

A Quasi Experimental Study to Assess the Effectiveness of Foot Massage on Sleep Quality and Sensory Peripheral Neuropathy in Type - II Diabetes Mellitus Patients of District Solan (HP)

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ABSTRACT

Introduction: Hippocrates allegedly stated in 400 BC that “medicine was the art of rubbing”, a procedure that later became known as massage treatment. The practice of massaging, patting and kneading is evident to improve blood circulation. The most common complication associated with diabetes mellitus type II is peripheral neuropathy which hampers the sleep quality and circulation in peripheral areas. Massage is a cost effective method to improve quality of life of people suffering from Type II Diabetes Mellitus.

Aim: To assess the effectiveness of foot massage on sleep quality with sensory peripheral neuropathy in Type II Diabetes Mellitus patients of District Solan, HP.

Methodology: A Quasi experimental research approach and experimental design was used to assess the effectiveness of foot massage on sleep quality and sensory peripheral neuropathy in Type - II Diabetes Mellitus patients. Data was collected from 60 patients of District SOLAN, in which 30 were in experimental group and 30 were in control group. The tools used in the study were Socio-Demographic Profile, Clinical Profile, Pittsburgh Sleep Quality Index, Neuropathy disability score.

Result: Result of the study depicts that in experimental group (0%) subjects were having good PSQI score whereas only (3.3%) subjects were having good PSQI score in control group. (15%) subjects belong to experimental group whereas (30%) subjects were having average PSQI score in control group. Majority of subject (35%) were having poor PSQI in experimental group whereas (16.7%) subjects were having poor PSQI score in control group and there were (10%) subjects in experimental group and (13.3%) subjects in control group were having mild Sensory Peripheral Neuropathy. In experimental group (33.3%) and in control group (50%) subjects were having moderate Sensory Peripheral Neuropathy. In experimental group (56%) and in control group (36.7%) were having severe Sensory Peripheral Neuropathy.

Conclusion The present study concluded that patients sleep quality was increased and the neuropathy was decreased. It concludes that the foot massage is very effective to the Type - II Diabetes Mellitus patients.

How to cite this paper: Ms. Diksha Sharma | Dr. Jasbir Kaur "A Quasi Experimental Study to Assess the Effectiveness of Foot Massage on Sleep Quality and Sensory Peripheral Neuropathy in Type - II Diabetes Mellitus Patients of District Solan (HP)"

Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-8 | Issue-6, December 2024, pp.27-38, URL: www.ijtsrd.com/papers/ijtsrd70477.pdf



IJTSRD70477

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KEYWORDS: Sleep quality, neuropathy, foot massage, Type - II Diabetes Mellitus patients

INTRODUCTION

Diabetes mellitus is a term used to describe a metabolic condition with numerous aetiologies that is

defined by persistent hyperglycaemia and disruption of the metabolism of carbohydrates, fats, and proteins

due to a deficiency in insulin secretion, insulin action, or both. Long-term harm, organ dysfunction, and failure are all effects of Diabetes mellitus. Typical signs and symptoms of diabetes mellitus include paraesthesia and neuropathy. Ketoacidosis or a non-ketotic hyperosmolar state may develop in its most severe form, which can result in stupor, coma, and, in the absence of adequate treatment, death.¹

The top three nations in terms of the number of people with diabetes in 2019 are China (116.4 million), India (77.0 million), and the United States of America (31.0 million). China (140.5 and 147.2 million people) and India (101.0 and 134.2 million people) are anticipated to continue to have the largest burden of diabetes in 2030 and 2045, respectively.²

Foot massage may be one of the alternative therapies to help diabetic people balance because it increases joint mobility when combined with joint distraction, which may promote joint mobility. Foot massages use toe distraction with thumb pressure along the meridian lines of the foot and leg to deliver a deep massage. Deep pressure massage improving blood flow to improve skin sensations from the bottom of the feet. The practitioner applies pressure with their thumb, finger, palm, or elbow. Foot massage may be one of the alternative therapies to enhance balance performance for diabetes patients since it increases range of motion (ROM) and sensation of the foot in conjunction with joint distraction, which may promote joint mobility. To assist the myelin coating of the nerves, it might directly stimulate the neurological system.³

