# Association between Post-Test Level of Blood Glucose of Diabetes Mellitus Patients with their Selected Demographic Variables at a Selected Primary Health Center in Thanjavur

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**ABSTRACT**

Diabetes is a complex and challenging disease that requires daily self-management decisions made by the person with diabetes. Diabetes self-management education and support (DSMES) addresses the comprehensive blend of clinical, educational, psychosocial, and behavioral aspects of care needed for daily self-management and provides the foundation to help all people with diabetes navigate their daily self-care with confidence and improved outcomes. This study used a quantitative approach. The research design adopted for the study was Pre–Test Post–Test Control Group. The population included in this study was the patients with diabetes mellitus. Patients with a fasting blood glucose level between 126 mg/dl to 200 mg/dl residing in Mela Ulur village and Papanadu village. The sample size was 60. The purposive sampling technique was used.

**INTRODUCTION**

Exercise lowers blood glucose levels by increasing the up take of glucose by muscles, altering lipid concentrations, increasing levels of high-density lipoproteins, and decreasing triglycerides and low-density lipoproteins

Diabetes mellitus is defined as prolonged hyperglycemia, which can harm the eyes, kidneys, and cardiovascular and neurological systems. Herbal agents and their derived supplements have been used for the treatment of diabetes mellitus as a part of integrated complementary medicine for centuries. Numerous studies have considered Aloe vera (L.) Burm.f, Xanthorrhoeaceae, as an alternative medicine due to its abundant bioactive chemicals, such as alkaloids, anthraquinones, and enthrones, with therapeutical properties including antioxidant, anti-inflammatory, neuro-protective, and anti-diabetic effects. Aloe vera has received considerable attention in traditional medicine for the treatment of several diseases including diabetes mellitus. Numerous studies have investigated the effects of herbal agents on diabetes mellitus using a streptozotocin-induced diabetic model. **(Fatemeh Haghani et al 2022)**

According to the World Health Organization (WHO) diabetes mellitus is a chronic, metabolic disease characterized by elevated levels of blood glucose, which leads over time to damage to the heart,

vasculature, eyes, kidneys and nerves. Over 90% of diabetes mellitus cases are T2DM, a condition marked by deficient insulin secretion by pancreatic islet β-cells, tissue insulin resistance (IR) and an inadequate compensatory insulin secretory response [**Stumvoll M et al 2005; Weyer C et al 1999**].

Diabetes mellitus is a chronic metabolic disorder characterized by high blood glucose levels, affecting millions of people worldwide (World Health Organization, 2020). The management of diabetes typically involves lifestyle modifications, such as diet and exercise, as well as pharmacological interventions (American Diabetes Association, 2020). Recently, there has been growing interest in the potential health benefits of aloe vera juice, including its effects on blood glucose levels. Aloe vera, a succulent plant, has been used for centuries in traditional medicine for its anti-inflammatory, antioxidant, and hypoglycemic properties (Yongchaiyudha et al., 2017).

Several studies have investigated the effectiveness of aloe vera juice on reducing blood glucose levels in patients with diabetes mellitus. For example, a randomized controlled trial conducted by Yongchaiyudha et al. (2011) found that aloe vera juice supplementation significantly reduced fasting blood glucose levels in patients with type 2 diabetes. Another study published by Ajabnoor et al. (2018) reported that aloe vera juice supplementation improved glycemic control and reduced oxidative stress in patients with type 1 diabetes.

The aim of this review is to examine the existing evidence on the effectiveness of aloe vera juice on reducing blood glucose levels in patients with diabetes mellitus.

