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A study to evaluate the effectiveness of "Mobile Diabetes" on knowledge and practice regarding management among patients with diabetes mellitus

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Abstract
This study utilizes a pre-experimental group design was selected; the samples were selected by convenience sampling technique. The study was conducted for about 4 weeks the data was collected from 41 respondents through a structured questionnaire schedule. It is presented in line with the objectives of the study, which was conducted to evaluate the effectiveness of mobile diabetes program on knowledge and practice regarding Management of diabetes mellitus among patients with diabetes mellitus, Bathinda, Punjab.

The demographic status of the studies with regard to their age 46.34% respondents age lies between 30-40. Considering their gender 63.41% are male and 36.58% are females. With regard to the treatments which are receiving by respondents, 2.43% of respondents receiving no any treatment, 87.8% of respondents receiving allopathic treatment. Considering their awareness about mobile diabetes, 0% of respondents aware about mobile diabetes and 100% respondents had no any awareness about mobile diabetes.

The pretest scores show that, about 46.34% (19 patients) had inadequate knowledge, 53.65% (22 patients) had moderate knowledge, and no one had adequate knowledge before administering mobile diabetes program. The post- test scores show that, about 4.87% (2 patients) had inadequate knowledge, 95.12% (39 patients) had moderate knowledge, and no one had adequate knowledge after administering mobile diabetes program.

The pretest scores show that, about 90.24% (27 patients) had good practice and 9.75% (4 patients) had very good practice regarding management of diabetes before administering mobile diabetes program. The post-test scores show that, about 100% (41 patients) had demonstrated good practice regarding management of diabetes.

In conclusion, it has been found that percentage of respondents who had inadequate knowledge of pre test scores was reduced after mobile diabetes programme and percentage of respondents who had moderately adequate knowledge of pre test scores was increased after mobile diabetes programme. Hence mobile diabetes programme found effective in improving knowledge regarding management of diabetes.

It has been found that percentage of respondents who had good practice was increased after mobile diabetes programme. Hence mobile diabetes programme found effective in improving practice regarding management of diabetes.

Hence, it is inferred that there is effective increase in the knowledge level and improvement in practices of diabetes patients regarding management of diabetes mellitus after mobile diabetes programme.

Keywords: Mobile diabetes, diabetes mellitus, knowledge and practice, diabetes management

Introduction

About 422 million people worldwide have diabetes. India has over 60 million diabetics out of a population of 1.3 billion. In 2015, over 0.9 million deaths in India were attributed to diabetes directly or indirectly. The number of diabetics in the country is expected to increase to a staggering 109 million cases by 2035 out of an estimated population of 1.5 billion.

Diabetes is a chronic disease, which occurs when the pancreas does not produce enough insulin (type 1 diabetes), or when the body cannot effectively use the insulin it produces (type 2 diabetes). This leads to raised blood glucose (sugar) level and over time, serious damage to many of the body's systems, especially the nerves and blood vessels [1].

The World Health Organization (WHO) projects that diabetes will be the 7th leading cause of death by 2030. The NCD Country Profiles 2014 published by WHO reveals the large share of mortality is due to NCDs. In India, an estimated 7.8% of the population above 18 years of age has raised blood glucose level or are on treatment for diabetes [2].

A recently reported Indian Council of Medical Research, India diabetes (ICMR-INDIAB) study conducted in four different zones of rural and urban India showed that the prevalence of diabetes and prediabetes are higher compared to previous studies. The inter-state variations in prevalence, ranging from 4.3% in Bihar, 10.4% in Tamil Nadu and 13.6% in Chandigarh [3].

Prevention of diabetes is possible through a mix of individual, population level, whole of government and whole of society level interventions. Many sectors of society have a role to play in preventing and treating diabetes, including governments, employers, educators, industry, civil society, private sector, media and individuals themselves. Cost-effective interventions already exist these include methods for early detection of NCDs and their diagnoses using inexpensive technologies; non-pharmacological and pharmacological approaches for modification of NCD risk factors, and affordable medications for prevention and treatment of heart attacks and strokes, diabetes, cancer and asthma.

Given the challenges in early detection, improving management and quality of life in confirmed diabetics, it is imperative to seek innovative ways that help to expand the reach of health literacy and services among the general population

One of the most promising new opportunities is afforded by the high penetration of mobile communications in India: the country now has over a billion mobile subscriptions. The delivery of healthcare services through mobile phones has increased worldwide over the past two decades and the global mobile phone revolution has inspired thousands of global health innovation project

Statement of the study

"A study to evaluate the effectiveness of "Mobile Diabetes" on knowledge and Practice regarding management among patients with diabetes mellitus"

Objectives of the study

1. To assess the existing knowledge regarding management among patients with diabetes mellitus.
2. To assess the existing practice regarding management among patients with diabetes mellitus.
3. To evaluate the effectiveness of "Mobile Diabetes" on knowledge regarding management among patients with diabetes mellitus.
4. To evaluate the effectiveness of "Mobile Diabetes" on practice regarding management among patients with diabetes mellitus

Materials and Methods

Research Approach: In the present study the Research Approach is Evaluative Approach and researcher aimed at evaluating the effectiveness of mobile Diabetes on knowledge and practice regarding Management of patients with diabetes mellitus.

