

# A Study to assess the effectiveness of a structured teaching program on knowledge regarding the life style practices related to diabetic mellitus among adults in selected urban area at Puducherry.

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## ABSTRACT:

**BACKGROUND:** diabetes mellitus is the major public health concern that requires lifelong lifestyle modification and self-management. Limited knowledge of healthy life style and practices can lead to poor glycaemic control and increased risk of complications. Structured teaching programmes can improve awareness and encourage healthy behaviours. This study evaluated the effectiveness of a structured teaching programme on knowledge of lifestyle practices among adults with diabetes mellitus in urban area at Ariyankuppam, Puducherry.

**METHOD:** A quantitative pre-experimental one group pre-test and post-test design was used. Sixty adults with diabetes, aged 30-60 years, were selected through convenience sampling technique. The pre-test knowledge was assessed and the post-test knowledge was assessed seven days after the structured teaching programme using structured questionnaire. Data were analysed using descriptive statistics and the paired t-test to evaluate the intervention's effectiveness.

**RESULTS:** Before the intervention, 78% of the participants has inadequate knowledge, While 21.7% had moderate knowledge. After the structured teaching programme, 93% achieved adequate knowledge.

The mean knowledge score increased significantly from  $6.87 \pm 1.662$  to  $18.42 \pm 1.608$  ( $t=38.977$ ,  $p= 0.001$ ), demonstrating the effectiveness of the programme in improving knowledge of diabetes –related lifestyle practices.

**CONCLUSION:** The structured teaching programme significantly improved knowledge of lifestyle practices among adults with diabetes mellitus. Community- based educational intervention can enhance awareness, promote healthy behaviours and support effective diabetes management.

**Key Words:** Diabetes MELLITUS, Lifestyle Practices, Knowledge, Adults.

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## INTRODUCTION

Diabetes mellitus is one of the fastest- growing non-communicable disease worldwide and continuous to pose a major challenge to public health. The condition is characterized by persistent elevation of blood glucose resulting from impaired insulin secretion, insulin action or both. Uncontrolled diabetes contribute to serious complication involving the cardiovascular system, Kidney, Eyes and Peripheral nerves leading to reduced quality of life, disability and pre-mature mortality. The increasing prevalence of diabetes places a substantial burden on individuals, families and health care systems, particularly in developing countries. India has experiencing a rapid increase in the number of people living with diabetes due to urbanization. Sedentary lifestyle, Unhealthy dietary habits, obesity and aging of the population. Many adults remain unaware of the importance of lifestyle modification in preventing disease progression and complications. Inadequate knowledge regarding balanced nutrition, regular physical activity and medication adherence results in poor glycaemic control and increased healthcare cost. Lifestyle modification is considered as one of the cornerstones of diabetes management. Adoption of healthy dietary practices, regular exercise. Maintenance of ideal body weight, cessation of tobacco use, avoidance of alcohol and periodic health check-ups contribute significantly to improved metabolic control reduction of diabetes- related complications. However, these lifestyle changes can only be achieved when individuals possess adequate knowledge and receive continuous health education. Structured teaching programme provide organized, evidence based educational sessions designed to improve awareness, strengthen Self-management skills, and encourage behavioural change. Such programme have been shown to enhance knowledge, improve treatment adherence and promote healthier lifestyles practices among adults with diabetes. Community based educational interventions are particularly important because they enable early identification of knowledge gaps and empower individuals to

actively participate in disease management. The present study was undertaken to evaluate the effectiveness of a structured teaching programme on knowledge regarding lifestyle practices related to diabetes Mellitus among adults in selected urban area at Ariyankuppam, Puducherry. The findings are expected to support community health nurses in planning educational interventions that improve diabetes awareness and promotes healthier lifestyle among adults.

## MATERIALS AND METHODS:

Research design is the architectural backbone of the study. **Pilot,(2008)**

The research design is the plan, structure and strategy of investigation of answering the research question. It is the overall plan or blue print, the researcher select to carry out the study. In this study, a Pre-experimental one group Pre and Post-test research design was used. The setting of the study at Ariyankuppam, Puducherry. The sample size of the study is 60 samples. In this study the investigator used Non Probability convenient sampling technique.

## DATA COLLECTION PROCEDURE:

After obtaining approval from the Institutional Ethical Committee, the data collection process will be initiated. The study will be conducted in a selected urban area of Ariyankuppam, Puducherry. Participants will be selected based on the inclusion criteria using a non- probability convenience sampling technique, and their participation will be explained clearly and written informed consent will be obtained from all participants. Confidentiality and anonymity of the information provided will be assured throughout the study.

