NITHIYA. B[1*], SASIKALA. R[2], R. GOMATHY[3]

[1]M.Sc (N).,Nursing tutor ,Department of Medical Surgical Nursing, Critical Care Nursing, Vinayaka Mission's College of Nursing, Vinayaka Missions Research Foundation (Deemed to be University), Puducherry, India. [2]Assistant professor, Research guide, Department of Medical Surgical Nursing, Vinayaka Mission's College of Nursing, Vinayaka Missions Research Foundation (Deemed to be University), Puducherry, India. [3]Associate professor, Research Co-guide, Department of Medical Surgical Nursing, Vinayaka Mission's College of Nursing, Vinayaka Missions Research Foundation (Deemed to be University), Puducherry, India.

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ABSTRACT

A quantitative study to assess the effectiveness of the multifactorial intervention on sleep quality among elderly adults in an old age home, Puducherry, to assess the sleep quality and evaluate the effectiveness of interventions. This sample size was 66, using the convenience sampling technique. The samples were divided into three groups and the interventions such as leisure activity, diet, and aromatherapy were given to samples for 10 days at 3 old age homes. Post-test was conducted on the 10th day for each intervention by using the Pittsburgh sleep quality index scale. Data were analyzed using descriptive and inferential statistics. The demographic variable shows that majority of the participants were from rural and taking treatment for their comorbidity. The result reveals that Anova F-value is 63.086 which shows, an overall significant difference between the group found to be statistically significant at $p<0.001$ level. The multiple comparisons of post-test sleep quality scores between the groups reveal that a mean difference of 10.09 between aromatherapy and diet, and 6.63 between Aromatherapy and leisure activity was found to be statistically significant at a $p<0.05$ level. The significant association found in leisure activity and diet group with sex and chi-square value was 6.873, 4.714 with the p-value of 0.032, 0.030. The study concluded that aromatherapy was found to be highly effective in improving sleep quality among elderly adults followed by leisure activity and diet.

INTRODUCTION

Sleeping is no mean art; for its sake, one must stay awake all day. The best bridge between despair and hope. Sleep is the golden chain that ties the chain between health and our bodies together. It is very important to know that too many brain functions, including how nerve cells communicate with each other. Most adults need 7-9 hours of sleep a night, but after 60 years, nighttime sleep tends to be shorter, lighter, and interrupted by multiple awakenings. The average adult needs slightly more than eight hours of sleep a day but only 38% of Indian adults consistently get this amount of rest. In general, people are getting less sleep than they need, due to longer working hours and other activities.

Sleep quality is the third most common problem in elderly people, comparatively headaches and digestive disorders. Sleep problems have significant negative outcomes on the physical and mental well-being of people, mainly elderly people, damage the quality of their day-to-day life activities and enhance health care costs and mortality. Incapacity to fall nap can lead to shorter notice spans, slow response time, damaged memory and concentration, and low execution.

The most common sleep disorders among elderly people are decreased sleep and sleep apnea along with age-related sleep disorders such as depression, anxiety, and delirium. If an older person is having difficulty sleeping, it's important to make sure that one of these common conditions isn't contributing to the problem. Alterations in circadian rhythms, primary sleep disorders, and physical health problems such as respiratory or cardiovascular diseases. Acute or chronic pain medications, restricted physical mobility, smoking, alcohol, or caffeine use, environmental factors such as bright lighting or noise, and distracting stimuli are the factors that affect sleep quality.

The majority of old age people take sleeping pills because of sleep problems. It causes major health problems. Doctors recommend sleeping pills only on a short-term basis. But the elderly adults, who are accustomed to sleeping pills, will become habituated.

METHODOLOGY

A Quantitative research approach was conducted among elderly adults in old age homes, Puducherry. Population elderly adults aged 60 – 85 years by Interview method. This section

consists of a scale (the Pittsburgh sleep quality index) to assess the sleep pattern. Paired t-test is used to find out the effectiveness of Multifactorial intervention on sleep quality among elderly adults in old age homes. Independent F-test is used to find out the comparison of a multifactorial intervention on sleep quality among elderly adults in old age homes. The Chi-square test is used to determine the association between the sleep qualities among elderly adults in old age homes with selected demographic Variables.

