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A study to assess the effectiveness of structured teaching programme on management and prevention of diabetic emergency among diabetic patients attending medicine OPD at SMCH, Thandalam

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Abstract
Diabetes Mellitus (DM) is a major health problem in the world. Diabetes mellitus describes a metabolic disorder of multiple etiologies characterized by chronic hypoglycemia with disturbances of carbohydrate, fat and protein metabolism. Hyperglycemia is an increase in blood glucose level. Hypoglycemia is a lower than normal level of blood glucose. Creating awareness on signs and symptoms among diabetic clients may reduce the complications. An evaluative approach quasi experimental research design was conducted among 100 diabetic client. Convenient sampling technique was used to select samples. Structured interview was used to collect demographic data, knowledge questions. Pre-test was conducted to assess the knowledge on diabetic client followed by administration of information booklet. After 7 days post test was conducted by using same questionnaire. The study finding revealed that after the administration of information booklet among Diabetic patient. Considering overall knowledge score, in pretest they scored only 11.7, after STP they scored 19.87 and mean difference is 8.14. The difference between pretest and posttest knowledge is large and its statistically significant. Statistical significance was calculated by paired 't' test. The t= 39.5182, df= 99. It shows a positive correlation which was found to be statistically significant p<0.001. This clearly interferes there is significantly improvement in the post-test level of knowledge regarding management and awareness of diabetic emergency among Diabetic patient.

Keywords: Structured Teaching Programme (STP), diabetic patient, management, diabetic emergency, pretest, posttest.

Introduction
Diabetes Mellitus (DM) is a major health problem in the world. It is one of the most prevalent metabolic diseases which can lead to enormous medical as well as socio economic consequences. Diabetes mellitus describes a metabolic disorder of multiple etiologies characterized by chronic hypoglycemia with disturbance of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action or both. The effects of diabetes mellitus include long-term damage, dysfunction or failure of various organs. Diabetes mellitus may present with characteristics such as thirst, polyuria, blurring of vision, and weight loss. In its most severe forms, ketoacidosis or non ketotic hyperosmolar state may develop and lead to stupor and coma. The long term effect of diabetes include progressive development of the specific complication of retinopathy with potential blindness, nephropathy that may lead to renal failure and nephropathy with risk of foot ulcer, amputation, charcot joints, and features of autonomic dysfunction, including sexual dysfunction. Two aspect of diabetes mellitus are hypoglycemia and hyperglycemia. Hyperglycemia is increase in blood glucose level and hypoglycemia is lower than normal level of blood glucose level.

Diabetes mellitus is currently the fastest growing debilitating disease in the world. It estimated that one out of five people aged 20 to 79 lives with this disease, while a similar percentage of the population is at risk of developing it. Recent studies od geographical and ethical influences shown that people of Indian origin are highly prone to diabetes. The number of adult suffering from diabetes mellitus in India is expected to increase three fold from 19.4 million in 2005to 57.2 million 2025. Diabetes is rapidly gaining the status o potential epidemic in India around 65 million people are expected to cross the 100 million mark and it is increasing to nearly 2 million in a year (Public health foundation of India, 2016).

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Hypoglycemia is a true medical emergency, which requires prompt recognition and treatment to prevent organ and brain damage. The spectrum of symptom depended on duration and severity of hypoglycemia and varied from autonomic activation to behavioral change to altered cognitive function to seizures or coma. The short and long term complication include neurologic damage, trauma, cardiovascular events and death. Severe untreated hypoglycemia can cause a significant economic and personal burden.

Diabetic ketoacidosis (DKA) is a life threatening condition with characteristics insulin deficiency and increased hormones of cortisol, glucagon, catecholamine, and growth hormones. The insulin deficiency and increased hormones lead to dehydration, electrolyte imbalance, hyperglycemia and ketosis. Those with severe DKA have a much higher mortality rate and risk of complication. This paper will summarize and evaluate two articles that discuss diabetic ketoacidosis (DKA) treatment protocol and the management of DKA.

According to the World Health Organization (WHO, Jan 2016) [2] report, India today heads the world with over 32 million diabetic patients and this number is projected to increase to 79.4 million by the year 2030. Recent surveys indicate that diabetes now affects a staggering 10-16% of urban population and (5-8%) of rural population in India. There is very little data on the level of awareness and prevalence about diabetes in developing countries like India. Such data is important to plan the public health program.

