

A comparative study on the effectiveness of foot reflexology on glycemetic levels among diabetics with oral hypoglycemic agents and insulin therapy from a selected old age home at Mangalore

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Abstract

The World Health Organization (WHO) has estimated that Diabetes will be one of the world leading causes of death and disability with next quarter century. The global epidemic of type II Diabetes, predominantly affects the people of the retirement age. Half of all people with Diabetes older than 65 years are hospitalized each year, and severe and life threatening complications often contribute to the increased rate of hospitalization. Purpose of this study was to evaluate the effectiveness of Foot Reflexology on glycemetic levels among Diabetics with Oral Hypoglycemic agents and Insulin. Sixty Diabetics were selected through the simple random sampling technique and their Post Prandial Blood Sugar (PPBS) was checked as pre test. Experimental group and Control group composed of 30 samples (15 on Oral Hypoglycemic agent and 15 on Insulin) respectively. 3 members each, from both the Experimental groups (I and II), received Foot Reflexology daily for 3 weeks, and no treatment was given to the Control group. All the participants were reassessed after 3 weeks to assess the effectiveness of the intervention. Findings revealed that mean pre test glycemetic level of Experimental group I (166.13) was higher as compared with post test score (117.93) and the mean pre test glycemetic level of Experimental group II (153.73) was higher as compared with post test score (109.80). Also, there was a significant difference between the Experimental group II and Control group II ($p = 0.005$). Thus, the study revealed that Foot Reflexology was found to be very effective in reducing the serum glycemetic levels among the Diabetics.

Keywords: Foot Reflexology, Glycemetic levels, Diabetics, Insulin therapy, Oral Hypoglycemic Agents

1. Introduction

Diabetes mellitus is a hormonal metabolic disease characterized by hyperglycemia resulting from a deficiency in insulin secretion, insulin action or both. It is an "iceberg" disease which is manifested as a chronic, progressive and degenerative disorder. More than 90% of all those with Diabetes have type II Diabetes; half of whom remain undiagnosed. It has been estimated that newly diagnosed patients have been hyperglycemic for 5 –10 years before being diagnosed^[1].

Amongst the elderly folks, type II Diabetes is a growing problem and glucose tolerance is a common occurrence. Elderly people are often more frail and susceptible to illness. There are numerous physiological changes undergoing, as the body grows and adapts to the age. Old aged people who are at risk of developing Diabetes, or those who have already had the disease, may not exhibit the expected classic symptoms. Age related changes cause some symptoms to be masked, or harder to spot and even manage. Furthermore, exercise and adapting a diet can be more difficult for elderly people, and problems can arise in these areas^[2].

Reflexology, or Zone therapy, refers to an Alternative therapy, which involves the act of physical application of pressure on to the feet, hands, or ears with specific thumb, and hand techniques without the use of any lotion or oil. It is based on the system of zones and reflex areas that reflect an image of the body on the feet and hands, leading to a physical change to the body^[3].

Reflexology for Diabetes has proved to be a very effective treatment, as it helps in controlling the blood sugar levels. With the proper use of reflex points and application of

adequate pressure to these reflex points, Reflexology acts as an aid to Diabetes control^[3].

1.1 Background of the study

The World Health Organization (WHO) has estimated that Diabetes will be one of the world leading causes of death and disability with next quarter century. They estimated that the number of Diabetics has surged drastically and the statistics are alarming globally; 108 million people were diagnosed with Diabetes in 1980, the number rose to 422 million Diabetics in 2014^[4].

The global epidemic of type II Diabetes, predominantly affects the people of the retirement age. Half of all people with Diabetes older than 65 years are hospitalized each year and severe and life threatening complications often contribute to the increased rate of hospitalization^[4].

India (named as The Diabetic Capital of the World by the WHO) tops the list of 10 countries, followed by China. New figures indicate that the epidemic is progressing rapidly across the nation, reaching to 64.5 million people, as per the statistics of the International Diabetes Federation. More than half of diabetics (53%) are above 60 years and more than 85% are above 45 years. Every 5th patient visiting a consulting physician is a Diabetic, and, every 7th patient visiting a family physician is a Diabetic^[5].