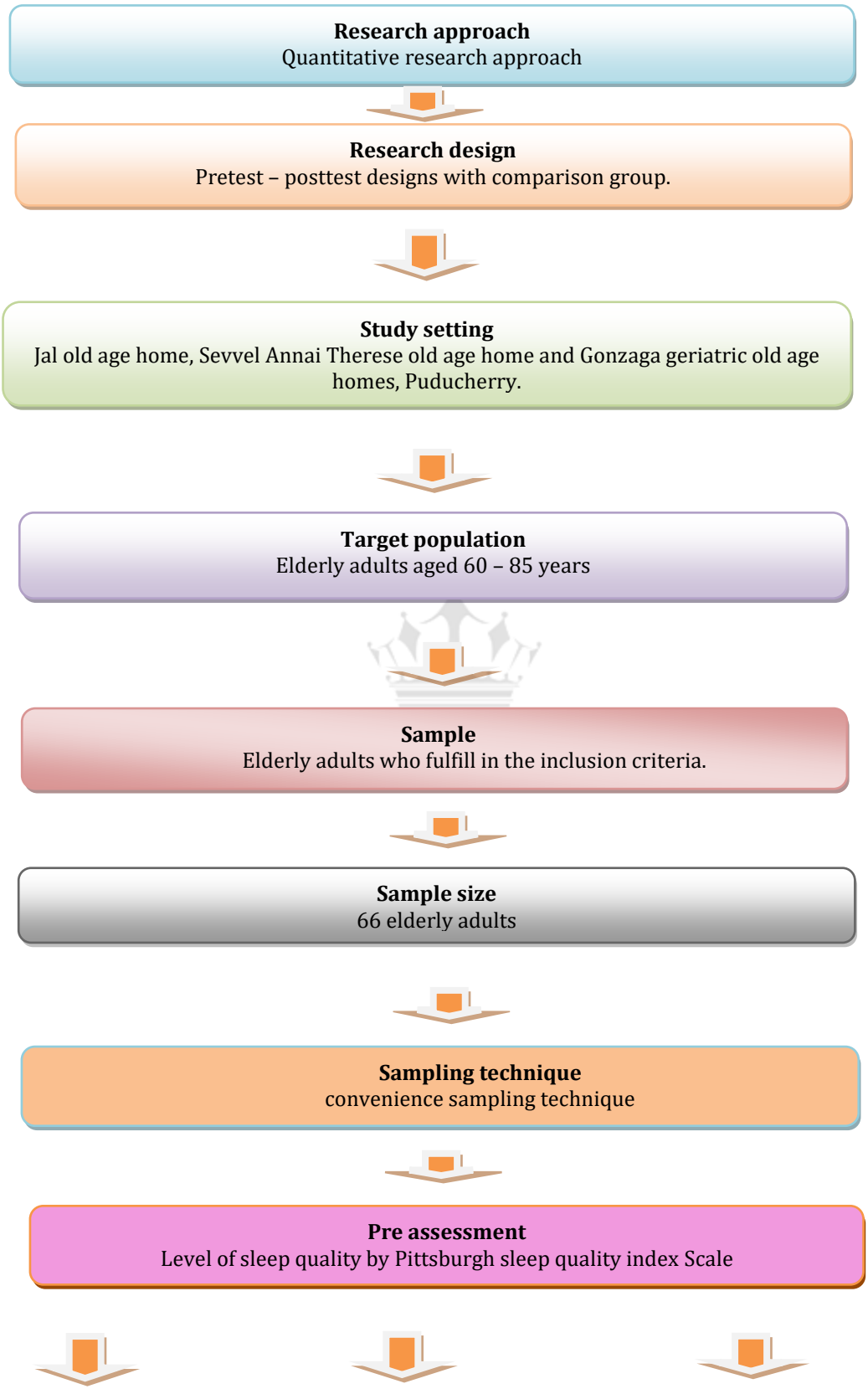
SCORE INTERPRETATION:

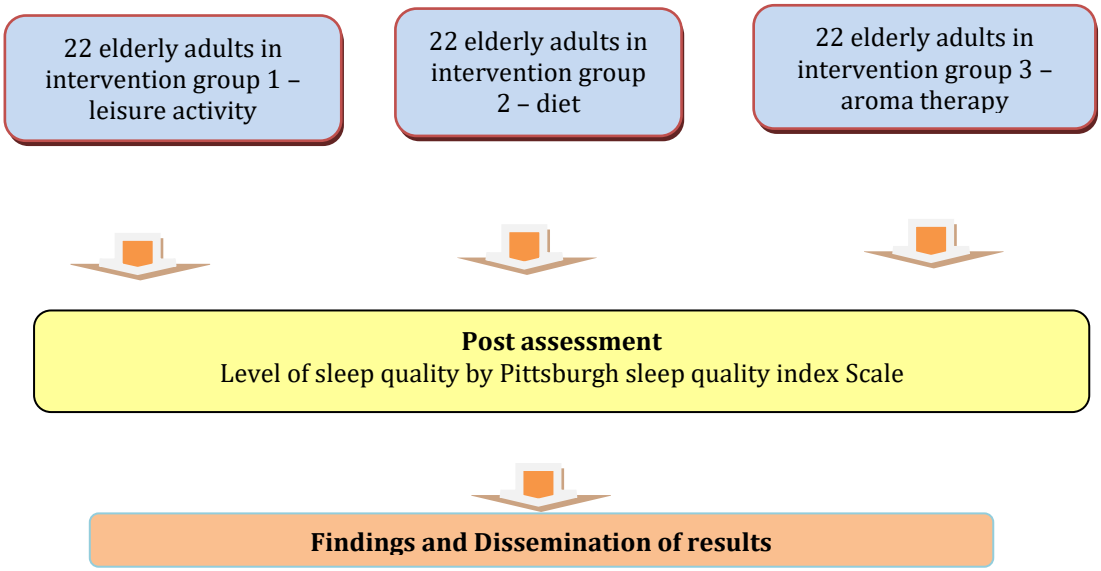
1.	Very good quality of sleep	0-10
2.	Moderate quality of sleep	11-20
3.	Poor quality of sleep	21-30
4.	Very poor quality of sleep	31-39

DATA COLLECTION PROCEDURE:

Before data collection, formal written permission was obtained from the concerned authorities of the supervisor of the old age homes, Puducherry. Written informed consent was obtained from the study participants with the assurance of confidentiality. A total of 66 samples were selected by convenience sampling technique. Demographic variables and sleep quality by using The Pittsburgh sleep quality index scale were used and the sample was divided into three groups for the intervention (leisure activity, diet, and aromatherapy). Interventions were given for 10 days. Before going to the bed. In the leisure activity intervention group, the books (Like Religious books and Storybooks) were given according to the participant's preference for bedtime reading. The Diet intervention group of elderly adults had warm milk of 150ml mixed with 2 teaspoons of honey. In the aromatherapy intervention group, elderly adults were assessed with a fragrance of 12 drops of lavender oil in 50 ml of coconut oil heated with a lamp. Post-test was conducted on the 10th day for each intervention by using the Pittsburgh sleep quality index scale, thus sleep quality was assessed.

SCHEMATIC REPRESENTATION OF METHODOLOGY





RESULTS:

Table 1: Frequency and percentage distribution of demographic variables of elderly adults in Group I (Leisure Activity), Group II (Diet), and Group III (Aromatherapy).

N = 66 (22+22+22)

Demographic Variables	**Group I (Leisure Activity)**	**Group II (Diet)**	**Group III (Aromatherapy)**
Age (in a year)	54.5 % were 66-75 years	50.0% were66-75 years	63.6% were 66-75 years
Sex	50.0%both male and female.	81.8% female	100% female
Education	45.5% were secondary education	50.0% were illiterate	40.9% were Primary education
Marital Status	86.4% were a widower	54.5 % were Widower	90.9% Widower
Dietary pattern	100% Normal diet	100.0% Normal diet	95.5% Normal diet