Ahmed Maashi Alanazi (2018) [3] conducted a study on Awareness of risk factors of DKA among diabetic adults in KSA. This is a exploratory cross- sectional study conducted among 100 diabetic patient aged from 16 to above 35 year in Riyadh city, kingdom of Saudi Arabia. Both quantitative and qualitative method were used in this study. The questionnaire was divided into 2 section, the first section was concerned with information of the participant, while the second section was evaluating the personal knowledge about DKA. Data analysis was carried out using Microsoft Excel 2016 and the statistical package for social science version 23.A total of 100 Saudi Arabia diabetic adult were enrolled in the current study, 81% of which were female while 19% were male. Age group ranged from 16 more than 35 years old. Educational stage was also diverse from high school student to graduates. 56% of participants had Type 1 DM while 44% had DM type 2.Our results revealed a compelling need to bridge the disparity in awareness of DKA among Saudi adults with both type.

Pramela (2016) conducted a study on a study to assess the awareness on management of hypoglycemia among diabetic clients in PSG hospitals, Coimbatore in view of preparing an information booklet. Descriptive survey design was adopted by selecting 60 samples using purposive sampling technique. Out of 60 samples, majority of the samples 32(53.4%) were male and only 28(46.6%) of the sample were female. Most of the sample 23(38.33%) belongs age group between 31-40 years. More than half of the samples 40(66.66%) were using hypoglycemic agents. 33(55%) were taking medication once a day. 18((30%) samples were having the history of hypoglycemic symptoms. Whereas, 7(11.66%) of them were not sure about the hypoglycemic symptoms. Only 24(40%) of them were aware about the self – management of hypoglycemia. The study highlights that the diabetes mellitus clients 13(21.6%) were having adequate knowledge, 39(65%) were having moderately adequate knowledge and 8(13.3%) had inadequate knowledge on management of hypoglycemia. The study findings reveled that, diabetic patientshad moderately adequate knowledge regarding awareness on hypoglycemia. So the diabetic patients should be aware on management of hypoglycemia by using information booklet which enhance the patients knowledge to manage the hypoglycemia and prevent.

The purpose of the study was
1. To assess the demographic variable of diabetic patients attending medicine OPD.
2. To determine the pretest knowledge regarding diabetic emergencies management and prevention among diabetic patients attending medicine OPD.
3. To evaluate the effectiveness of structure teaching programe on diabetic emergency management and its prevention in terms of gain in knowledge in posttest.
4. To find out the association between the posttest knowledge with their selected demographic variable.

Materials and Methods
In this study two types of variables are used (1) independent variable (2) dependent variable. Independent variable refers to the structured teaching program regarding knowledge of diabetic patient regarding prevention and management of diabetic emergency in medicine OPD whereas dependent variable gaining of knowledge among diabetic patient regarding prevention and management of diabetic emergency in medicine OPD. Patient attending medicine OPD has been selected as sample in the total population and there were 100 patients. Convenient sampling technique was used to select the subject from the target population. Criteria of sample selection: Inclusive criteria are Diabetic patients. (i) who are attending medicine OPD in the hospital, (ii) who know to read and write Tamil or English, (iii) who are willing to participate, Exclusive Criteria are Patients from medical and paramedical profession. Selection and development of tools: data collection instrument was "structured questionnaire" and the data collection method done through structured questionnaire. Demographic tool which included 7 items such as name, age, sex, educational background, marital status, occupational status, income in rupees, religion. Structured knowledge questionnaires: Structured Knowledge Questionnaire about diabetic emergency prevention and its management was used to assess the knowledge of patient. It consists of 25 close ended questions to assess the knowledge of diabetic patients regarding diabetic emergency and its management. Structured interview guide consists of 25 multiple choice questions. Diabetic patients coming for medicine OPD were interviewed and the answers were written in the box provided against each question. Each question have one correct response and the correct answer was awarded a score of "one" and the wrong answer was awarded a score of "zero". The total score was 25. The knowledge score interpretation1-12 (<50%) - Inadequate knowledge, 13-18(51-75%)- Moderate knowledge, 19-25(>76%)- Adequate knowledge. Structured teaching programme on prevention and management of diabetes: the STP was developed according to the literature review, objectives and sample size and the content of STP are a) introduction b) definition c) causes d) signs and symptoms e) types f) management g) prevention of recurrence h) foods to be restricted.