In South India, the incidence of Diabetes and impaired glucose tolerance had been increasing since 1984. The total percentage of Diabetes Mellitus was 19.78%, 16.06% in males and 22.04% in females of Karnataka^[6].

The dramatic rise in the prevalence of Diabetes Mellitus is associated with changes in lifestyle like relative physical

inactivity, obesity and change in food habits, lack of awareness about the disease among the public as well as not seeking early identification, timely treatment and improper monitoring of disease by the health authorities [7].

1.2 Need for the study

Owing to, better health care facilities for all, by 2000, as well as increasing life expectancy, the number of elderly is increasing at a faster rate than the whole population, and now constitute a good proportion of the general population. From a global perspective, the elderly will constitute one-third of the total population of the world by the year 2050 [8].

India is amidst a Demographic transition with a trend towards an aging population. It constitutes a figure of 8.3% of the general population with the elderly people and the percentage is projected to rise to 9% by 2016, according to one estimate [9]. With the currently accepted National Diabetes Data Group criteria, the prevalence of Diabetes Mellitus increase from 2% in the age group 20 – 44 years to nearly 18% in the age group of 65 -74 years [10].

Old people often have limited regenerative abilities and are more prone to disease than younger adults. They display extensively heterogeneous health conditions ranging from robust to subtle. This heterogeneity and the individual medical complexity make medical care for older patients particularly challenging. As they get older, their risk of getting Diabetes will increase. The glucose tolerance deteriorates with advancing age. Severity and the effects of Diabetes on everyday functioning act a paramount significance [10].

Factors such as changes in the diet, decreased physical activity and obesity had been suggested as causes for decreased glucose tolerance in the elderly. Recent studies, however, suggest that, besides these factors, impaired insulin secretion may play an important role in the pathogenesis of carbohydrate intolerance in the elderly [11].

Unfortunately, many people choose drugs as a first option, because drugs are convenient, and mistakenly believe that they give a free pass to continue to stuff our mouths with the junk food that's killing us. But, these treatments have their own drawbacks ranging from development of resistance and adverse effects to lack of responsiveness in a large segment of the client population. Furthermore, none of the glucose lowering agents adequately control the hyperlipidemia that frequently met with the disease [12].

The limited usage of existing pharmacological agents either in terms of efficiency/safety, together with the emergence of the disease into global epidemic have encouraged to explore the efficacy of Complementary therapies/ Alternative therapy that can manage Diabetes more efficiently and safely [13].

Recent studies indicate that Alternative methods are useful in controlling the glycemic levels. A study, which was conducted in All India Institute of Medical Sciences, New Delhi, India, to evaluate the efficacy of Foot Reflexology exhibited the efficient utilization of Reflexology therapy integrated with Conventional medicines in managing Diabetes. Subjects were randomly distributed into Reflexology and Control groups in which both groups were treated with ongoing pharmacological drugs. Reflexology group was additionally treated with Reflexology therapy. The outcome measure was a reduction in glycemic levels in the Reflexology group [14].

Hence, this study was planned to find the efficacy of Foot Reflexology on glycemic levels among the elderly Diabetics.

1.3 Statement of the problem

A comparative study on the effectiveness of Foot Reflexology on glycemic levels among Diabetics with Oral Hypoglycemic agents and Insulin therapy from a selected old age home at Mangalore

2. Objectives of the study

- To assess the effectiveness of Foot Reflexology on glycemic levels among Experimental group I and Experimental group II.
- To find the association between the pre intervention glycemic levels with selected Demographic variables.

2.1 Operational definitions

1. Effectiveness

In this study, effectiveness refers to the extent to which, Foot Reflexology achieve the desired effect in reducing the glycemic levels among the Diabetics, as measured by postprandial blood glucose levels.

2. Foot Reflexology

In this study, Foot Reflexology refers to the process of applying pressure over the feet using the thumb, without using lotion or oil, for 20 minutes three times a week, for a period of one month.

3. Glycemic levels

In this study, the glycemic level refers to the amount of serum glucose level present in the blood of a person, as measured by the PPBS (mg/dl).