Residence	100% Rural	100.0% Rural	100.0% Rural
Religion	86.4% Hindu	72.7 % Hindu	95.5% Hindu
History of comorbid	100% having comorbid	100.0% having comorbid	100.0% having comorbid
If Yes,	31.8% have Heart disease	40.9% Diabetes mellitus	36.4% Asthma
Current treatment for comorbid illnesses	100% in the treatment	100% in the treatment	95.5% in the treatment
Leisure activities	59.1% Listening to music	50.0% Walking	50.0% Walking
History of sleeping pills intake	100.0% no history of sleeping pills intake	100.0% no history of sleeping pills intake	100.0% no history of sleeping pills intake
Comfortable measures are taken to promote sleep	40.9% were Blanket	45.5 % were Extra pillows	50.0% used Extra pillows
Do you have any allergic history?	59.1% No allergies	45.5% No allergies	100% No allergies
Duration of sleep during the night?	63.6% sleeping hours 4 – 5	68.2 % sleeping hours 4 – 5	59.1% sleeping hours 4 – 5
Daytime sleeping duration	100% having daytime sleeping.	77.3% have daytime sleeping.	95.5% have daytime sleeping.

Table 2: Frequency and percentage distribution of pretest level of sleep quality among elderly adults in Group I (Leisure Activity), Group II (Diet), and Group III (Aromatherapy).

N = 66 (22+22+22)

Sleep Quality	Very Good Quality of Sleep		Moderate Quality of Sleep		Poor Quality of Sleep		Very Poor Quality of Sleep	
	No.	%	No.	%	No.	%	No.	%
Group I (Leisure Activity)	0	0	1	4.55	10	45.4	11	50.0
Group II (DIET)	0	0	0	0	1	4.55	21	95.45
Group III (Aromatherapy)	0	0	0	0	4	18.18	18	81.82

Percentage distribution of pretest level of sleep quality among elderly adults in Group I (Leisure Activity), Group II (Diet), and Group III (Aromatherapy)

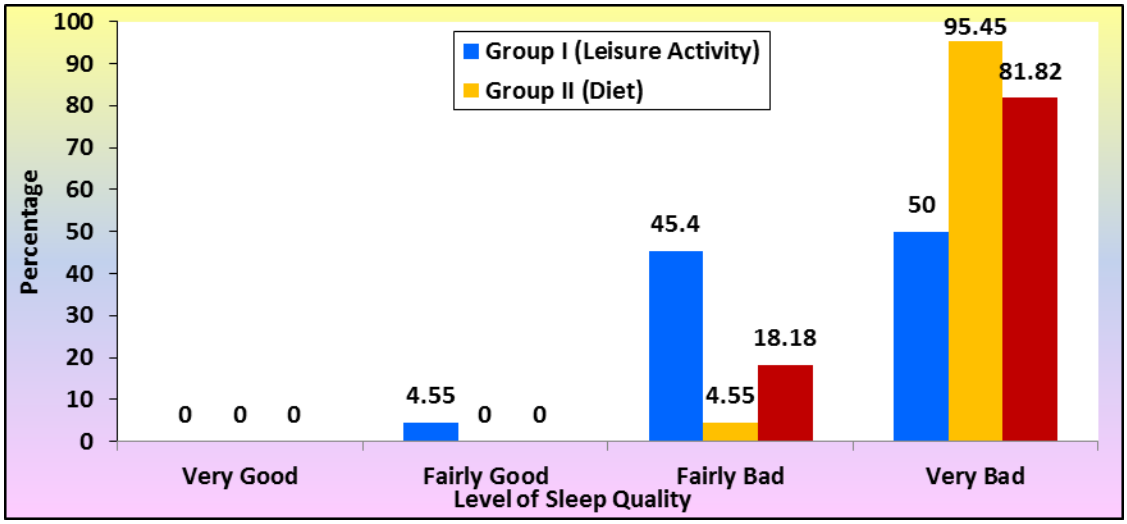


Table 3: Frequency and percentage distribution of post-test level of sleep quality among elderly adults in Group I (Leisure Activity), Group II (Diet), and Group III (Aromatherapy).