NEED OF STUDY

Diabetes has become a major core of concern in modern society of 21st century. Shifting the loads to non-communicable disease being leading cause of death, diabetes tops the list for causing both increased mortality and morbidity. Globally, the prevalence of diabetes is a serious public health issue that is almost epidemic in scope. Chronic, non-communicable illness prevalence is rising alarmingly on a global scale. Unquestionably one of the most difficult medical issues of the twenty-first century is diabetes. It is possible to avoid Type 2 Diabetes, but governments will need to exert tremendous political will if they are to succeed. They can do this by fostering an atmosphere that encourages people to alter their lifestyles.³

The high prevalence of chronic illnesses and dementia in demography means that elderly people frequently depend on others to carry out daily tasks. The number of senior inhabitants in care institutions rises along with the world's aging population. The constant physical, social, and psychological changes

and obstacles that patients admitted to residential care facilities face lead to a variety of geriatric health issues. Particularly, elderly residents of residential homes who engage in little physical activity each day and are reliant on others for assistance with bodily functions frequently spend a lot of time in bed. Due to their increased sedentary lifestyle, seniors have fewer opportunities for physical activity.⁴

OPERATIONAL DEFINITIONS

- **Diabetes mellitus:** Diabetes mellitus is a metabolic disorder which is characterised by high level of glucose in the blood which includes the lack of insulin production by the pancreas. For the study a blood glucose level above 165mg/dl is taken into consideration.
- **Diabetes mellitus Type 2:** It is a non-insulin dependent diabetes which is a characterised by the increased level of sugar in the blood which resulting from the body inability to effectively use of insulin. The glucose level is tested using glucometer. A random glucose level above 165 mg/dl and history of diabetes mellitus for at least 3 years or more is included.
- **Diabetic foot massage:** it refers massage designed to improve circulation, reduce inflammation and prevent increase rate of foot problems in individual with the diabetic mellitus.
- **Peripheral neuropathy:** It is an umbrella term for nerve disease that affect a specific subdivision of nervous system. Sensory peripheral neuropathy is measured using neuropathy disability score.
- **Sleep quality:** It is defined as one's satisfaction of the sleep experience, integrating aspects of sleep initiation, sleep maintenance, sleep quality and refreshment upon awakening. Sleep quality is assessed using Pittsburgh sleep quality index.

DELIMITATION

A study is delimited to sixty (60) patient with diabetes mellitus type 2 associated with its complication peripheral neuropathy in selected area of district solan.

Objectives:

1. To assess the pre sleep quality and sensory peripheral neuropathy in patient with Type II Diabetes Mellitus patients in selected areas in district Solan.
2. To plan and implement the Diabetic Foot massage in Type II Diabetes Mellitus patients in selected areas in district Solan.
3. To assess and compare the post sleep quality and sensory peripheral neuropathy in Type II Diabetes Mellitus patients in selected areas in district Solan.

4. To find out the association of post sleep quality and sensory peripheral neuropathy with selected socio-bio demographic profile in Type II Diabetes Mellitus patients in selected areas in district Solan.

Methodology:

Research Approach: A “research approach is defined as master plan specifying the method and procedure for collection and analysing needed information “

A Quantitative research approach was used to collect quantitative data on sleep quality and sensory peripheral neuropathy among Type-2 Diabetic patients in district Solan.

Sample and Sampling Technique

Sample: A sample is the subset of a population selected to participate in the research study. Sample was comprised of **60 patients in which 30 patients** were in experimental group and 30 were in control group.

Sample Technique: "Sampling is the process of selecting a representative segment of population under the study". The process of sampling makes it possible to accept a generalised to the individual population on the basis of careful observation within a relatively small portion of population.

Non probability purposive sampling technique was employed in the present study.

➤ Inclusion Criteria

Diabetic patients who are:

- Has been diagnosed with Diabetes Mellitus Type 2 since past 3 years or more
- Has glucose level equal to or more than 165 mg/dl but otherwise healthy subjects.
- Willing to participate in the research.
- Willing to return for required follow up (post-test) visits.

➤ Exclusion Criteria

Diabetic Patients who are:

- Has been diagnosed with Diabetes Mellitus Type 2 for less than 3 years
- Has glucose level less than 165 mg/dl.
- Associated with comorbidities

Validity of Tool

"Validity refers to the degree to which the instrument measures what it is supposed to be measuring"

- The tools used during study, Pittsburgh sleep quality index and neuropathy disability score, are standardised and are found to be valid during multiple studies.

- In order to validate the applicability of tool in this study, validation was taken from 13 faculty member and experts from the field.