Data Collection procedure: Stated that instrument in a research should ask for as possible be a vehicle that would be the best obtaining data for drawing conclusion pertinent to the study. The procedure as (a) a formal written permission was taken from the hospital administrators of selected hospital (b) consent was taken from the diabetic patient attending medicine OPD (c) sample information kept confidential and used for research purpose (d) the investigator collected data from the selected hospitals and (e) investigator had taken pretest first of the sample & then administered STP and then after seven days the posttest. Paired t test also used to assess the pretest and post test score and the p value is <.05. The result was extremely significant (S). Chi square test was used to test the association between categorical variables. P < 0.05 was taken as statistically significant.

Results and Discussion
Among 100 samples, 56(56%) samples were male and 44(44%) of the samples were female. The samples 2(2%) belongs to age group between 41-50years, 24 of the samples belongs to the age group between 51-60 years. 22(22%) of the samples belongs to the age group between31-40 years. 18(18%) of the samples belongs to the age group between above 60 years, 10(10%) of the samples belongs to the age group of above 21-30 years. On verifying the educational status, 40(40%) of them had undergone secondary education, 36(36%) were qualified with primary education, 20(20%) were graduates and only 4(4%) were illiterate. Among 100 samples, 52(52%) were private employed, 24(24%) were self-employed, 18(18%) samples were government employed. Only 6(6%) samples were unemployed. Out of 100 samples 38(38%) had a family monthly income between Rs10000-20000, while 36(36%) of them were under the category of Rs. 5000-10000. The rest of the samples 20(20%) were 20000-30000 and 6(6%) were above Rs. 30000. On verifying the religion of samples, majority of them 56(56%) samples belongs to Hinduism and 32(32%) of them belongs to Christianity. Only 6(6%) of them belongs to Muslims.

Among 100 samples 54(54%) were not having a family history of diabetes. 46(46%) were have a family history of diabetes mellitus. Among 100 samples, 42(42%) of them were diagnosed as diabetes mellitus between 2-3 years, 32(32%) of the samples were diagnosed diabetes mellitus between 1-2 years and 2(2%) of the samples were diagnosed as diabetes mellitus above 3 years respectively. The samples),were using64(64%) diabetic medicine and 46(46%) samples were not using diabetics medicine Majority of 68(68%) samples, were not using any natural herbal medication and 32(32%) of the samples were using the natural herbal medication.

Section III

Table 1: Frequency and percentage distribution of diabetes mellitus client based on awareness on management and prevention of diabetic emergency.

Level of knowledge	Pre test		Post test	
	Frequency	Percentage	Frequency	Percentage
Inadequate knowledge	66	66%	-	-
Moderate knowledge	34	34%	28	28%
Adequate knowledge	-	-	72	72%

Table 1: shows that out of 100 samples 66(66%) had inadequate knowledge, 34(34%) had moderate knowledge and none have adequate knowledge in pretest. Table 3 also shows that out of 100 samples 72(72%) had adequate knowledge, 28(28%) had moderate knowledge and none of them had inadequate knowledge in posttest.
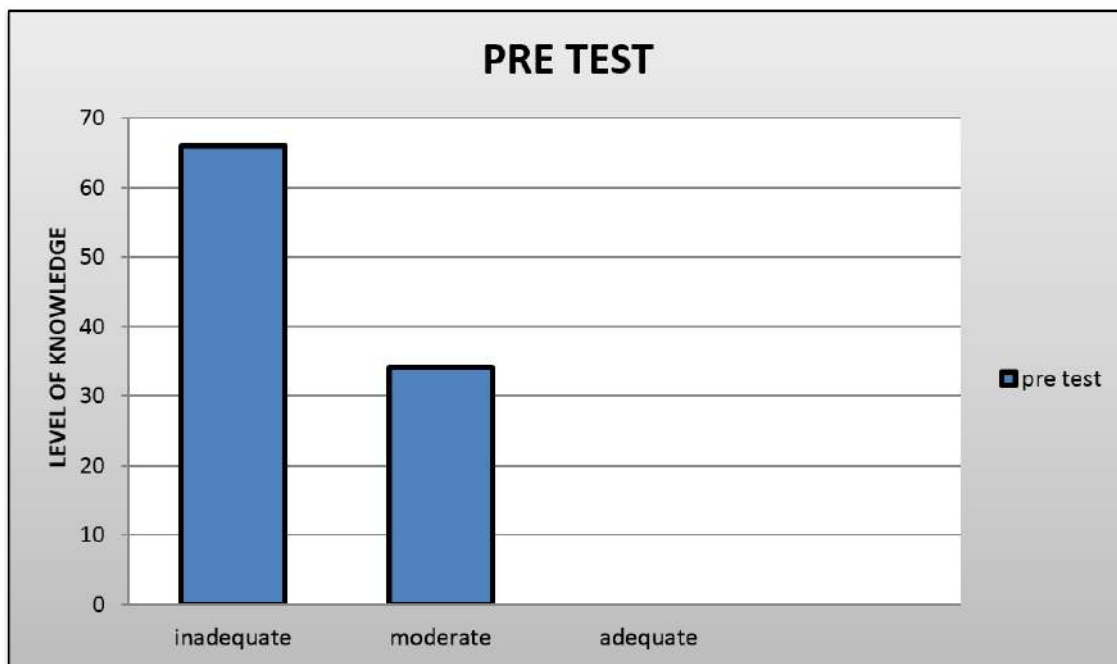
Inadequate (66%), Moderate (34%), Adequate (0)