Research Setting

The study was conducted at Bhucho Mandi, Bathinda.

Population

Population is defined as the entire set of individuals having some common characteristics

Target Population: Target Population of this study included all Diabetes mellitus patients.

Accessible Population: Accessible Population of the study included the 40 diabetes mellitus patients, Bhucho Mandi, Bathinda who fulfill the inclusive criteria.

Sample Size

The sample size of the study constituted 41 those patients with diabetes mellitus were included in study. (n=41).

Criteria for selection of the sample

The criteria for sample selection are mainly depicted under two headings, which includes the inclusion and the exclusion criteria.

Inclusion Criteria

The study includes the Patients with diabetes (both men & women), who are:

- Diagnosed with type 2 diabetes mellitus.
- Willing to provide written consent to participate in the study.
- Having mobile phone and are able to operate basic mobile functions.

Exclusion Criteria

The study excludes the Patients with diabetes, who are**:**

- Having Type 1 Diabetes, Gestational.

Not interested to participate in the study

Validation of the tool

Validity is defined as the accuracy with which a test measures whatever it is intended/supposed to measure

Reliability

Reliability is the degree of consistency or accuracy with which an instrument measures the attribute it is designed to measure. The tool was tested for reliability during the pilot study and was obtained by split half method by using Karl Pearson correlation co-efficient

Results

Analysis and interpretation

This chapter deals with the analysis and interpretation of data collected from a sample of 41 patients with diabetes mellitus, Bathinda, Punjab to assess the effectiveness of mobile diabetes on knowledge and practice regarding the management of diabetes mellitus at Bhucho Mandi, Bathinda. The purpose of analysis is to reduce the data into an interpretable and meaningful form so that the results can compared and significance can be identified.

Ker linger (1976) has defined analysis as categorizing, ordering, manipulating and summarizing of data to obtain answers to research hypothesis questions.

Analysis is the process of organizing and- synthesizing data so as to answer research questions and test hypotheses

Section I: Frequency and percentage distribution of demographics variables of patients with diabetes mellitus

Table 1: Distribution of respondents according to age

Sl. No.	Age in Years	No of People	%
1	30-40	19	46.34
2	41-50	12	29.26
3	51-60	6	14.63
4	61 and above	4	9.75

The above table shows the distribution of respondents according to age that shows 46.34% respondents age lies between 30-40, 29.26% respondents age lies between 41-50 and 9.75% respondents age is above 61.

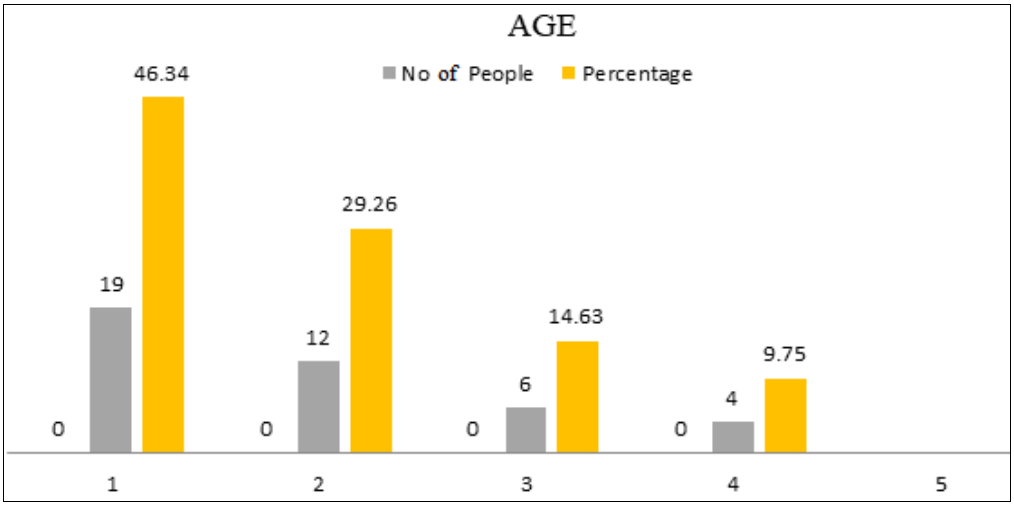

Fig 1: Distribution of respondents according to age

Table 2: Distribution of respondents according to religion

Sl. No	Religion	No of People	%
1	Sikh	25	60.97
2	Hindu	14	34.14
3	Others	2	4.57

The table above shows the distribution of respondents according to religion that shows 60.97% are Sikh and 34.1% are females.