Reliability of Tool

" Reliability is the consistency of test with which it measures whatever is supposed to be measured. Test reliability is usually thought as the degree to which the test is free from compensating error. "

On testing the reliability of tool via IBM SPSS Statistics 23, the value of Cronbach alpha for

Pittsburgh sleep quality index turned out to be around 0.709.

- On testing the reliability of tool via IBM SPSS Statistics 23, the value of Cronbach alpha for neuropathy disability **score** turned out to be 0.78.

Conclusion – According to the above mentioned data, the tools used during pilot study is acceptable and reliable.

Pilot Study

A pilot study was conducted with the following objectives:

- To assess the availability of the study subject.
- To assess the feasibility and practicability of using the research tool.
- To refine and find out the procedural deficiency in methodology.
- To estimate the time required for each study subjects.

Pilot study was carried out in month of May (2023). Self-introduction was given to the participants and written informed consent was taken from the patients for the data collection. Self-reported method (pen paper) was used to collect the data. The tool was found to be feasible and methodology was found to be appropriate. It took 30-40 minutes. The subjects of the pilot study were also included in the main research.

Analysis and Interpretation: Analysis and interpretation of data collected from 60 Diabetes mellitus type 2 patients of district Solan, Analysis of data was done according to the objectives of the study.

1. Section I- Frequency and Percentage Distribution of the Sample Characteristic
2. Section II- Frequency and Percentage Distribution of Clinical Profile Data
3. Section III- Pre Score of Pittsburgh Sleep Quality Index(PSQI) of experimental and control group.
4. Section IV- Pre score of sensory peripheral neuropathy of experimental and control group.

5. Section V- Mean, Standard deviation, M%, Mean difference and t value of sleep quality and sensory peripheral neuropathy between experimental and control group in pre-test.
6. Section VI- Mean, Standard deviation, M%, Mean difference and t value of sleep quality and sensory peripheral neuropathy between experimental and control group in post-test.
7. Section VII-Comparison between post score of post sleep quality and sensory peripheral neuropathy in Type II diabetes mellitus patients in selected areas in district Solan in experimental group.
8. Section VIII -The association of post sleep quality with selected socio-bio demographic profile in Type II diabetes mellitus patients in selected areas in district Solan of both groups.
9. Section IX -The association of sensory peripheral neuropathy with selected socio-bio demographic profile in Type II diabetes mellitus patients in selected areas in district Solan of both groups.

Section -1

FREQUENCY AND PERCENTAGE DISTRIBUTION OF THE SAMPLE CHARACTERISTIC

The section describes the socio demographic variables of Diabetes mellitus type 2 patients under the study. The sample size consists 60 Diabetes mellitus type 2 patients. The selected variables describe in terms of age, gender, educational status, religion, residential area, marital status, occupational status.

TABLE 4.1: FREQUENCY AND PERCENTAGE DISTRIBUTION OF THE SAMPLE CHARACTERISTIC

N=60

S.no.	Socio Demographic profile	Experimental group n=30 f(%)	Control group n=30 f (%)	Chi Square	df	p value
1	Age					
1.1	35-45	7(23.3)	3(10)	4.400	3	0.22 ^{NS}
1.2	46-55	9(30)	10(33.3)			
1.3	56-65	4(13.3)	8(26.7)			
1.4	>65	10(33.3)	9(30)			
2	Gender					
1.1	Male	12(40)	11(36.7)	3.267	1	0.71 ^{NS}
1.2	Female	18(60)	19(63.3)			
1.3	Others	0(0)	0(0)			
3	Educational status					
1.1	Non –Literate	13(43.3)	14(46.7)	17.73	3	0.00*
1.2	Elementary	11(36.7)	7(23.3)			
1.3	Secondary	4(13.3)	4(13.3)			
1.4	Graduate	2(6.7)	5(16.7)			
1.5	Post Graduate	0(0)	0(0)			
4	Religion					
1.1	Hindu	30(100)	30(100)	Not applicable		
1.2	Muslim	0(0)	0(0)			
1.3	Sikh	0(0)	0(0)			
1.4	Christian	0(0)	0(0)			
5	Residential area					
1.1	Urban	5(16.7)	7(23.3)	4.900	2	0.08 ^{NS}
1.2	Semi-urban	12(40)	13(43.3)			
1.3	Rural	13(43.3)	10(33.3)			
6	Marital status					
1.1	Married	17(56.7)	19(63.3)	42.80	3	0.00*
1.2	Never married	1(3.3)	4(13.3)			
1.3	Separated	4(13.3)	1(3.3)			
1.4	Widow	8(26.7)	6(20)			