Fig I: Shows that diabetic clients has the percentage of inadequate (66%), Moderate (34%), A dequate (0%)
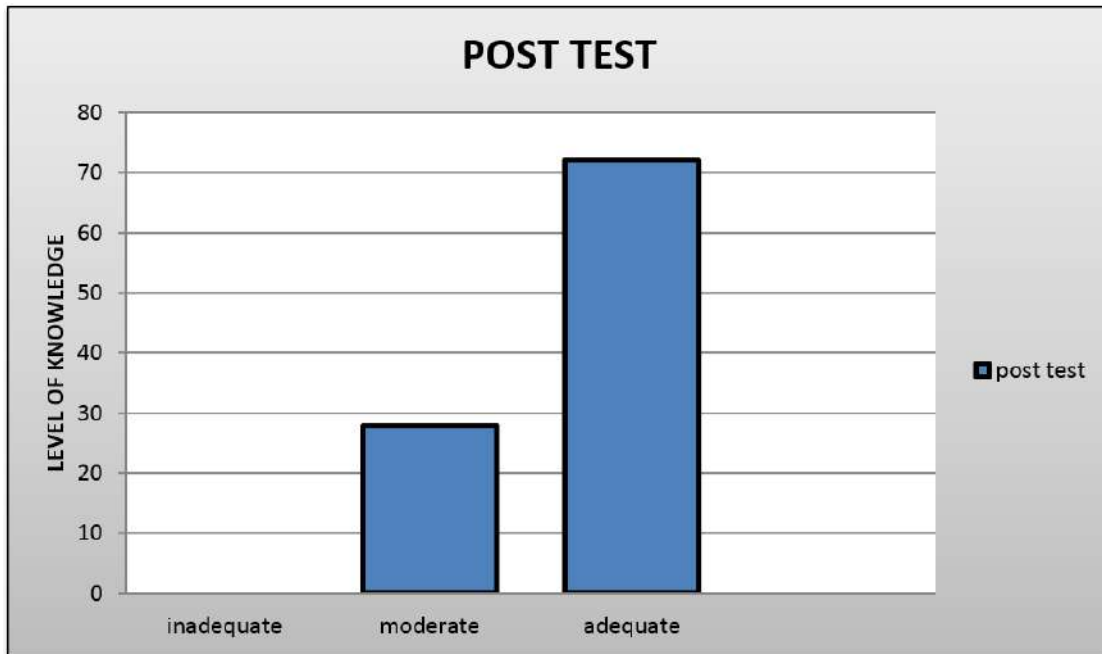
Inadequate (0%), Moderate (28%), Adequate (72%).

Fig II: Shows that diabetic patients has the percentage of inadequate (0%), Moderate (28%), Adequate (72%).

Section IV

Table 2: Graphical presentation and distribution of mean and standard deviation of level of knowledge among diabetic patients regarding diabetic emergency condition in pretest and posttest.