**REVIEW OF LITERATURE**

N. Suksomboon, N. Poolsup† PhD and S. Punthanitisarn, 2016 conducted a study on Effect of Aloe vera on glycaemic control in prediabetes and type 2 diabetes: asystematic review and meta-analysis. Results: **Eight trials involving 470 patients (235 each for prediabetes and type 2 diabetes) were included. In prediabetes, Aloe vera significantly improved FPG (mean difference −0·22 mmol/L, 95% CI −0·32 mmol/L to −0·12 mmol/L, P < 0·0001), with no effect on $HbA_{1c}$ (mean difference −2 mmol/mol, 95% CI −5 mmol/mol to 1 mmol/mol). Aloe vera may improve glycaemic control in type 2 diabetes, with a marginal improvement in FPG (mean differences −1·17 mmol/L, 95% CI −2·35 mmol/L to 0·00 mmol/L, P = 0·05) and a significant improvement in $HbA_{1c}$ (mean difference −11 mmol/mol, 95% CI −19 mmol/mol to −2 mmol/mol, P = 0·01).**

**Sumanpreet Kaur et al 2017** conducted a study on A descriptive study to Assess the Knowledge Regarding Diabetes Mellitus among the Residents of selected rural community, gurdaspur, Punjab. The result of study revealed that out of 100 community people, 90% have average knowledge, 9% have good knowledge and only 1% have poor knowledge. The mean score of good level of knowledge was 21.77 with standard deviation ±0.56, the mean score of average knowledge was 16.97 with standard deviation ±0.35 and mean score of poor level of knowledge was 10 with standard deviation 0. The association between the level of knowledge regarding Diabetes Mellitus of residents of selected rural community with their demographic variables. The result revealed that there was a

significant association found with the age, education, and occupation at the level of significance <0.05 and there was no significant association found between the level of knowledge and their Gender, Type of Family, Presence of Disease, Duration of Disease, Type of Medication and Source of Information.

**RESEARCH METHODOLOGY**

This study used a quantitative approach. The research design adopted for the study was Pre–Test Post–Test Control Group. The population included in this study was the patients with diabetes mellitus. Patients with a fasting blood glucose level between 126 mg/dl to 200 mg/dl residing in Mela Ulur village and Papanadu village. The sample size was 60. The purposive sampling technique was used.

**DATA ANALYSIS AND INTERPRETATION**

**Association between post-test level of blood glucose of diabetes mellitus patients with their selected demographic variables.**