Initially, a pre – test will be conducted using a structured knowledge questionnaire to assess the baseline knowledge regarding lifestyle practices related to diabetes mellitus among adults. Following the pre-test, a structured teaching programme will be administered to educate participate on healthy dietary practices, regular physical activity, medication adherences, blood

glucose monitoring, foot care, Prevention of diabetes- related complications, stress management and other essential lifestyle modifications for effective diabetes management.

A post-test will be conducted on the seventh day using the same structured knowledge questionnaire to evaluate the effectiveness of the structured teaching programme. The collected data will be compiled, coded and entered into a master data sheet for further analysis. Descriptive and inferential statistical methods will be used to analyse and interpret the data to determine the effectiveness of the structured teaching programme and the association between knowledge levels and selected demographic variables.

## ETHICAL CONSIDERATION

The Research Proposal was approved by the experts, pilot study and permission for the main study was obtained from the head of the department.

## IEC NO:

## RESULTS

The collected data were computerised and analysed using SPSS version 25. The data was analysed using descriptive statistics (distribution, mean, standard deviation) and inferential statistics (chi-square value test, correlation Pearson r test ). The result have been organized and presented as given below:

**Table 4.1: Frequency and Percentage Distribution of Demographic Variables among Adults at Selected Urban Area, Ariyankuppam (N =60 ).**

| Demographic variables        | Category             | Frequency | Percentage |
|------------------------------|----------------------|-----------|------------|
|                              |                      | (n)       | (%)        |
| <b>Age in years</b>          | 20-30 years          | 15        | 25.0%      |
|                              | 31-40 years          | 11        | 18.3%      |
|                              | 41- 50 years         | 16        | 26.7%      |
|                              | Above 50 years       | 18        | 30.0%      |
| <b>Gender</b>                | Male                 | 44        | 73.3%      |
|                              | Female               | 16        | 26.7%      |
| <b>Educational status</b>    | No formal education  | 11        | 18.3%      |
|                              | Primary education    | 21        | 35.0%      |
|                              | Secondary education  | 17        | 28.3%      |
|                              | College education    | 11        | 18.3%      |
| <b>Occupation</b>            | Government employee  | 17        | 28.3 %     |
|                              | Private employee     | 18        | 30.0%      |
|                              | Self – employed      | 14        | 23.3%      |
|                              | Unemployed/Homemaker | 11        | 18.3%      |
| <b>Monthly family income</b> | Below ₹10,000        | 15        | 25.0%      |
|                              | ₹10,001 – ₹20, 000   | 18        | 30.0%      |
|                              | ₹20,001 - ₹ 30,000   | 13        | 21.7%      |
|                              | Above ₹ 30, 000      | 14        | 23.3%      |

|                                                 |                                  |    |       |
|-------------------------------------------------|----------------------------------|----|-------|
| <b>Marital status</b>                           | Married                          | 52 | 86.7% |
|                                                 | Unmarried                        | 3  | 5.0%  |
|                                                 | Widows/ widowers                 | 2  | 3.3%  |
|                                                 | Divorced                         | 3  | 5.0%  |
| <b>Type of family</b>                           | Nuclear family                   | 21 | 35.0% |
|                                                 | Joint family                     | 16 | 26.6% |
|                                                 | Extended family                  | 23 | 38.3% |
| <b>Duration of diabetes</b>                     | Less than 1 year                 | 11 | 18.3% |
|                                                 | 1-3 years                        | 12 | 20.0% |
|                                                 | 4-6 years                        | 18 | 30.0% |
|                                                 | More than 6 years                | 19 | 31.7% |
| <b>Types of treatment taken for diabetic</b>    | Oral Medication                  | 24 | 40.0% |
|                                                 | Insulin                          | 18 | 30.0% |
|                                                 | Both oral medication and insulin | 10 | 16.7% |
|                                                 | Diet control only                | 8  | 13.3% |
| <b>Source of information regarding diabetes</b> | Doctors / nurses                 | 21 | 35.0% |
|                                                 | Television / internet            | 10 | 16.7% |
|                                                 | Friends/ Relatives               | 13 | 21.7% |
|                                                 | Health workers                   | 16 | 26.7% |