4. Diabetics

In this study, Diabetics refer to the group of people who are diagnosed with type II Diabetes Mellitus.

5. Oral Hypoglycemic agents

In this study, Oral Hypoglycemic agents refer to the oral drugs, which help to lower the serum glucose levels of an individual.

6. Insulin therapy

In this study, Insulin therapy refers to the technique of treatment with a hormone, in the form of injection, which removes excess glucose from the blood.

2.2 Experimental group I

In this study, Experimental group I refers to the group of Diabetics, who are on Oral Hypoglycemic drugs, who receives Foot Reflexology treatment.

2.3 Experimental group II

In this study, Experimental group II refers to the group of Diabetics, who are on Insulin therapy, who receives Foot Reflexology treatment.

2.4 Control group I

In this study, Control group I refers to the group of Diabetics, who are on Oral Hypoglycemic drugs who does not receive Foot Reflexology treatment.

2.5 Control group II

In this study, Control group II refers to the group of Diabetics, who are on Insulin therapy who does not receive Foot Reflexology treatment.

2.6 Assumption

The study assumes that Foot Reflexology may be an effective strategy in reducing the glycemetic level of Diabetics.

3. Hypotheses

H1 : There will be a difference in the glycemetic levels of the Diabetics before and after the Foot Reflexology.

H2 : There will be an association between the pre intervention glycemetic levels with selected Demographic variables.

3.1 Delimitation

The study is delimited to Diabetics residing in an old age home at Mangalore.

3.2 Scope of the study

- The study will assess the glycemetic levels of Diabetics from a selected old age home at Mangalore.
- The study aims at assessing the effect of Foot Reflexology on glycemetic levels among Diabetics with Oral Hypoglycemic agents and Insulin therapy from a selected old age home at Mangalore.
- The findings of the study will encourage the authorities of old age homes to implement Foot Reflexology to more Diabetic inmates.

4. Materials and Methods

4.1 Research Approach

Evaluative approach was used for the present study.

4.2 Research Design

The research design adopted for the study was two group experimental design. This design was used to test the effectiveness of foot reflexology on glycemetic levels among the Diabetics. It is composed of,

- Experimental group I – group of Diabetics, who were on Oral Hypoglycemic drugs and received Foot Reflexology treatment.
- Experimental group II – group of Diabetics, who were on Insulin therapy and received Foot Reflexology treatment.
- Control group I – group of diabetics, who were on Oral Hypoglycemic drugs, for whom Foot Reflexology treatment was not given.
- Control group II – group of diabetics who were on insulin therapy, for whom Foot Reflexology treatment was not given.

4.3 Variables used for the study

The variables under the study include

4.4 Independent variables

In this study, Foot Reflexology was the independent variable.

4.5 Dependent variables

The dependent variable in the present study was Glycemetic level (mg/dL), measured by calibrated glycometer.

4.6 Extraneous variables

In this study, age, gender, educational status, dietary pattern, history of smoking and alcohol consumption were the extraneous variables.

4.7 Setting of the study

This study was conducted in a selected old age home in Mangalore. The researcher selected the setting for the following reasons:

- Availability of the sample
- Economic feasibility of conducting the study.

4.8 Population

The study population was Diabetics aged above 50 years, irrespective of gender.

4.9 Sample and Sampling Technique

From a selected old age home at Mangalore, 60 Diabetics, who fulfilled the inclusion criteria were selected as the sample. Simple random sampling was used to allocate the subjects into Experimental and Control groups.

4.10 Sampling Criteria

Inclusion Criteria

Diabetics who,

- Are aged 50 years and residing in old age homes.
- Are on insulin therapy and oral hypoglycemic agents.
- Can read any one of the language such as english, kannada.

4.11 Exclusion criteria

Diabetics who are,

- Having Co Morbid Conditions Such As Hypertension, Kidney Diseases and Cardiovascular Diseases.
- Recently Diagnosed With Diabetes Mellitus.
- Having Diabetic foot, Psychiatric illness, and end stage of the disease.