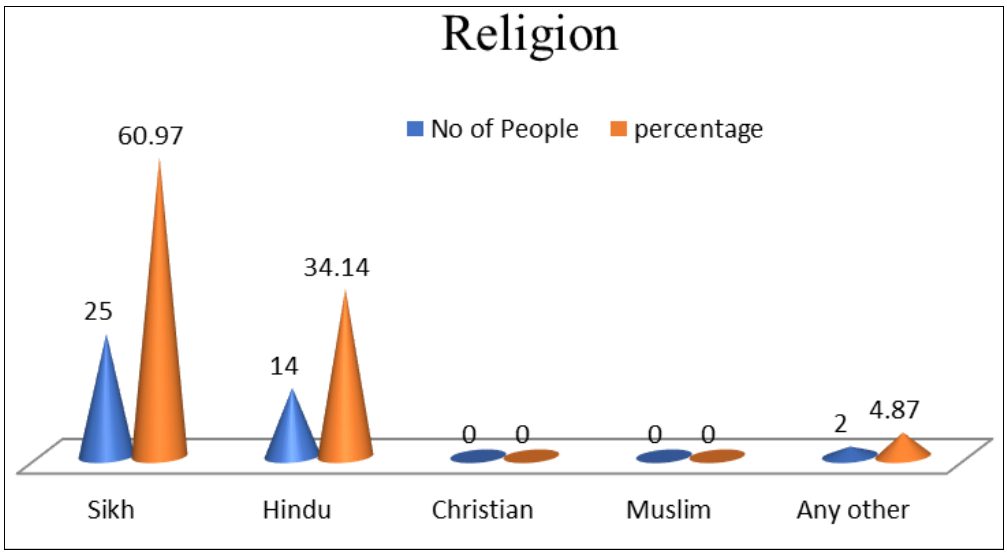

Fig 2: Distribution of respondents according to religion

Table 3: Distribution of respondents according to gender

Gender	No of People	Percentage (%)
Male	26	63.41
Female	15	36.58

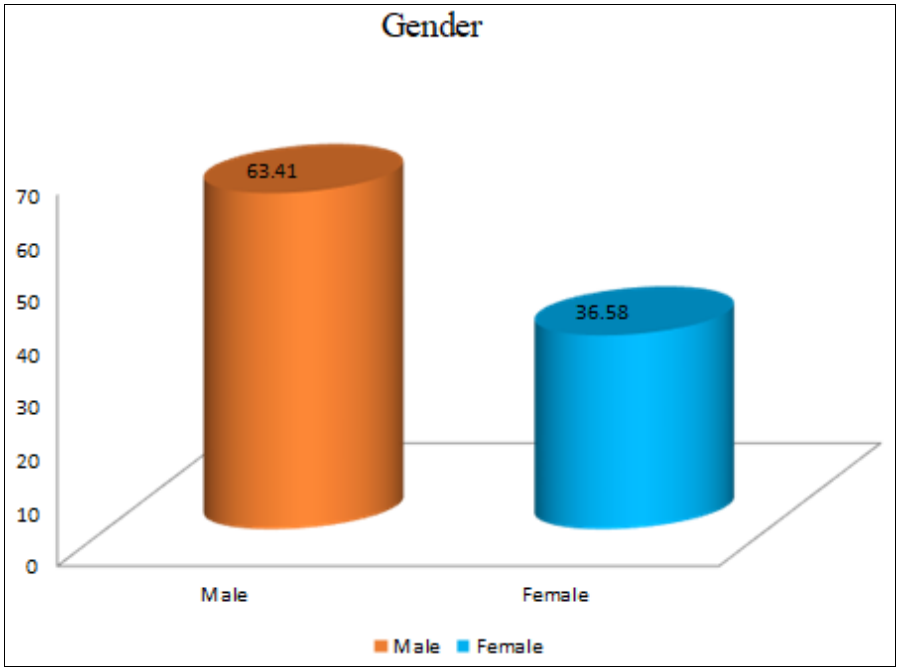

Fig 3: Distribution of respondents according to gender

Table 4: Distribution of respondents according to type of family

SL No	Type of the Family	No of People	%
1	Nuclear Family	32	78.048
2	Joint Family	9	21.95
3	Extended Family	0	0

The table above shows the distribution of respondents according to type of family which shows that 78.04% have nuclear family, 21.95% have joint family and 0% has extended family.