**Table 4.1:** shows frequency and percentage of demographic variables among adults at the selected urban area, Ariyankuppam ( N= 60). Regarding age, **15 (25.0%)** participants were in the age group of the 20 – 30 years, **11 (18.3%)** were 31-40 years, **16 (26.7%)** were 41-50 years and **18 ( 25.0%)** were above 50 years. With regard to gender, **44 ( 73.3%)** participants were male and **16 ( 26.7%)** were female. Regarding educational status, **11 (18.3%)** had no formal education, **21 (35.0%)** had primary education, **17 (28.3%)** had secondary education and **11 (18.3%)** had college education. Concerning occupation, **17 (28.3%)** were government employee, **18 (30.0%)** were private employee, **14 (23.7%)** were self-employed and **11 (18.3%)** were unemployed / homemaker. Regarding monthly family income,

**15 (25.0%)** participants had an income below ₹10,000, **18 (30.0%)** had an income of ₹10,001– ₹20,000, **13 (21.7%)** had an income of ₹20,001– ₹30,000, and **14 (23.3%)** had an income above ₹30,000. Regarding marital status, **52 (86.7%)** participants were married, **3 (5.0%)** were unmarried, **2 ( 3.3%)** were widows / widowers and **3 (5.0%)** were divorced. With respect to the type of the family, **21 (35.0%)** belongs to the nuclear family. **16 ( 26.7%)** belongs to the joint families, and **23 (38.3%)** belonged to the extended families. Regarding the duration of diabetes, **11 ( 18.3%)** participants had diabetes for less than one year, **12 ( 20.0%)** had for 1-3 years, **18 (30.0%)** had diabetes for 4- 6 years, and **19 ( 31.7%)** had more than 6 years. Regarding the type of treatment, **24 (40.0%)** participants were taking

oral medication, **18 (30.0%)** were taking insulin, **10 (16.7%)** were taking both oral medication and insulin, and **8 (13.3%)** were following diet control only. Regarding the source of information, **21 (35.0%)** participants received information from

doctors/nurses, **10 (16.7%)** from television/internet, **13 (21.7%)** from friends/relatives, and **16 (26.7%)** from health workers.

**Table 4.2: Frequency and percentage distribution of pre-test and post –test level of knowledge regarding the lifestyle practices related to diabetes mellitus among adults at selected urban area at Ariyankuppam , Puducherry (N=60).**

| Level of Knowledge   | Pre-test Frequency (n) | Pre-test Percentage (%) | Post-test Frequency (n) | Post-test Percentage (%) |
|----------------------|------------------------|-------------------------|-------------------------|--------------------------|
| Inadequate knowledge | 47                     | 78.3%                   | 0                       | 0.0%                     |
| Moderate knowledge   | 13                     | 21.7%                   | 4                       | 6.7%                     |
| Adequate knowledge   | 0                      | 0.0%                    | 55                      | 93.3%                    |
| <b>Total</b>         | <b>60</b>              | <b>100.0%</b>           | <b>60</b>               | <b>100.0%</b>            |

**Table 4.2:** Depicts the distribution of pre-test levels of knowledge regarding lifestyle practices related to diabetes mellitus among adults. During the **pre-test**, the majority of the participants, **47 (78.3%)**, had **inadequate knowledge**, while **13 (21.7%)** had **moderately adequate knowledge** and none had adequate knowledge. Following the structured teaching programme, the **post-test** results showed that **56(93.3%)** participants achieved **adequate knowledge**, whereas only **4 ( 6.7%)** had **moderately adequate knowledge** and none remained in the inadequate knowledge category.

**Table 4.3: Mean and standard Deviation of Pre-test and post –test knowledge scores Regarding Lifestyle Related to Diabetes Mellitus among adults at Selected urban Area, Ariyankuppam N= 60)**

| Knowledge score | Mean  | Standard Deviation |
|-----------------|-------|--------------------|
| Pre-test        | 6.87  | 1.662              |
| Post –test      | 18.42 | 1.608              |

**Table 4.3:** Shows the mean and standard deviation of the pre-test and post –test Knowledge scores regarding lifestyle practices related to diabetes mellitus among adults. The **pre-test mean knowledge score was 6.87 with a standard deviation of 1.662**, indicating a low level of baseline knowledge. Following the structured teaching programme, the **post –test mean knowledge score is increased to 18.42 with a standard deviation of 1.608**.