**(N=60)**

| S. No | Demographic variables | Components of variable | Post-test blood glucose level | | | | | | | | $\chi^2$ valu e |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Normal | | Stage I Diabetes Mellitus | | Stage II Diabetes Mellitus | | StageIII Diabetes Mellitus | | |
| | | | F | % | F | % | f | % | f | % | |
| 1. | Age(Years) | a)<30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.148 |
| | | b)31-45 | 1 | | 4 | | 2 | | 1 | | df:6 |
| | | c)46-60 | 2 | | 13 | | 1 | | 1 | | **NS** |
| | | d)>60 | 1 | | 4 | | 0 | | 0 | | |
| 2. | Sex | a) Male<br>b) Female | 2<br>2 | | 7<br>14 | | 2<br>1 | | 1<br>1 | | 0.683<br>df=3<br>**NS** |
| 3. | Educational Status | a)<br>Illiterate | 2<br>0 | | 6<br>**3** | | 0<br>0 | | 1<br>0 | | 0.056<br>df=1 |
| | | b) Primary | | | | | | | | | 2<br>**S** |
| | | School/Secondary School<br>c) Higher | 0 | | 2 | | 2 | | 0 | | |
| | | Secondary | | | | | | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | School<br>d) Graduate | 2 | | 9 | | 1 | | 1 | | |
| | | e) Post<br>Graduate | 0 | | 1 | | 0 | | 0 | | |
| 4. | Occupation | a)Professional | 0 | | 1 | | 0 | | 0 | | 0.159 |
| | | b)Government | 3 | | 10 | | 1 | | 1 | | DF= |
| | | /Private | | | | | | | | | 9 |
| | | c)Home | 1 | | 8 | | 1 | | 1 | | **NS** |
| | | Maker<br>d)Business | 0 | | 2 | | 1 | | 0 | | |
| 5. | Dietary<br>habits | a)Vegetarian Non<br>vegetarian | 1<br>3 | | 0<br>21 | | 0<br>3 | | 0<br>2 | | 0.118<br>DF=<br>3<br>**NS** |
| 6. | Income | b)a)Less | 1 | | 2 | | 0 | | 0 | | |
| | | than<br>Rs.5000)<br>b)Rs. | 3 | | 11 | | 1 | | 0 | | 0.026 |
| | | 5001-<br>15,000) | | | | | | | | | DF=9 |
| | | c)Rs.15,001- | 0 | | 5 | | 2 | | 2 | | **S** |
| | | 25,000<br>d)Morethan<br>Rs.25,000 | 0 | | 3 | | 0 | | 0 | | |
| 7. | Lifestyle | a)Alcoholism | 2 | | 4 | | 0 | | 1 | | |
| | Practices | b)Smoking | 0 | | 2 | | 2 | | 0 | | |
| | | c)Tobacco | 0 | | 6 | | 1 | | 0 | | 0.056 |
| | | chewing | | | 9 | | 0 | | 1 | | DF= |
| | | d)Noneof | 2 | | | | | | | | 9 |
| | | theabove | | | | | | | | | **S** |
| 8. | Levelof | a)Sedentary | 2 | | 11 | | 1 | | 1 | | 0.034 |
| | Physical | b)Moderate | 2 | | 9 | | 2 | | 1 | | DF=6 |
| | activity | c)Heavy | 0 | | 1 | | 0 | | 0 | | S |
| 9. | Medication | a)Allopathy | 3 | | 18 | | 3 | | 2 | | 0.299 |
| | | b)AYUSH | 1 | | 3 | | 0 | | 0 | | DF=3<br>NS |
| 10. | Type of | a)Homemade | 3 | | 17 | | 2 | | 2 | | 0.908 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | foodintake | food b)Outside food | 1 | | 4 | | 1 | | 0 | | DF=3 NS |
| 11. | Typeof | a)Walking | 0 | | 4 | | 0 | | 1 | | 0.179 |
| | exercise | b)Stretching | 0 | | 1 | | 0 | | 0 | | DF=9 |
| | habit | c)Yoga | 2 | | 3 | | 2 | | 1 | | NS |
| | | d)Others | 0 | | 0 | | 0 | | 0 | | |
| | | e)None | 2 | | 13 | | 1 | | 0 | | |
| 12. | Family | a)Present | 1 | | 11 | | 2 | | 1 | | 0.451 |
| | historyof | b)Absent | 3 | | 10 | | 1 | | 1 | | DF=3 |
| | Diabetes Mellitus | | | | | | | | | | NS |
| 13. | Sourcesof | a)Newspaper | 0 | | 0 | | 0 | | 0 | | 0.733 |
| | information | & Magazine | | | | | | | | | DF=6 |
| | regarding | b)Friends& | 0 | | 6 | | 2 | | 0 | | NS |
| | Diabetes | Family | | | | | | | | | |
| | Mellitus | members c)Radio& Television | 1 | | 1 | | 0 | | 0 | | |
| | | d)Health Personnel | 3 | | 14 | | 1 | | 2 | | |

**NS: Non Significant**

Association of post-test blood glucose level of patients with diabetes mellitus with their selected demographic variables such as age, sex, education, occupation, dietary habits, income, life style practices, physical activity, medication, type of food intake, type of exercise, family history of diabetes mellitus, sources of information regarding diabetes mellitus.

The findings revealed that there was no significant association between the post-test blood glucose level with selected demographic variables such as age, sex, religion, education, occupation, dietary habits, income, family history of diabetes mellitus and life style practices. Since no association was found between the posttest blood glucose level with selected demographic variables such as age, sex, religion, education, occupation, dietary habits, income, family history of diabetes mellitus and life style practices the researcher rejects the research hypothesis and accepts the null hypothesis.

**CONCLUSION**

The study suggests that the reduction in blood glucose levels post-intervention (due to Aloe Vera juice) was not influenced by the demographic or lifestyle variables considered, and the effectiveness of Aloe Vera juice in reducing blood glucose levels is likely independent of these factors.

This indicates that the intervention's effect is consistent across various demographic groups,

reinforcing the potential universality of Aloe Vera juice as an effective supplementary treatment for managing blood glucose levels in patients with diabetes mellitus.

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