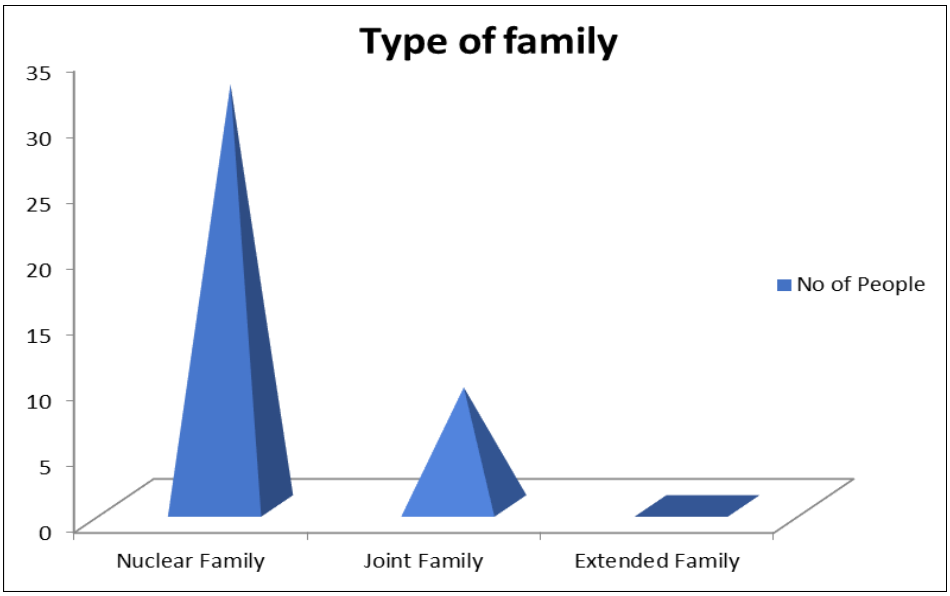

Fig 4: Distribution of respondents according to type of family

Table 5: Distribution of respondents according occupation

SL No	Occupation	No of People	%
1	Professional	3	7.31
2	Semi-Professional	5	12.19
3	Arithmetic skill job	1	2.43
4	Skilled worker	9	21.95
5	Semi-skilled worker	9	21.95
6	Unskilled worker	8	19.51
7	Unemployed	6	14.63

The table above shows the distribution of respondents according occupation of people that show 7.31% are professionals and 12.19% are seme-professional,2.43% are arithmetic skill jobe,21.95% are skilled workers,21.95% are semi-skilled workers,19.51% are unskilled workers and 14.63 are unemployed

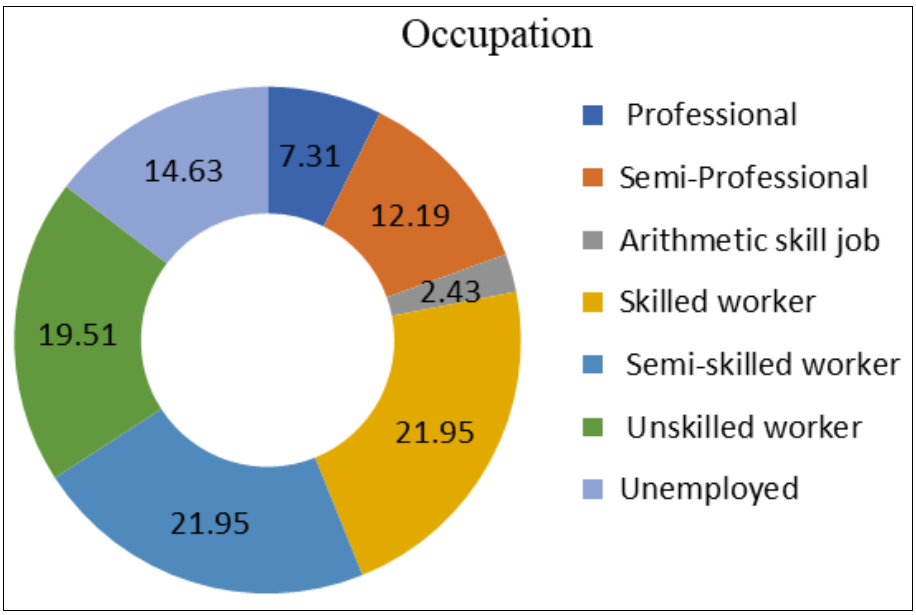

Fig 5: Distribution of respondents according to occupation

Table 6: Distribution of respondents according to language

Sl. No	Languages	No of people	%
1	Punjabi	31	75.6
2	Hindi	6	14.63
3	English	4	9.75

The above shows the distribution of respondents according to language that shows 75.6% respondents knows punjabi language, 14.63% respondents knows hindi language and 9.75% respondents knows english language.