4.12 Protection of Human Subjects Rights

- Study proposal was presented to the ethical committee for ethical consideration and obtained permission.
- The permission for the study was received from the concerned authority of old age home at Mangalore
- Informed consent is obtained from the participants for the study, after proper explanation of the purpose, usefulness of the study and, assurance was given about the confidentiality of their responses.

4.13 Data Collection Process

60 Diabetics aged above 50 years, irrespective of gender, were selected randomly, using simple random sampling. Participants (both of the Experimental groups and the Control groups) were requested to fill the demographic Proforma initially, and the pre test was done (for both the Experimental

groups and the Control groups), by checking the serum glyceic levels 2 hrs after lunch (Post Prandial Blood Sugar-PPBS). Experimental groups consisted of 30 samples (15 on oral hypoglycemic agents and 15 on insulin therapy). Daily 3 members from both the Experimental group, were selected for the treatment, for 3 weeks. The control group also, composed of 30 diabetics, who are on oral hypoglycemic drugs and insulin therapy, for whom the foot reflexology treatment were not given. The participants were reassessed after 3 weeks to assess the effectiveness of the intervention by checking the PPBS.

5. Result

The data collected from the subjects were organized and presented under the following sections:

Section I: Description of the sample according to the Demographic characteristics

The data obtained on sample characteristics were analyzed using Descriptive statistics. The frequency of the Diabetics by their Demographic characteristics is presented in Table-1

Table 1(a): Distribution of samples according to Demographic variables. (n = 60)

| Demographic Variables | | Exp. Group I | Control Group I | Exp. Group II | Control Group II |
|------------------------|-----------------------|--------------|-----------------|---------------|------------------|
| Gender | Male | 2 | 5 | 6 | 6 |
| | Female | 13 | 10 | 9 | 9 |
| Educational status | No formal education | 3 | 3 | 2 | 2 |
| | Primary | 9 | 11 | 9 | 12 |
| | High school | 2 | 1 | 4 | 1 |
| | Graduation and above | 1 | 0 | 0 | 0 |
| Dietary pattern | Vegetarian | 1 | 2 | 0 | 1 |
| | Mixed | 14 | 13 | 15 | 14 |
| Smoking | Yes | -- | -- | -- | -- |
| | No | 15 | 15 | 15 | 15 |
| Alcohol consumption | Yes | -- | -- | -- | -- |
| | No | 15 | 15 | 15 | 15 |
| Diagnosis of DM | Health camps | -- | -- | -- | -- |
| | Routine checkups | 15 | 15 | 14 | 13 |
| | Before any surgery | -- | -- | -- | -- |
| | After having symptoms | -- | -- | 1 | 2 |
| Diabetic complications | Yes | -- | -- | -- | -- |
| | No | 15 | 15 | 15 | 15 |

Table 1(b): Distribution of samples according to Demographic variables. (n = 60)

| Variables | | | Exp. Group I | Control Group I | Exp. Group II | Control Group II |
|---------------------------|---------------|-----|--------------|-----------------|---------------|------------------|
| Alternative therapy | Homeopathy | Yes | 1 | 0 | 1 | 1 |
| | | No | 14 | 15 | 14 | 14 |
| | Naturopathy | Yes | -- | -- | -- | -- |
| | | No | 15 | 15 | 15 | 15 |
| | Ayurveda | Yes | 1 | 1 | 1 | 0 |
| | | No | 14 | 14 | 14 | 15 |
| Measures taken against DM | Yoga | Yes | -- | -- | -- | -- |
| | | No | 15 | 15 | 15 | 15 |
| | Exercise | Yes | -- | -- | -- | -- |
| | | No | 15 | 15 | 15 | 15 |
| | Diabetic diet | Yes | 3 | 2 | 3 | 6 |
| | | No | 12 | 13 | 12 | 9 |