7	Occupational status					
1.1	Govt. job	6(20)	3(10)	4.133	3	0.65 ^{NS}
1.2	Private job	7(23.3)	11(36.7)			
1.3	Farmer	6(20)	8(26.7)			
1.4	Others	11(36.7)	8(26.7)			

*Significant ($p < 0.05$)^{NS} Non Significant ($p > 0.05$)

The data presented in table 4.1 with respect to age, the majority (33.3%) subjects in experimental group were in age group of more than 65 years followed by (33.3%) subjects in control group were in age group of between 46-55 years. Majority of subjects were female (60%) in experimental group and (63.3%) in control group. Majority of subjects were non literate (43.3%) in experimental group followed by (46.7%) in control group. Maximum number of subjects in experimental and control group were Hindu (100%). Majority of subjects belongs to rural area (43.3%) and in experimental group where as in control group (43.3%) were from semi urban. Maximum number of subject were married (56.7%) in experimental group and followed by (63.3%) in control group. Majority of subjects were belonging to other occupational status (36.7%) in experimental group and (36.7%) were doing private jobs.

SECTION -II

FREQUENCY AND PERCENTAGE DISTRIBUTION OF CLINICAL PROFILE DATA

The section describes the clinical profile variables of Diabetes mellitus type 2 patients under the study. The sample size consists 60 Diabetes mellitus type 2 patients. The selected variables describe in terms of duration of illness, history of diabetes mellitus in family, previous RBS, FBS level, do you perform regular exercises, dietary management, are you on hypoglycaemic medication, previous knowledge.

TABLE 4.2: FREQUENCY AND PERCENTAGE DISTRIBUTION OF CLINICAL PROFILE DATA

N=60

CLINICAL PROFILE DATA						
S.no	Socio demographic profile	Experimental group (n=30) f(%)	Control group (n=30) f(%)	Chi Square	df	p value
1	Duration of Illness					
1.1	<5years	4(13.3)	4(13.3)	11.70	2	0.07 ^{NS}
1.2	5-10ears	12(40)	17(56.7)			
1.3	>10years	14(46.7)	9(30)			
2	Any History of Diabetes Mellitus in Family					
1.1	Yes	15(50)	13(43.3)	0.26	1	0.60 ^{NS}
1.2	No	15(50)	17(56.7)			
3	Previous RBS/ FBS Level					
1.1	Less than 160mg/dl	0(0)	0(0)	Not applicable		
1.2	More than 160mg /dl	30(100)	30(100)			
4	Do you perform regular exercise					
1.1	Yes	13(43.3)	14(46.7)	0.60	1	0.43 ^{NS}
1.2	No	17(56.7)	16(53.3)			
5	Dietary management					
1.1	Yes	0(0)	0(0)	5.40	1	0.80 ^{NS}
1.2	No	9(30)	12(40)			
1.3	If yes specify.....	21(70)	18(60)			
6	Are you on hypo glycaemic medication					
1.1	Yes	0(0)	0(0)	17.06	1	0.43 ^{NS}
1.2	No	3(10)	11(36.7)			
1.3	If yes then specify.....	27(90)	19(63.3)			
7	Previous knowledge					
1.1	Yes	15(50)	18(60)	0.600	1	0.43 ^{NS}
1.2	No	15(50)	12(40)			

*Significant ($p < 0.05$)^{NS} Non Significant ($p > 0.05$)

The data presented in table 4.2 depicts the majority (46.7%) subjects in experimental group were suffering from the illness from more than 10 years whereas (56.7%) subjects were suffering from the illness from 5-10 years in control group. In both experimental and control group majority of subjects (50%) were having history of diabetes mellitus in the family. Majority of subjects (100%) in experimental and control group were having their FBS & RBS levels more than 160mg/dl. In Experimental group and control group majority of subjects (56.7%) followed by (53.3%) were not performing regular exercises. Majority of subject (70%) in experimental group and in control group (60%) subjects were following the various dietary management routine. Majority of subjects (90%) in experimental group were taking various hypoglycaemic medications followed by (63.3%). Majority of subjects (50%) in both experimental and control group were having previous knowledge regarding the diabetes mellitus.