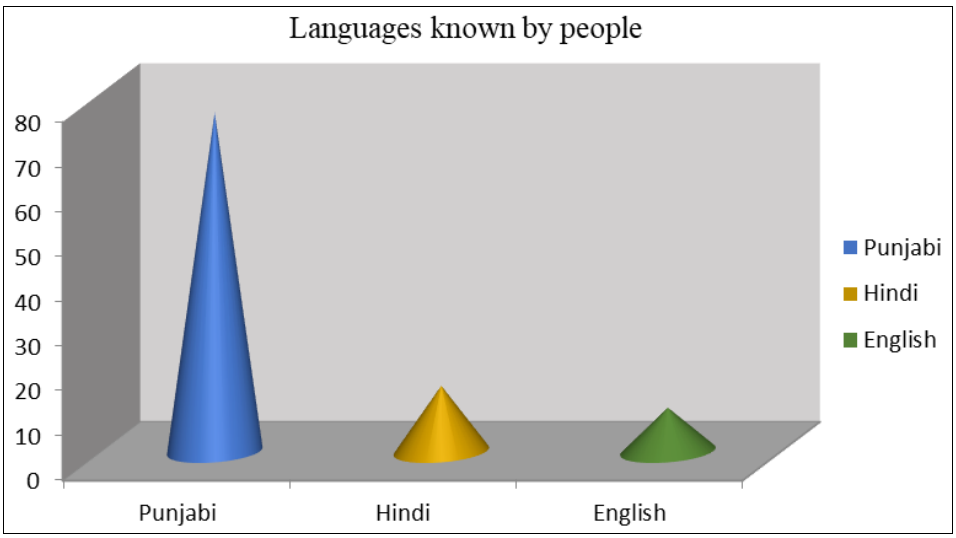

Fig 6: Distribution of respondents according to language

Table 7: Distribution of respondents according to treatments which they are receiving

SL No.	What type of treatment are you receiving?	No of people	%
1	No treatment	1	2.43
2	Allopathic (Oral hypoglycaemic agents, Insulin)	36	87.8
3	Ayurveda	3	7.31
4	Homeopathy	1	2.43
5	Naturopathy	0	0
6	Yoga	0	0
7	Sidhha	0	0
8	Unani	0	0

The above table shows the distribution of respondents according to treatments which are receiving by respondents that shows 2.43% of respondents receiving no any treatment, 87.8% of respondents receiving allopathic treatment, 7.31% of respondents receiving ayurveda treatment, 2.43% of respondents receiving homeopathy treatment, and 0% of respondents receiving naturopathy, yoga, siddha, unani treatments.

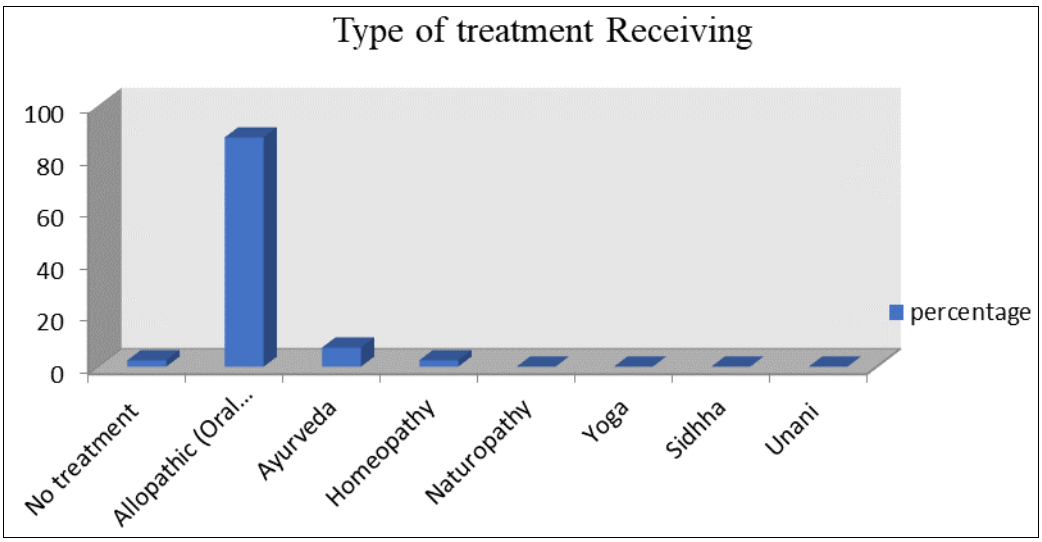

Fig 7: Distribution of respondents according to type of treatment receiving

Table 8: Distribution of respondents according to awareness about Mobile diabetes

Sl. No	Do you know about m Diabetes (Mobile diabetes)?	No of people	%
1	Yes	0	0
2	No	41	100

The above table shows that the distribution of respondents according to awareness about m diabetes shows that 0% of respondent's awareness about m diabetes and 100% respondents had no any awareness about m diabetes.