Level of Knowledge	Pre Test		Post Test	
	Mean	Standard Deviation	Mean	Standard Deviation
Inadequate	10.5758	1.404	0	0
Moderate	13.8824	0.7693	16.4286	1.1996
Adequate	0	0	21.1667	1.6867

Table 2 shows the mean and standard deviation of level of knowledge of patient with diabetes regarding management and prevention of diabetic emergency in pretest and posttest. In pretest the mean score for inadequate (10.5758), moderate (13.8824) and adequate (0) and standard deviation score for inadequate (1.404), moderate (0.7693) and adequate (0). In posttest the mean score for inadequate (0), moderate (16.4286) and adequate (21.1667) and the standard deviation score for inadequate (0), moderate (1.1996) and adequate (1.6867).
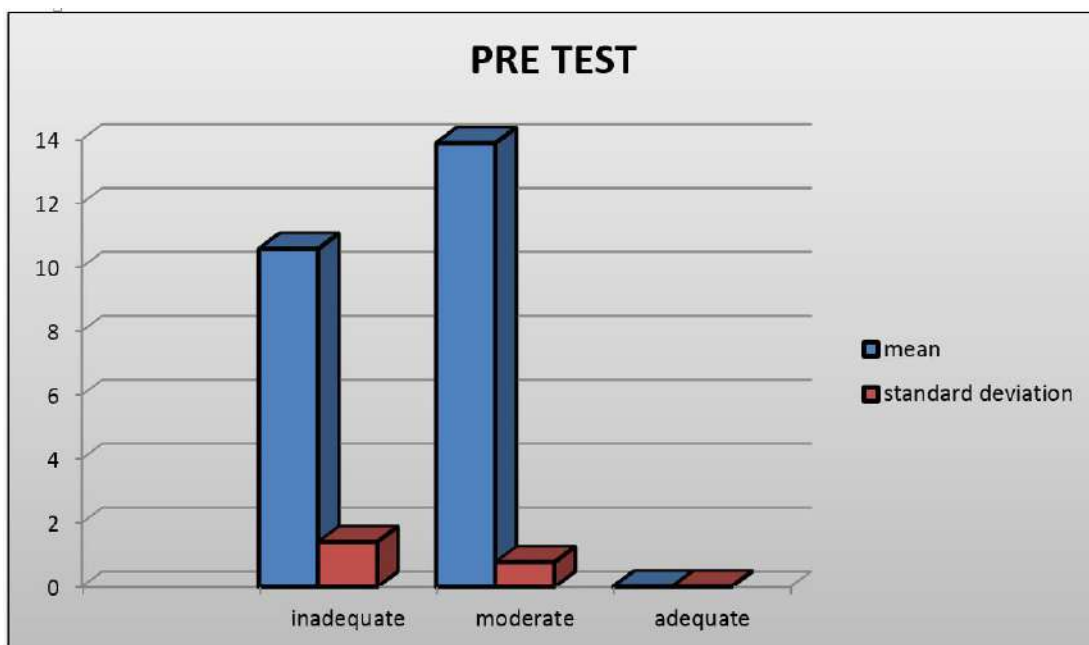

Fig III: Shows graphical presentation of mean score and standard deviation of level of knowledge of patients in medicine OPD regarding management and prevention of diabetic emergency in pretest
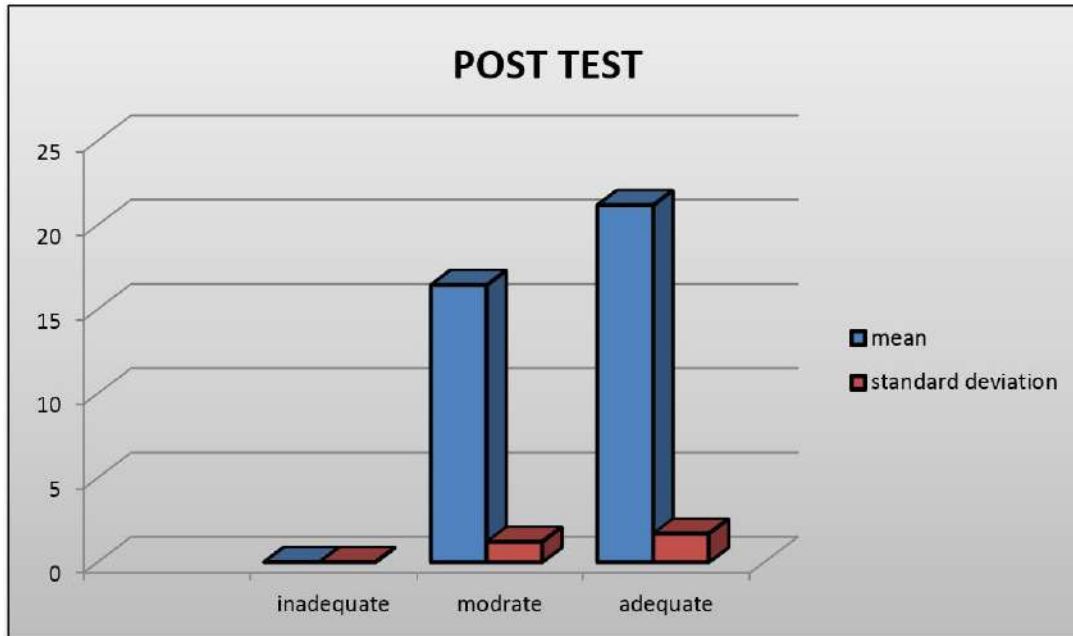
Fig IV: Shows graphical presentation of mean score and standard deviation of level of knowledge of patients in medicine OPD regarding management and prevention of diabetic emergency in posttest.