N=66 (22+22+22)

Sleep Quality	Very Good Quality of Sleep		Moderate Quality of Sleep		Poor Quality of Sleep		Very Poor Quality of Sleep	
	No.	%	No.	%	No.	%	No.	%
Group I (Leisure Activity)	0	0	5	22.73	16	72.73	1	4.55
Group II (DIET)	0	0	0	0	21	95.45	1	4.55
Group III (Aromatherapy)	0	0	22	100	0	0	0	0

Table 4: Comparison of pretest and post-test levels of sleep quality among elderly adults in Group I (Leisure Activity), Group II (Diet), and Group III (Aromatherapy).

N = 66 (22+22+22)

Group	Test	Mean	S.D	Paired 't' Test
Group I (Leisure Activity)	Pretest	29.36	4.51	t = 11.686 p = 0.0001, S***
	Post Test	23.18	4.47	
Group II (Diet)	Pretest	33.14	2.05	t = 16.759 p = 0.0001 S***
	Post Test	26.64	2.06	
Group III (Aromatherapy)	Pretest	31.45	1.10	t = 33.443 p = 0.0001, S***
	Post Test	16.55	1.82	

***p<0.001, S – Significant

The above findings show that in all the groups there was a significant improvement in sleep quality was observed after the respective interventions in the post-test.

Comparison of pretest and post-test levels of sleep quality among elderly adults in Group I (Leisure Activity), Group II (Diet), and Group III (Aromatherapy)

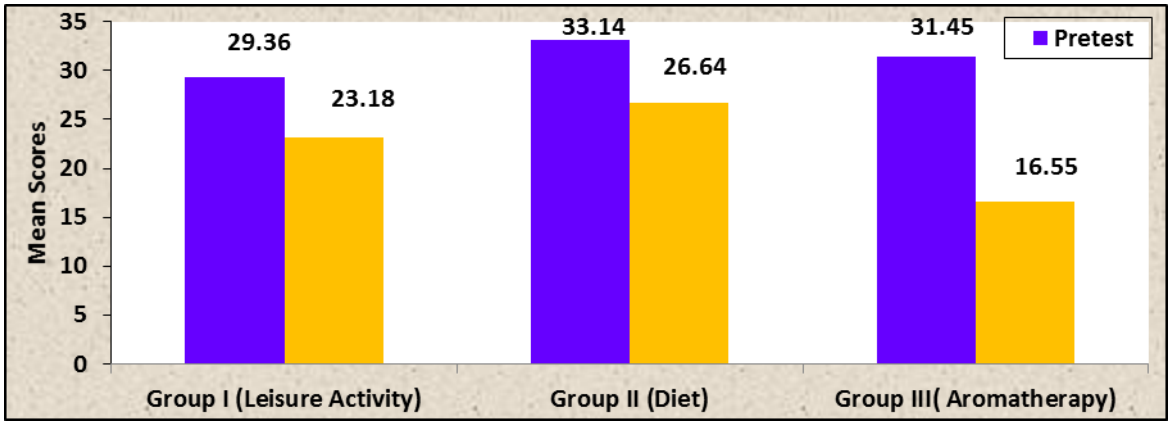


Table 5: Comparison of post-test overall sleep quality among elderly adults between Group I, Group II, and Group III.

N = 66 (22+22+22)

Test	Group	Mean	S.D	S.E	95% Confidence Interval for Mean		One Way ANOVA – F Test
					Lower Bound	Upper Bound	
Post Test	Leisure Activity	23.1818	4.46826	.95264	21.2007	25.1629	**F = 63.086**
	Diet	26.6364	2.05971	.43913	25.7231	27.5496	**P = 0.0001**
	Aromatherapy	16.5455	1.81861	.38773	15.7391	17.3518	**S*** **

***p<0.001, S – Significant

The calculated One Way ANOVA F-value of F = 63.086 shows that there was an overall significant difference observed between the group in terms of sleep quality after the respective interventions which was found to be statistically significant at p<0.001 level.

ASSOCIATION OF PRETEST LEVEL OF SLEEP QUALITY AMONG ELDERLY ADULTS WITH SELECTED DEMOGRAPHIC VARIABLES.