SECTION -III

TABLE 4.3: Pre Score of Pittsburgh Sleep Quality Index(PSQI) of experimental and control group.

The section describes the-

- Frequency and percent distribution of Pittsburgh Sleep Quality Index of experimental and control group before intervention
- The score presented in table 4.3 depicts the classification of PSQI scores among the good, average and poor. Good begins from 0-7, average continues from 8-14 and poor ends at 15-21.

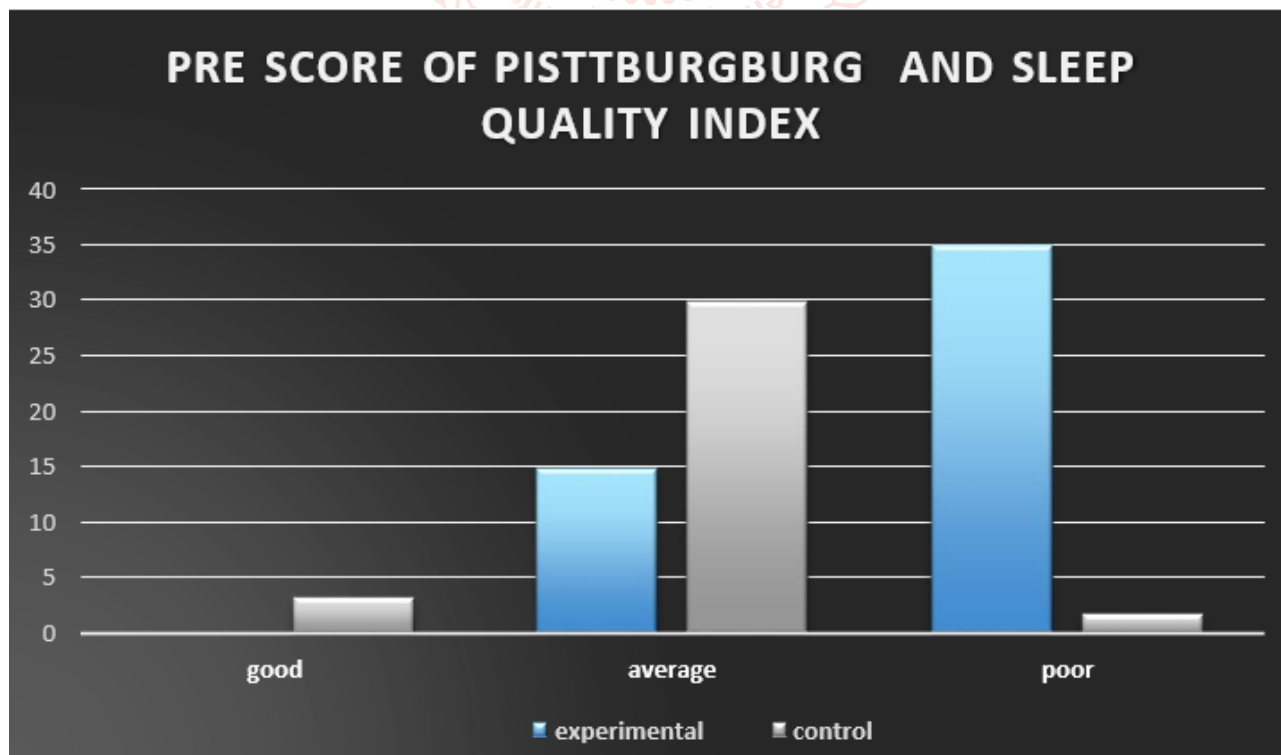
N=60			
PSQI	SCORES	EXPERIMENTAL GROUP f (%) n=(30)	CONTROL GROUP f (%) (n=30)
GOOD	0-7	0(0)	2(3.3)
AVERAGE	8-14	9(15)	18(30)
POOR	15-21	21(35)	10(16.7)

Minimum Score = 0 Maximum Score = 21

Experimental group: - Mean1 ± SD1 =16.40 ± 1.97

Control group: -Mean2 ± SD2 =13.40 ± 4.50

The table 4.3 depicts that in experimental group (0%) subjects were having good PSQI score whereas only (3.3%) subjects were having good PSQI score in control group. (15%) subjects belong to experimental group whereas (30%) subjects were having average PSQI score in control group. Majority of subject (35%) were having poor PSQI in experimental group whereas (16.7%) subjects were having poor PSQI score in control group.