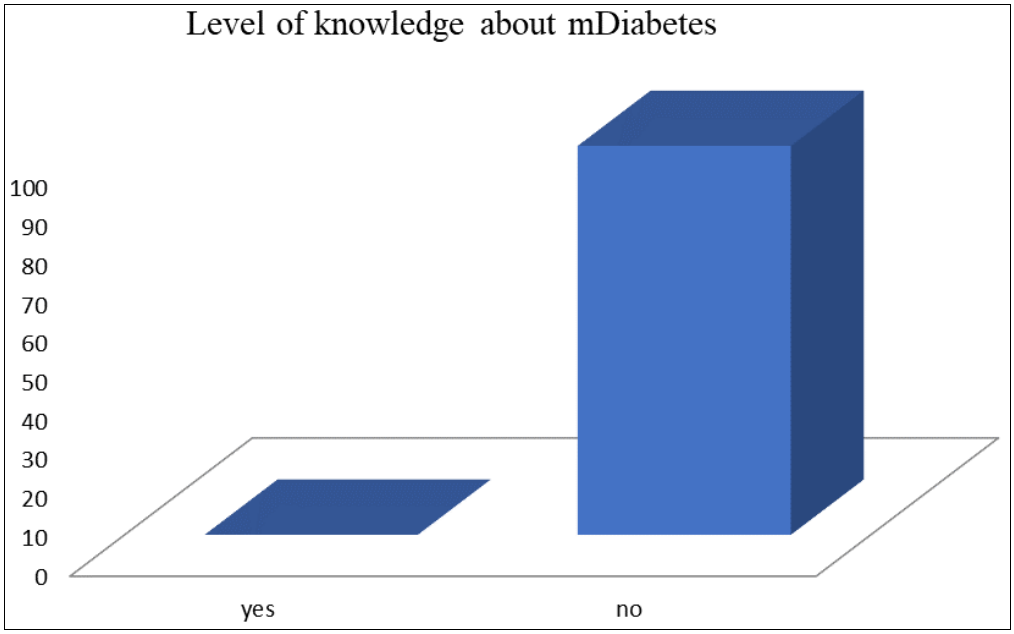

Fig 8: Distribution of respondents according to level of knowledge about Mobile Diabetes

Section II: Effectiveness of Mobile Diabetes on knowledge of patients with diabetes mellitus regarding management of diabetes mellitus.

Table 9: Comparison of pre-test and post-test level of knowledge regarding management of diabetes mellitus among diabetes patients.

Sl. No	Level of Knowledge	Pre Test		Post Test	
		Frequency	Percentage	Frequency	Percentage
1	Inadequate Knowledge	19	46.34	2	4.87
2	Moderately adequate knowledge	22	53.65	39	95.12
3	Adequate Knowledge	0	0	0	0