Table 1(c): Distribution of samples according to Demographic variables. (n = 60)

| Variables | | Exp. Group I | Control Group I | Exp. Group II | Control Group II |
|--------------------------------------|------|--------------|-----------------|---------------|------------------|
| Age | Min. | 52 | 53 | 53 | 51 |
| | Max. | 76 | 67 | 71 | 69 |
| | Mean | 62.5 | 60.9 | 61.6 | 61 |
| | S.D | 7.5 | 4.3 | 4.9 | 5.2 |
| Duration of stay in the old age home | Min. | 1 | 1 | 2 | 3 |
| | Max. | 33 | 17 | 22 | 19 |
| | Mean | 11.8 | 7.5 | 8.9 | 9.5 |
| | S.D | 9.0 | 4.7 | 5.2 | 3.9 |
| Duration of DM | Min. | 1 | 1 | 1 | 1 |
| | Max. | 10 | 9 | 12 | 11 |
| | Mean | 4.8 | 4.8 | 6.3 | 5.1 |
| | S.D | 2.6 | 2.3 | 3.2 | 2.8 |
| Duration of insulin or oral | Min. | 1 | 1 | 1 | 1 |

| | | | | | |
|---------------------|------|-----|-----|-----|-----|
| hypo-glycemic drugs | Max. | 10 | 9 | 12 | 11 |
| | Mean | 4.6 | 4.8 | 6.3 | 5.1 |
| | S.D | 2.7 | 2.3 | 3.2 | 2.8 |

The above table describes the following findings:

- Minimum age of the Experimental group I (Oral Hypoglycemic drugs with Foot Reflexology) was 52 and the maximum was 76; for the Experimental group II (Insulin therapy with Foot Reflexology) 53 was the minimum age and 71 was the maximum.
- Majority of Diabetics were females (41) and males were 19 in number.
- Most of the Diabetics (41) had primary education, 10 had no formal education, 8 were having a high school education, and only 1 have undergone graduation.
- Majority of the Diabetics was having a mixed diet pattern (56) and 4 were vegetarians.
- None of the Diabetics were having the habit of smoking and alcohol consumption.
- Mostly Diabetes was diagnosed through routine check up (57) and 3 were diagnosed after having symptoms.
- Minimum number of duration of stay in old age home for the Experimental group I (Oral Hypoglycemic drugs with Foot Reflexology) was 1 and the maximum was 33; for the Experimental group II (Insulin therapy with Foot Reflexology), 2 was the minimum and 22 was the maximum.
- None of the Diabetics were having diabetic complications and other diseases.
- Only a few of the Diabetics have exposed to alternative therapies such as homeopathy (3), and Ayurveda (3).
- Measures against DM like diabetic diet were practiced by a few diabetics (14).
- The minimum number for the duration of DM in the Experimental group I (Oral Hypoglycemic drugs with Foot Reflexology) was 1 and 10 was the maximum number; in the Experimental group II (Insulin therapy with Foot Reflexology), 1 was the minimum and 12 was the maximum.
- In the Experimental group I (Oral Hypoglycemic drugs with Foot Reflexology), minimum number for the duration of oral drugs/ insulin was 1 and 10 was the maximum; 1 was the minimum number and 9 was the maximum for the Experimental group II (Insulin therapy with Foot Reflexology).

Section II: Effectiveness of Foot Reflexology on glycemc levels among Experimental group I and Experimental group II.

In order to find the significant difference between the glycemc levels of the Diabetics before and after the Foot Reflexology, Paired t test was used.

Table 2(a): Difference between pre test and post test glycemc levels of the Diabetics by using Paired t test. (n = 60)

| Group | | Mean | SD | t Value | p Value |
|-----------------------|-----------|--------|-------|---------|---------|
| Experimental group I | Pre test | 166.13 | 54.16 | 7.77 | <0.001 |
| | Post test | 117.93 | 31.15 | | |
| Experimental group II | Pre test | 153.73 | 24.74 | 10.42 | <0.001 |
| | Post test | 109.80 | 20.53 | | |

The mean pre test glycemc level of Experimental group I (166.13) was higher as compared with post test score (117.93) and the mean pre test glycemc level of Experimental group II (153.73) was higher as compared with post test score (109.80). The mean difference of glycemc levels of Experimental group I was 48.20 and of Experimental group II was 43.93 (pre – post). The calculated t value in Experimental group I is 7.77 and in Experimental group II is 10.42. The calculated values are more than the table t value, which is 2.015 and also, the p values in each Experimental group are less than 0.05. Hence, there is a difference in PPBS before and after Foot Reflexology in both the groups. It indicates that Foot Reflexology is effective in reducing the serum glycemc levels of the Diabetics at the 5% level of significance.