**Table 4.4: Effectiveness of the structured teaching programme Regarding Lifestyle Practices for the Management of Diabetes Mellitus Among At Selected urban Area, Ariyankuppam (N= 60 ).**

| Knowledge Score | Mean  | Mean Difference | Standard Deviation | T= value | df | p- value  |
|-----------------|-------|-----------------|--------------------|----------|----|-----------|
| Pre-test        | 6.87  | 11.55           | 1.662              | 38.977   | 59 | <.0001*** |
| Post –test      | 18.42 |                 | 1.608              |          |    |           |

**\*\*P<0.001, Highly Significant**

**Table 4.4:** Depicts of the Effectiveness of the structured teaching programme regarding lifestyle practices for the management of diabetes mellitus among adults. The **pre-test mean knowledge score 6.87 (SD = 1. 662)**, which increased to **18.42(SD= 1.608)** in the post-test, with a **mean difference of 11.55**. The paired

t-test revealed a **t=value of 38.977** with **59 degrees of freedom**, and the obtained **p= value was <0.001**, indicating a highly statistically significant difference between the pre- test and post-test knowledge scores. Therefore, the structured teaching programme was effective in significantly improving the knowledge regarding lifestyle practices related to the management of diabetes mellitus among adults.

**Table 4.5: Association between Pre-test Level of Knowledge Regarding Lifestyle Practices Related to Diabetes Mellitus and Selected Demographic variables among Adults at selected urban area, Ariyankuppam (N=60).**

| Demographic Variable         | Category             | Inadequate Knowledge | Moderately Adequate Knowledge | $\chi^2$ value | df | p-value       |
|------------------------------|----------------------|----------------------|-------------------------------|----------------|----|---------------|
|                              |                      | n (%)                | n (%)                         |                |    |               |
| <b>Age (years)</b>           | 20–30 years          | 14 (29.8%)           | 1 (7.7%)                      | 8.596          | 3  | <b>0.035*</b> |
|                              | 31–40 years          | 10 (21.3%)           | 1 (7.7%)                      |                |    |               |
|                              | 41–50 years          | 13 (27.7%)           | 3 (23.1%)                     |                |    |               |
|                              | Above 50 years       | 10 (21.3%)           | 8 (61.5%)                     |                |    |               |
| <b>Gender</b>                | Male                 | 38 (80.9%)           | 6 (46.2%)                     | 6.269          | 1  | <b>0.012*</b> |
|                              | Female               | 9 (19.1%)            | 7 (53.8%)                     |                |    |               |
| <b>Educational status</b>    | No formal education  | 7 (14.9%)            | 4 (30.8%)                     | 3.904          | 3  | 0.272NS       |
|                              | Primary education    | 19 (40.4%)           | 2 (15.4%)                     |                |    |               |
|                              | Secondary education  | 12 (25.5%)           | 5 (38.5%)                     |                |    |               |
|                              | College education    | 9 (19.1%)            | 2 (15.4%)                     |                |    |               |
| <b>Occupation</b>            | Government employee  | 16 (34.0%)           | 1 (7.7%)                      | 6.668          | 3  | 0.083NS       |
|                              | Private employee     | 15 (31.9%)           | 3 (23.1%)                     |                |    |               |
|                              | Self-employed        | 8 (17.0%)            | 6 (46.2%)                     |                |    |               |
|                              | Unemployed/Homemaker | 8 (17.0%)            | 3 (23.1%)                     |                |    |               |
| <b>Monthly family income</b> | Below ₹10,000        | 9 (19.1%)            | 6 (46.2%)                     | 5.739          | 3  | 0.125NS       |
|                              | ₹10,001–₹20,000      | 17 (36.2%)           | 1 (7.7%)                      |                |    |               |
|                              | ₹20,001–₹30,000      | 10 (21.3%)           | 3 (23.1%)                     |                |    |               |
|                              | Above ₹30,000        | 11 (23.4%)           | 3 (23.1%)                     |                |    |               |
| <b>Marital status</b>        | Married              | 41 (87.2%)           | 11 (84.6%)                    | 1.042          | 3  | 0.791NS       |
|                              | Unmarried            | 2 (4.3%)             | 1 (7.7%)                      |                |    |               |
|                              | Widow/Widower        | 2 (4.3%)             | 0 (0.0%)                      |                |    |               |