Groups/ Demographic Variables	Very Good Quality of Sleep		Moderate Quality of Sleep		Poor Quality of Sleep		Very Poor Quality of Sleep		Chi-Square Test Value
	No.	%	No.	%	No.	%	No.	%	
Group I (Leisure Activity) Sex									**c2=6.873 d.f=2 p = 0.032S***
Male	-	-	1	4.5	2	9.1	8	36.4	
Female	-	-	0	0	8	36.4	3	13.6	
Group II (Diet) Sex									**c2=4.714 d.f=1 p = 0.030S***
Female	-	-	-	-	0	0	18	81.8	
Group III (Aromathera py) Religion									**c2=4.714 d.f=1 p = 0.030S***
Hindu	-	-	-	-	3	13.6	18	81.8	

Table shows that the demographic variable religion had shown a statistically significant association with the level of sleep quality among elderly adults at $p<0.05$.

DISCUSSION:

Major findings of the study:

TO ASSESS THE SLEEP QUALITY AMONG ELDERLY ADULTS IN SELECTED OLD AGE HOMES.

Group I (Leisure Activity) majority of them 11(50%) had very poor quality of sleep patterns, 10(45.4%) had poor quality of sleep patterns and only 1(4.55%) had a moderate quality of sleep pattern. Group II (Diet), most of them 21(95.45%) had very poor quality sleep patterns and 1(4.55%) had poor quality sleep patterns. Group III (Aromatherapy), the highest of the 18(81.82%) had very poor quality of sleep patterns and 4(18.18%) had poor quality of sleep patterns.

Suresh Kumar et al (2019) had done a cross-sectional study on the relationship between sleep quality, inappropriate medication use, and frailty among older adults in aged care homes in Malaysia. With the sample size of 151 older adults. the study showed that over half (56%) found moderately poor sleep quality followed by 39% who had very poor sleep quality.

EFFECTIVENESS OF MULTIFACTORIAL INTERVENTIONS ON SLEEP QUALITY AMONG ELDERLY ADULTS IN SELECTED OLD AGE HOMES.

In Group I (Leisure Activity) most of them 16(72.73%) had very poor quality sleep patterns, 5(22.73%) had moderate quality sleep patterns and only 1(4.55%) had very poor quality sleep patterns. In Group II (Diet), most of them 21(95.45%) had poor quality sleep patterns and 1(4.55%) had very poor quality sleep patterns. Group III (Aromatherapy), most of them 22(100%) had moderate quality sleep patterns.

The study findings were similar to **Fatemeh Sadat Izadiavanji et al (2019**) was conducted a single-blind RCT on the effect of aromatherapy with lavender oil among 100 elderly people. The results showed that 64% of the elderly had positive effects on sleep quality. **Hence the stated study research hypothesis (H1) was accepted.**

ASSOCIATE BETWEEN THE LEVEL OF SLEEP QUALITY WITH DEMOGRAPHIC VARIABLES AMONG ELDERLY ADULTS.

In this study, the result indicates the leisure activity group shows that the demographic variable sex had shown statistically significant association with the level of sleep quality among elderly adults at $x^2 = 6.873$, d:f=2 the p-value (p=0.032) level and the other demographic variables had not shown statistically significant. The Diet group shows that the demographic variables sex had shown statistically significant association with the level of sleep quality among elderly adults at $x^2=4.714$ d.f=1 the p-value is (p=0.030) level and the other demographic variables had not shown statistically significant. Aromatherapy shows that the demographic variable religion had shown a statistically significant association with the level of sleep quality among elderly adults at $x^2=4.714$, d.f=1 (p=0.030) level, and the other demographic variables had not shown statistically significant. From the above result, it was clear that there will be a significant association between the pretest with a selected demographic variable. **Hence, the study research hypothesis (H_2) was accepted.**

CONCLUSION:

The multiple comparisons of post-test sleep quality scores among elderly adults between the groups. The mean difference of 10.09 between aromatherapy and diet and 6.63 between Aromatherapy and leisure activity was found to be statistically significant at a $p<0.05$ level. This infers that Aromatherapy was found to be highly effective in improving the sleep quality among elderly adults than the other two interventions and it was followed by leisure activity which was found to be more effective than the diet intervention.

CONFLICT OF INTEREST

No conflict of interest

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