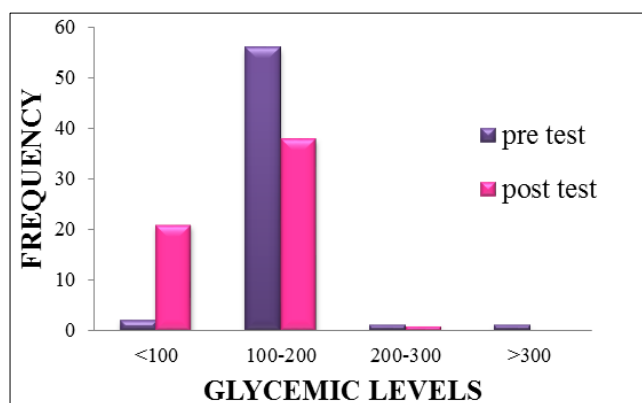


Fig 1: Bar diagram showing the frequency of glycemc levels.

Table 2(b): Difference in PPBS between Experimental groups and Control groups by using Independent sample t test. (n = 60)

| | Scores | Mean | SD | t Value | p Value |
|-----------|-----------------------|--------|-------|---------|---------|
| Pre test | Experimental group I | 166.13 | 54.16 | 0.57 | 0.125 |
| | Control group I | 157.47 | 22.24 | | |
| Post test | Experimental group I | 117.93 | 31.15 | 0.74 | 0.341 |
| | Control group I | 110.87 | 19.27 | | |
| Pre test | Experimental group II | 153.73 | 24.74 | 1.32 | 0.08 |
| | Control group II | 138.80 | 35.90 | | |
| Post test | Experimental group II | 109.80 | 20.53 | 1.76 | 0.03 |
| | Control group II | 127.33 | 32.44 | | |

The calculated t value in Experimental group I and Control group II in the post test is 1.76. The calculated value is less than the table t value, which is 2.015 and also, the p values are less than 0.05. It indicates that, there is a difference in PPBS for the Experimental group II (after Foot Reflexology) and the Control group II and there is no difference between other groups. Hence, Foot Reflexology is effective in the Experimental group II (Insulin therapy with Foot Reflexology) as compared with control group II (Insulin therapy without foot reflexology), in reducing the serum glycemc levels of the Diabetics at the 5% level of significance.

Section III: Comparison between Experimental groups and Control groups.

In order to compare the difference in mean glycemc level between the groups, one way ANOVA was used. The results

Table 3(a): Comparison between the differences of glycemc level between the experimental groups by using one way ANOVA

| Group | Mean (Pre – Post) | S.D | f Value | p Value |
|-----------------------|-------------------|-----|---------|---------|
| Experimental group I | 48.2 | 24 | 7.457 | < 0.001 |
| Experimental group II | 43.9 | 16 | | |
| Control group I | 47 | 17 | | |
| Control group II | 16.9 | 24 | | |

The calculated F value is 7.457 and it is less than the calculated F table value 2.96 and the p value is < 0.05. Hence, there is a difference in the mean glycemc level (pre – post). To know between which groups there is a difference in the glycemc level, Tukey test was used and the results are given below [Table no: 3(b)].

are given in table no: 3(a).

Table 3(b): Comparison between the differences of glycemc level between the groups by using Tukey test

| Comparison | Mean Difference | p Value |
|--|-----------------|---------|
| Experimental group I v/s Control group I | 1.2 | 0.99 |
| Experimental group II v/s Control group II | 27 | 0.005 |

From the above table; it is clear that between Experimental group II (Insulin therapy with Foot Reflexology) and Control group II (Insulin therapy without Foot Reflexology), there is a difference in the glycemc level (p = 0.005) at 5% level of significance.

Section IV: Association between the pre intervention glycemc levels with selected Demographic variables
In order to find the association between the pre intervention glycemc levels with selected Demographic variables, Chi square was used.