Table 3: Distribution of mean and standard deviation of level of knowledge among diabetic patient in pretest and posttest

Level of Knowledge	Mean	S.D	Mean Difference	Paired T Value
Pre Test	11.7	1.9924	8.14	P< 0.0001
Posttest	19.84	2.6466	8.14	T=39.5182 Df=99 S***

S.D = Standard Deviation
P< 0.001
Df= degree of freedom
t=paired t test
S= significant

Table 3 shows that the mean, standard deviation, mean difference paired t test value of pre and posttest. In pretest the mean value is 11.7 and standard deviation is 1.9924. And in posttest the mean value is 19.84 and the standard deviation is 2.6466. The mean difference between pre and posttest is 8.14. Through the knowledge on management and prevention of diabetic emergency showed significant improvement in mean and standard devisation in posttest than pretest. The paired t test value is 39.5182 and is highly significant.
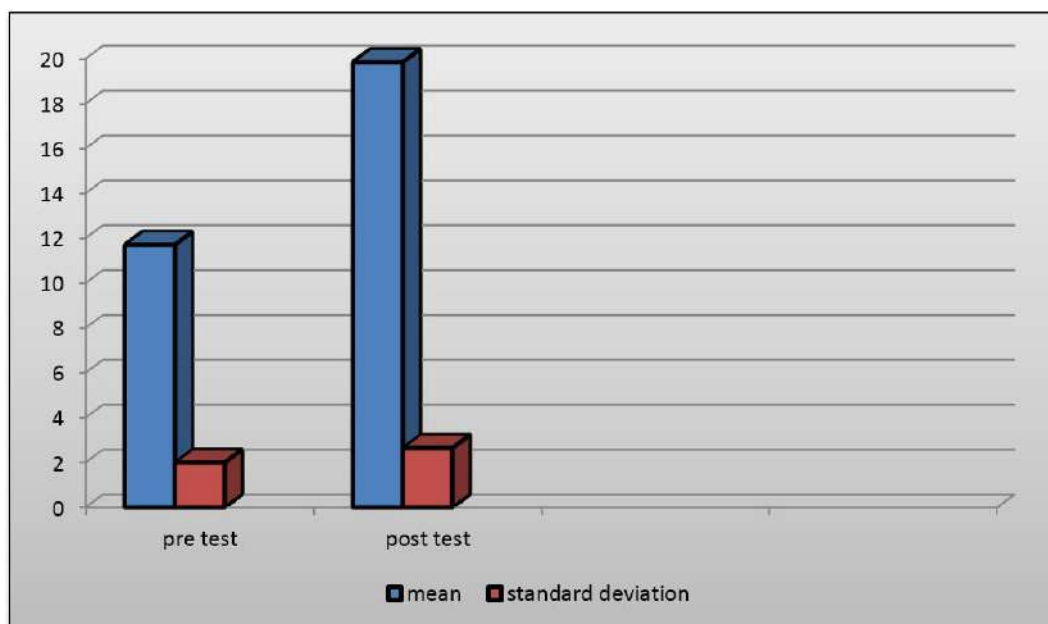

Fig V: Shows graphical presentation of comparison of mean and standard deviation in pretest and posttest

The association of demographic variable with knowledge regarding management and prevention of diabetic emergency among patient with diabetes, It shows that the demographic variable of age, occupation, education and are statistically significant association with posttest level of knowledge at p<0.001 level. The other demographic variable are not statistically significant with the posttest knowledge.

Conclusion

The study revealed that the information booklet was highly effective in improving knowledge of diabetic patients regarding diabetic emergency and its management.

Acknowledgement

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