SECTION-V**Table 4.5- Mean, Standard deviation, M%, Mean difference and t value of sleep quality and sensory peripheral neuropathy between experimental and control group in pre-test.**

N=60

Variables	Group	Mean ±SD	M%	Mean difference	t test	p value
PQSI	Experimental group (30)	16.40±1.97	54.66	3	3.47	0.12 NS
	Control group (30)	13.40±4.50	44.66			
SENSORY PERIPHERAL NEUROPATHY	Experimental group (30)	8.03±1.84	26.76	0.57	1.24	0.22 NS

Significant (p < 0.05) ^{NS} Non Significant (p > 0.05)

Table 4.5 depicts that before intervention of foot massage in experimental group sleep quality mean score was 16.40 with standard deviation of 1.97 and in control group before giving intervention mean score was 13.40 with standard deviation of 4.50. The M% was 3 and the computed “t” value (3.47) was found not to be statistically significant at 0.00 level of significance in experimental and control group.

It also depicts that before intervention of foot massage in experimental group sensory peripheral neuropathy mean score was of 8.03 with standard deviation of 1.84 and in control group before giving intervention mean score was 7.46 with standard deviation of 1.85. The M% was 0.57 and the computed “t” value (0.22) was found not to be statistically significant at 0.00 level of significance in experimental and control group.

Section -VI**Table 4.6 Mean, Standard deviation, M%, Mean difference and t value of pre sleep quality and sensory peripheral neuropathy between experimental and control group in post-test.**

Variables	Group	Mean±SD	M%	Mean difference	t test	p value
PQSI	Experimental group (30)	9.36±2.76	31.2	0.44	0.83	0.02 *
	Control group (30)	9.80±3.17	32.66			
SENSORY PERIPHERAL NEUROPATHY	Experimental group (30)	6.60±1.77	22	0.83	1.87	0.04 *
	Control group (30)	7.43±1.95	24.76			

Significant (p < 0.05) ^{NS} Non Significant (p > 0.05)

Table 4.6 depicts that after intervention of foot massage in experimental group sleep quality mean score was 9.36 with standard deviation of 2.76 and in control group mean score was 9.80 with standard deviation of 3.17. The M% was 0.44 and the computed “t” value (0.83) was found to be statistically significant at 0.02 level of significance in experimental and control group.

It also depicts that after intervention of foot massage in experimental group sensory peripheral neuropathy mean score was of 6.60 with standard deviation of 1.77 and in control group mean score was 7.43 with standard deviation of 1.95. The M% was 1.87 and the computed “t” value (0.07) was not found to be statistically significant at 0.04 level of significance in experimental and control group.

Section -VII**TABLE 4.7: Comparison between post score of post sleep quality and sensory peripheral neuropathy in Type II diabetes mellitus patients in selected areas in district Solan in experimental group.**

N=60

VARIABLES	Mean ± SD	M%	R	Mean difference	t	p value
POST SLEEP QUALITY INDEX	9.33±2.76	31.1	0.22	2.73	4.13	0.00*
SENSORY PERIPHERAL NEUROPATHY	6.60±1.77	22	1			

Significant (p < 0.05) ^{NS} Non Significant (p > 0.05)

Table 4.7 Depicts that there was the significant difference (at the level of 0.005) between the mean score of post-test among experimental group of PSQI and Sensory Peripheral Neuropathy. So the hypothesis will be rejected.

Section VIII

Table4.8: The association of post sleep quality with selected socio-bio demographic profile in Type II diabetes mellitus patients in selected areas in district Solan of both groups.

N=60

Socio Demographic profile	Experimental group		F/T Value	P value	df	Control group		F/T Value	P value	df
	n1	Mean ± SD				n 2	Mean± SD			
AGE 1.1 35-45 1.2 46-55 1.3 56-65 1.4 >65		2.56±1.19					2.76±1.0			29
GENDER 1.1. Male 1.2. Female 1.3. Others		1.60± 0.49	1.10	0.40 ^{NS}	29		1.63±0.49	1.44	0.23 ^{NS}	29
EDUCATIONAL STATUS 1.1 Non - Literate 1.2 Elementary 1.3 Secondary 1.4 Graduate 1.5 Post Graduate		1.83±0.91	0.64	0.74 ^{NS}	29		2.0±1.14	0.46	0.84 ^{NS}	29
RELIGION 1.1. Hindu 1.2. Muslim 1.3. Sikh 1.4. Christian		1.0±0.0	Not applicable		1.0±0.0	Not applicable				
RESIDENTIAL AREA 1.1. Urban 1.2. Semi-urban 1.3. Rural		2.26±0.73	1.98	0.09 ^{NS}	29		2.1±0.75	0.85	0.55 ^{NS}	29
MARITAL STATUS 1.1. Married 1.2. Never married 1.3. Separated 1.4. Widow		2.10±1.34	1.31	0.29 ^{NS}	29		1.80±1.21	0.30	0.94 ^{NS}	29
OCCUPATIONAL 1.1. Government job 1.2. Private job 1.3. Farmer 1.4. Others		2.73±1.17	0.91	0.53 ^{NS}	29		2.70±0.98	1.24	0.31 ^{NS}	29