Table 4: Association between the pre intervention glycemc levels with selected Demographic variables by using Chi square. (n = 60)

| Demographic Variables | | < 150 | > 150 | Test Statistic | p Value | |
|---------------------------------|---------------------|-------|-------|------------------------|-----------------------|-------|
| Age | 50 - 59 years | 11 | 11 | 1.405 (Chi square) | 0.465 | |
| | 60 - 69 years | 19 | 15 | | | |
| | > 70 years | 1 | 3 | | | |
| Gender | Male | 10 | 8 | 0.156 (Chi square) | 0.456 | |
| | Female | 21 | 21 | | | |
| | No formal education | 5 | 5 | | | |
| Education status | Primary | 23 | 18 | 2.045 (Fisher’s exact) | 0.265 | |
| | High school | 3 | 5 | | | |
| | Graduation | 0 | 1 | | | |
| Dietary pattern | Vegetarian | 4 | 0 | 4.009 (Fisher’s exact) | 0.065 | |
| | Mixed | 27 | 29 | | | |
| Duration of stay | < 10 years | 23 | 17 | 3.153 (Chi square) | 0.249 | |
| | 10- 30 years | 7 | 12 | | | |
| | >30 years | 1 | 0 | | | |
| Duration of DM | 1-4 years | 14 | 10 | 2.746 (Chi square) | 0.111 | |
| | 5-8 years | 15 | 13 | | | |
| | 9-12 years | 2 | 6 | | | |
| Duration of insulin/ oral drugs | 1-4 years | 14 | 11 | 2.630 (Chi square) | 0.155 | |
| | 5-8 years | 15 | 12 | | | |
| | 9-12 years | 2 | 6 | | | |
| Diagnosis of DM | Routine check ups | 29 | 28 | 0.285 (Fisher’s exact) | 0.525 | |
| | After having signs | 2 | 1 | | | |
| Measures against DM (Diet) | Yes | 9 | 5 | 1.164 (Chi square) | 0.220 | |
| | No | 22 | 24 | | | |
| Alternative therapy | Homeopathy | Yes | 1 | 0.425 (Fisher’s exact) | 0.475 | |
| | | No | 30 | | | 27 |
| | Ayurveda | Yes | 1 | 2 | 0.42 (Fisher’s exact) | 0.475 |
| | | No | 30 | 27 | | |

From the above table, it is clear that the Chi square value for age (calculated value = 1.405 < table value = 5.991), gender (calculated value = 0.156 < table value = 3.841), Duration of stay (calculated value = 3.153 < table value = 5.991), Duration of DM (calculated value = 2.746 < table value = 5.991), Duration of insulin/ oral drugs (calculated value = 2.630 < table value = 5.991), and Measures taken against DM such as Diet (calculated value = 1.164 < table value = 3.841). Also the p values are more than 0.05 (table – 3). Hence, there

is no association between these characteristics with glycemc levels.

For the remaining selected Demographic variables such as alternative therapies such as Homeopathy and Ayurveda, methods of diagnosis, dietary pattern, and educational status, Fisher’s Exact test was used. The p values of these variables are more than 0.05 (table- 3), and hence, there is no association between these characteristics with glycemc levels at 5% level of significance.

6. Conclusion

Diabetes mellitus is a chronic metabolic disease characterized by hyperglycemia and disturbances of carbohydrate, fat, and protein metabolism, which is associated with an absolute or relative deficiency in the secretion and/or action of the hormone insulin. Multiple factors, involved in the lifestyle changes associated with modern life, such as, the reduction in physical activities and the predominance of hyper caloric diets and the resulting obesity, are responsible for the escalation of Diabetes across the country. Above all, the ageing fraction of the population is the major victim.¹⁵ It has been evident that Foot Reflexology is effective in reducing the glycemic levels of Diabetics. Hence, the investigator selected Foot Reflexology for reducing the glycemic levels of Diabetics.

In particular, there are several well designed studies that indicate Reflexology's promise as an intervention to reduce the glycemic levels in Diabetics. Reflexology Massage not only controlling the blood glucose level, but also shields the organs that may be affected by long term Diabetes. From this study, researcher found that Foot Reflexology is effective in reducing the glycemic levels of Diabetics.

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