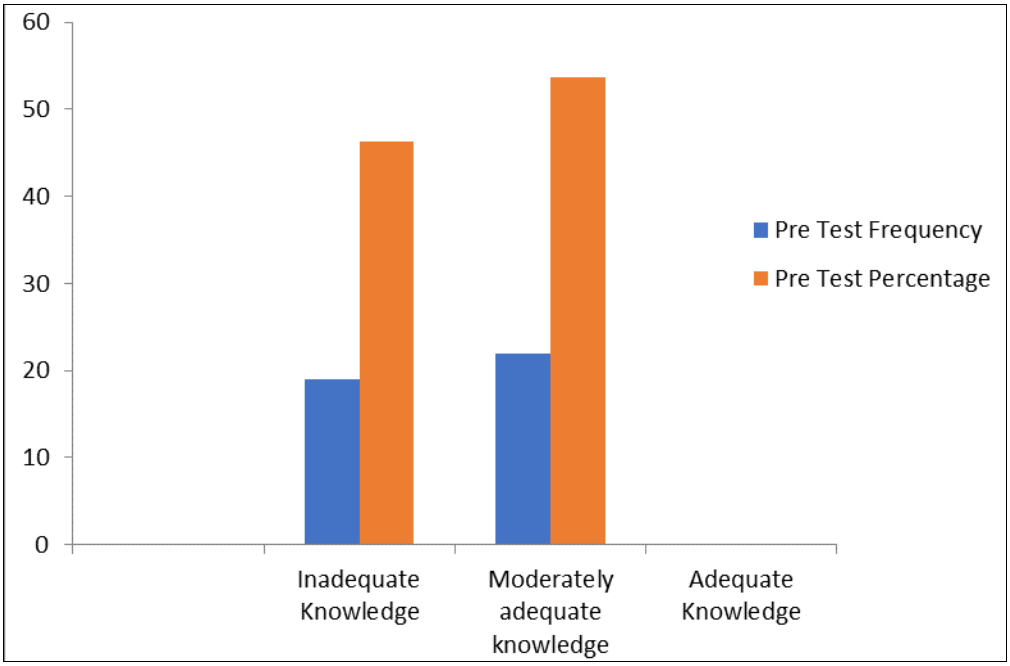

Fig 9: Distribution of Pre test knowledge Scores of diabetes patients

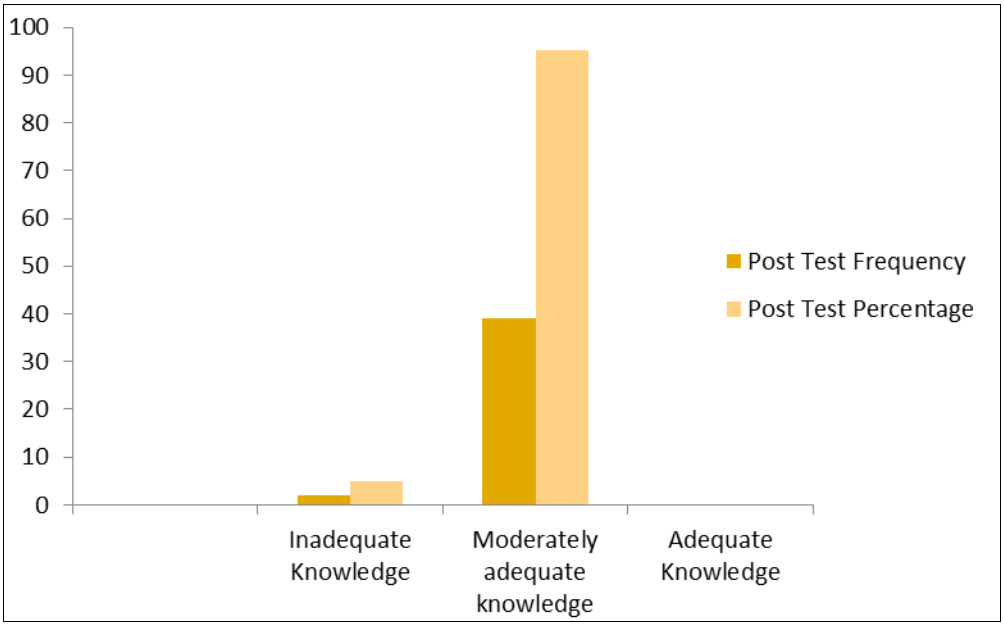

Fig 10: Distribution of Post test knowledge Scores of diabetes patient's mellitus regarding management of diabetes mellitus.

Table 10: Comparison of pre-test and post-test level of practice regarding management of diabetes mellitus among diabetes patients

Sl. No	Level of Practice	Pre Test		Post Test	
		Frequency	Percentage	Frequency	Percentage
1	Poor Practice	0	0	0	0
2	Average Practice	0	0	0	0
3	Good Practice	37	90.24	41	100
4	Very Good Practice	04	9.75	0	0