|                              |                           |            |           |       |   |         |
|------------------------------|---------------------------|------------|-----------|-------|---|---------|
|                              | Divorced                  | 2 (4.3%)   | 1 (7.7%)  |       |   |         |
| <b>Type of family</b>        | Nuclear family            | 15 (31.9%) | 6 (46.2%) | 1.702 | 2 | 0.427NS |
|                              | Joint family              | 12 (25.5%) | 4 (30.8%) |       |   |         |
|                              | Extended family           | 20 (42.6%) | 3 (23.1%) |       |   |         |
| <b>Duration of diabetes</b>  | Less than 1 year          | 7 (14.9%)  | 4 (30.8%) | 1.846 | 3 | 0.605NS |
|                              | 1–3 years                 | 10 (21.3%) | 2 (15.4%) |       |   |         |
|                              | 4–6 years                 | 15 (31.9%) | 3 (23.1%) |       |   |         |
|                              | More than 6 years         | 15 (31.9%) | 4 (30.8%) |       |   |         |
| <b>Type of treatment</b>     | Oral medication           | 17 (36.2%) | 7 (53.8%) | 1.473 | 3 | 0.689NS |
|                              | Insulin                   | 15 (31.9%) | 3 (23.1%) |       |   |         |
|                              | Oral medication + Insulin | 8 (17.0%)  | 2 (15.4%) |       |   |         |
|                              | Diet control only         | 7 (14.9%)  | 1 (7.7%)  |       |   |         |
| <b>Source of information</b> | Doctor/Nurse              | 15 (31.9%) | 6 (46.2%) | 2.093 | 3 | 0.553NS |
|                              | Television/Internet       | 7 (14.9%)  | 3 (23.1%) |       |   |         |
|                              | Friends/Relatives         | 11 (23.4%) | 2 (15.4%) |       |   |         |
|                              | Health worker             | 14 (29.8%) | 2 (15.4%) |       |   |         |

\* Significant at  $p < 0.05$ ; NS – Not Significant

Shows the association between the pre-test level of knowledge regarding the lifestyle practices related to diabetes mellitus and selected demographic variables among adults. Among the selected variables, **age** ( $\chi^2 = 8.596$ ,  $df = 3$ ,  $p = 0.035$ ) and **gender** ( $\chi^2 = 6.269$ ,  $df = 1$ ,  $p = 0.012$ ) showed a statistically significant association with the pre-test level of knowledge ( $p < 0.05$ ). However, **educational status** ( $p = 0.272$ ), **occupation** ( $p = 0.083$ ), **monthly family income** ( $p = 0.125$ ), **marital status** ( $p = 0.791$ ), **type of family** ( $p = 0.427$ ), **duration of diabetes** ( $p = 0.605$ ), **type of treatment** ( $p = 0.689$ ), and **source of information regarding diabetes** ( $p = 0.553$ ) did not show a statistically significant association with the pre-test level of knowledge ( $p > 0.05$ ).

## DISCUSSION

The present study evaluated the effectiveness of a structured teaching programme on knowledge

regarding lifestyle practices related to diabetes mellitus among adults in a selected urban area of Ariyakuppam, Puducherry. The findings showed a significant improvement in participants knowledge following the educational intervention. Before the intervention, 78.3% of the participants had inadequate knowledge and 21.7% had moderate knowledge, While none had adequate knowledge regarding lifestyle practices for diabetes mellitus management. This indicates that many adults lacked sufficient awareness of essential self-care measures such as healthy diet, regular physical activity, medication adherence, blood glucose monitoring and prevention of complication. After the structured teaching programme, Knowledge levels improved considerably. In the post- test, 93.3% of participants achieved adequate knowledge. While 6.7% had moderate knowledge. No participants remained in the inadequate knowledge category, demonstrating

the positive impact of the educational intervention. The effectiveness of the programme was further confirmed by the increase in the mean knowledge score from  $6.87 \pm 1.662$  in the pre-test to  $18.42 \pm 1.608$  in the post-test. With a mean difference of 11.55. The paired t-test value of 38.977 ( $p < 0.001$ ) indicated that the improvement was highly statistically significant, confirming the effectiveness of the structured teaching programme. The study also found a significant association between pre-test knowledge and selected demographic variables, suggesting that participants' baseline knowledge was influenced by certain personal and socioeconomic characteristics. This finding highlights the importance of providing targeted educational programmes based on the needs of different population groups. Overall, the study demonstrates that the structured teaching programmes are an effective method for improving knowledge regarding lifestyle practices among adults with diabetes mellitus. Community based educational interventions can enhance diabetes – awareness, promote healthy lifestyle

behaviours and support better long time diabetes management.

## CONCLUSION

The present study concluded that the structured teaching programme was effective in improving knowledge regarding the lifestyle practices related to diabetes mellitus among adult in selected urban area at Ariyankuppam, Puducherry. The intervention resulted in a significant increase in participants knowledge levels as evidenced by post-test scores compared to the pre-test findings. The study highlights that structured health education can enhance awareness about healthy dietary practices, physical activity, medication adherence and other diabetes self – management measures. Therefore, regular community-based educational programmes can play an important role in promoting healthy lifestyle behaviours, improving diabetes management and reducing the risk of diabetes – related complications among adults.

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