Significant (p < 0.05) ^{NS}

Non Significant (p > 0.05)

Socio Demographic profile	Experimental group		F/T Value	p value	df	Control group		F/T Value	P value	df
	n1	Mean + SD				n2	Mean + SD			
DURATION OF ILLNESS 1.1. < 5 years 1.2. 5-10 years 1.3. > 10 years		2.33±0.71	0.90				2.16±0.64			
HISTORY OF DIABETES MELLITUS IN FAMILY 1.1. Yes		1.50±0.50	0.86	0.55 ^{NS}	29		1.56±0.50	1.25	0.31 ^{NS}	29

1.2. No										
PREVIOUS RBS/ FBS LEVEL										
1.1. Less than 160 mg/dl		2.0±0.0	Not applicable				2.0±0.0	Not applicable		
1.2. More than 160 mg/dl										
DO YOU PERFORM REGULAR EXERCISES?										
1.1. Yes		1.56±0.50	1.15	0.21 ^{NS}	29		1.53±0.50	1.47	0.22 ^{NS}	29
1.2. No										
DIETARY MANAGEMENT										
1.1. Yes		2.70±0.46	1.05	0.43 ^{NS}	29		2.60±0.49	0.30	0.94 ^{NS}	29
1.2. No										
1.3. If yes specify										
ARE YOU ON HYPOGLYCEMIC MEDICATION										
1.1. Yes		2.90±0.30	0.34	0.93 ^{NS}	29		2.63±0.49	1.81	0.13 ^{NS}	29
1.2. No										
1.3. If yes, specify										
PREVIOUS KNOWLEDGE										
1.1. Yes		1.50±0.50	0.58	0.78 ^{NS}	29		2.63±0.49	0.74	0.63 ^{NS}	29
1.2. No										

Significant (p < 0.05) ^{NS} Non Significant (p > 0.05)

Table 4.8 Shows that there was not significant association of post sleep quality with selected socio-bio demographic profile in Type II diabetes mellitus patients in selected areas in district Solan of both groups.

Table 4.9 The association of sensory peripheral neuropathy with selected socio-bio demographic profile in Type II diabetes mellitus patients in selected areas in district Solan of both groups.
N=60

Socio Demographic profile	Experimental group		F/T Value	P value	df	Control group		F/T Value	P value	df
	n1	Mean ± SD				n2	Mean± SD			
AGE										
1.1 35-45										
1.2 46-55		2.56±1.19	1.76	0.14	29		2.76±1.0	1.18	0.35 ^{NS}	29
1.3 56-65				NS						
1.4 > 65										
GENDER										
1.1 Male		1.60±0.49	1.20	0.34	29		1.63±0.49	1.74	1.51 ^{NS}	29
1.2 Female				NS						
1.3 Others										
EDUCATIONAL STATUS										
1.1 Non – Literate										
1.2 Elementary		1.83±0.91	1.16	0.36	29		2.0±1.14	0.67	0.69 ^{NS}	29
1.3 Secondary				NS						
1.4 Graduate										
1.5 Post Graduate										
RELIGION										
1.1 Hindu		1.0±0.0	Not applicable				1.0±0.0	Not applicable		
1.2 Muslim										
1.3 Sikh										
1.4 Christian										
RESIDENTIAL AREA										
1.1 Urban		2.26±0.73	0.94	0.50	29		2.1±0.75	0.46	0.84 ^{NS}	29
1.2 Semi-urban				NS						
1.3 Rural										