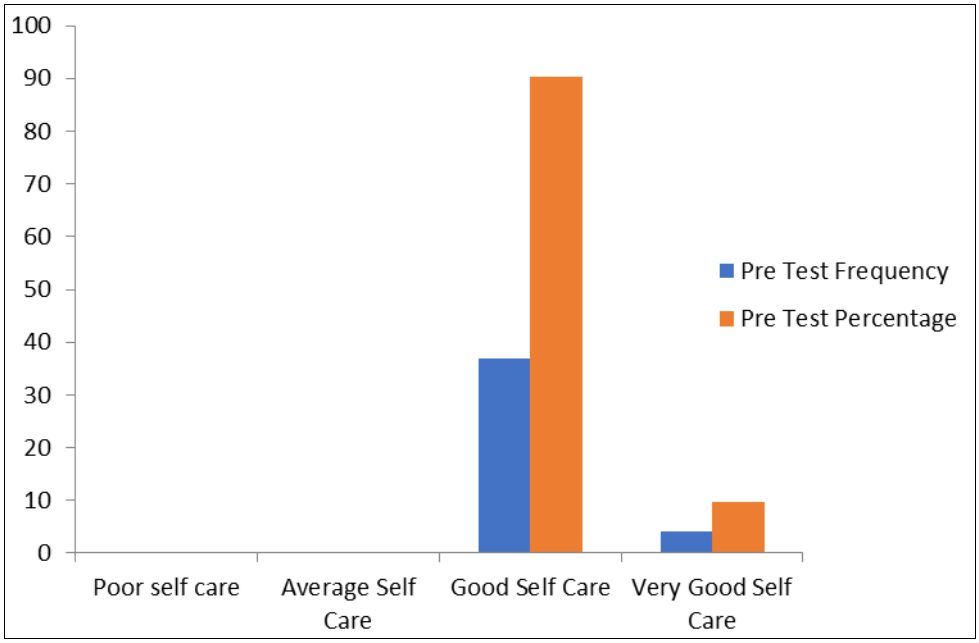

Fig 11: Distribution of Pre test practice Scores of diabetes patients

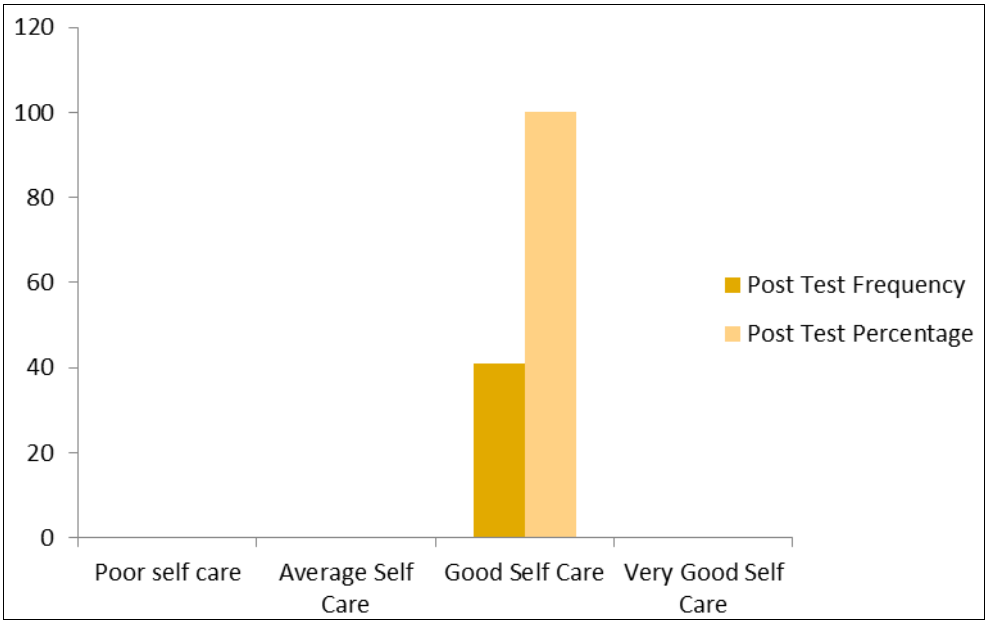

Fig 12: Distribution of Post test practice Scores of diabetes patients

Discussion

This chapter deals with the detailed discussion on the findings of the study interpreted from statistical analysis. The findings are discussed in relation to the objectives, need for the study, related literature of the study and conceptual framework. It is presented in line with the objectives of the study, which was conducted to evaluate the effectiveness of mobile diabetes programme on knowledge and practice regarding Management of diabetes mellitus among patients with diabetes mellitus, Bathinda, Punjab in order to achieve the objectives, Pre experimental group design was selected, the samples were selected by convenience sampling technique.

The study was conducted for about 4 weeks the data was collected from 41 respondents through a structured questionnaire schedule.

Description of population

Table 1-11 shows Distribution of socio demographic variables of diabetes mellitus patients.

With regard to their age 46.34% respondents age lies between 30-40, 29.26% respondents age lies between 41-50 and 9.75% respondents age is above 61.

Considering their 63.41% are male and 36.58% are females

With regard to their religion 60.97% are Sikh and 34.1% are females

With regard to type of family 78.04% have nuclear family, 21.95% have joint family and 0% has extended family.

Considering their occupation 7.31% are professionals and 12.19% are seme-professional, 2.43% are arithmetic skill jobs, 21.95% are skilled workers, 21.95% are semi-skilled workers, 19.51% are unskilled workers and 14.63 are unemployed with regard to the treatments which are receiving by respondents, 2.43% of respondents receiving

no any treatment, 87.8% of respondents receiving allopathic treatment, 7.31% of respondents receiving ayurveda treatment, 2.43% of respondents receiving homeopathy treatment, and 0% of respondents receiving naturopathy,yoga, siddha, unani treatments.
Considering their awareness about mobile diabetes, 0% of respondents aware about mobile diabetes and 100%

Conclusion

The study effectively demonstrated the positive impact of the "Mobile Diabetes" program on enhancing knowledge and improving practices among diabetes patients in Bathinda, Punjab. Before the intervention, a significant portion of participants displayed inadequate knowledge (46.34%) and moderate knowledge (53.65%) regarding diabetes management. However, post-intervention results revealed a dramatic improvement, with 95.12% of respondents achieving moderate knowledge and a substantial reduction in inadequate knowledge to 4.87%.
Similarly, while pretest findings showed that 90.24% of participants demonstrated good management practices, the post-test results indicated a complete shift, with 100% exhibiting good practices. This highlights the effectiveness of the mobile-based educational intervention in empowering patients with the necessary skills and awareness to manage diabetes effectively.
The findings underscore the potential of leveraging mobile health technologies to address gaps in health literacy and practice in resource-limited settings. Such initiatives can significantly contribute to better health outcomes by enabling patients to take proactive roles in managing chronic diseases like diabetes.
In conclusion, the "Mobile Diabetes" program proves to be a cost-effective, scalable, and impactful strategy for enhancing diabetes management knowledge and practices, with implications for broader applications in public health.

Conflict of Interest

Not available

Financial Support

Not available

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