MARITAL STATUS									
1.1 Married									
1.2 Never married		2.10±1.34	0.69	0.69 NS	29		1.80±1.21	0.26	0.96 ^{NS} 29
1.3 Separated									
1.4 Widow									
OCCUPATIONAL									
1.1 Government job									
1.2 Private job		2.73±1.17	0.93	0.51 NS	29		2.70±0.98	0.97	0.47 ^{NS} 29
1.3 Farmer									
1.4 Others									

Significant (p < 0.05)^{NS} Non Significant (p > 0.05)

Socio Demographic profile	Experimental group		F/T Value	p value	df	Control group		F/T Value	P value	df
	n1	Mean±SD				n2	Mean±SD			
DURATION OF ILLNESS										
1.1 < 5 years										
1.2 5-10 years		2.33±0.71	0.90				2.16±0.64			
1.3 > 10 years										
HISTORY OF DIABETES MELLITUS IN FAMILY										
1.1 Yes		1.50±0.50	0.86	0.55 ^{NS}	29		1.56±0.50	1.25	0.31 ^{NS}	29
1.2 No										
PREVIOUS RBS/FBS LEVEL										
1.1 Less than 160 mg/dl										
1.2 More than		2.0±0.0	Not applicable				2.0±0.0	Not applicable		
1.3 160 mg/dl										
1.4 1.4 No										
DO YOU PERFORM REGULAR EXERCISES?										
1.1 Yes		1.56±0.50	1.15	0.21 ^{NS}	29		1.53±0.50	1.47	0.22 ^{NS}	29
DIETARY MANAGEMENT										
1.1 Yes										
1.2 No		2.70±0.46	1.05	0.43 ^{NS}	29		2.60±0.49	0.30	0.94 ^{NS}	29
1.3 If yes specify										
ARE YOU ON HYPOGLYCEMIC MEDICATION										
1.1 Yes		2.90±0.30	0.34	0.93 ^{NS}	29		2.63±0.49	1.81	0.13 ^{NS}	29
1.2 No										
1.3 If yes, specify										
PREVIOUS KNOWLEDGE										
1.1 Yes		1.50±0.50	0.58	0.78 ^{NS}	29		2.63±0.49	0.74	0.63 ^{NS}	29
1.2 No										

Significant (p < 0.05)^{NS} Non Significant (p > 0.05)

Table 4.9 Shows that there was not significant association of sensory peripheral neuropathy with selected socio-bio demographic profile in Type II diabetes mellitus patients in selected areas in district Solan of both groups.

Summary

This chapter describes about analysis of data and interpretation of the findings of the study. The analysis was organized in nine section. Frequency and percentage was used to analyse the socio-bio demographic profile and Chi-square was used to check the homogeneity in socio-bio demographic profile. Mean, Standard deviation, M%, Mean

difference and t test were used to compare the sleep quality and sensory peripheral neuropathy between experimental and control group in pre-test and post-test. Anova and paired t test is used to check the association.

Discussion

The purpose of the present study to assess the effectiveness of foot massage on sleep quality and

sensory peripheral neuropathy in type -II Diabetes Mellitus Patients of District Solan. The present descriptive study was conducted to assess the effectiveness of Diabetic Foot Massage on sleep quality in patients with Sensory Peripheral Neuropathy in Diabetic patients.

Diabetes mellitus is a metabolic condition due to deficiency in insulin secretion. Typical signs include thirst, polyuria, eye sight and weight loss. Although it affects both men and women equally. Most diabetics—about half of them—have not received a diabetes diagnosis and are not aware of the condition. Additionally, about 18% of residents here are prediabetic, meaning they have a 50% probability of getting diabetes within the next ten years. China (140.5 and million people) and India (101.0 and 134.2 million people) are anticipated to continue to have the largest burden of diabetes in 2030 and 2045, respectively.

A Qualitative research approach and non- probability Purposive Technique survey research design was used including sample was comprised of 60 patients in which 30 patients were in experimental group and 30 were in control group in selected area district Solan. Data was tabulated and analysis are done by using descriptive and inferential statistics.

The analysis of sociodemographic profile Diabetes prevalence in India increased from 7.1% in 2009 to 8.9% in 2019. Impaired Glucose Tolerance is thought to affect 25.2 million adults currently, and it's predicted that number will rise to 35.7 million by the year 2045. With 77 million diabetics, India comes in second place behind China in the world's diabetes epidemic. There are 12.1 million of them who are over 65, and by the year 2045, that number is expected to rise to 27.5 million.

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