



## Knowledge and Practice of Self Care Management on Diabetes Mellitus among Urban People

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### ABSTRACT

Diabetes Mellitus has become a health problem of great magnitude recently. If it is untreated, it is leading to many complications silently. Diabetes self management is the corner stone for controlling Diabetes and preventing Diabetes complication. The aim of the study was to assess the effectiveness of demonstration on self care management among Clients with diabetes mellitus. The self care management includes practice of regular blood sugar level monitoring and self administration of insulin injection among client with diabetes mellitus. In quasi experimental research design one group pre and post test design was used. Totally 75 Clients with diabetes mellitus were selected by using purposive sampling method. Assessing the level of knowledge on self blood glucose monitoring and self insulin injection administration among clients with diabetes mellitus in pretest, 87% and 93% had inadequate knowledge respectively and it was reduced to 12% and 8% in post test. Regarding the demonstration of self blood sugar monitoring and self insulin injection administration practice 97% and 98% had poor practice in pretest and it was reduced to 22% and 27% in post test respectively. There was significant association between the level of knowledge with the selected demographic variables such as age, education and source of health information at  $P < 0.005$ . The study concluded that there is effectiveness of demonstration on self care management among Clients with diabetes mellitus.

**Keywords:** Self care management; Diabetes mellitus; Blood Glucose Level; Self-administration of insulin injection.

### INTRODUCTION

Diabetes is a complex metabolic disease that may lead to many circulatory and neurological disorders. Diabetes is a disease of the endocrine system where the body is not able to maintain the blood sugar at the required level for good health and well being. Diabetes has become a big problem of great magnitude recently.<sup>1</sup> It is estimated that 10-12% of the urban residing Clients and 4-6% of rural Clients of India are having diabetes mellitus. There is also a corresponding increasing in the diabetic related complication for example diabetic neuropathy, diabetic retinopathy, and diabetic nephropathy.<sup>2</sup>

Diabetes Mellitus occurs due to defect in the beta cells of islets of langerhans, in pancreas. This leads to deficient production of insulin that is responsible for maintenance of blood glucose. There are two types of diabetes. They are insulin dependent and non insulin dependent diabetes mellitus. The development of disease may be caused by various factors including, hereditary, viruses, and immunological factors.<sup>3</sup>

Diabetes mellitus has emerged as a major health care problem in India. According to diabetes atlas published by international diabetic federation (IDF) there were estimated 40 million Clients with diabetes in 2007 and this number predicted to rise to almost 70 million Clients by 2025<sup>4</sup>. The countries with largest number of diabetes will be in India, China and USA by 2030. It is estimated that every 5<sup>th</sup> person with diabetes will be an Indian<sup>2</sup>.

Diabetes is considered as mother for all diseases. Increased glucose in the blood for a long time can create many problems. That can damage many parts of the body, such as heart, blood vessels, eyes and kidneys. Heart and blood vessels diseases can lead to heart attacks and strokes, which are main killer of mankind. If Clients control diabetes properly with time to time medicines and regular checkups and follow up, that may result in to good glycemic control and thus reduce diabetic complications<sup>3</sup>.

Ultimately, diabetes prevention needs societal and community support and behavioral change on the part of individual and their families. Now it is the time for India to wake up to the imminent problem of diabetes mellitus and act before arising of damage to the body parts.

### Need for the study

A study was conducted to estimate the prevalence of diabetes and the number of all age which diabetes for year 2000 and 2030. The prevalence of diabetes for all age group worldwide was estimated to be 2.8% in 2000 and 4.4% in 2030 the total number of Clients with diabetes project to rise from 171 million in 2000 to 366 million in 2030<sup>5</sup>. The Even minor trauma can lead to infection of foot ulcers and amputation is major course of morbidity, disability and cost for Clients with diabetes mellitus<sup>6</sup>.

Diabetic nephropathy is the leading cause of end stage of renal disease worldwide and develops in 20-40% of patient with type I or type II diabetes mellitus. Diabetic retinopathy is common complication of diabetes mellitus and is one of the leading causes of visual loss in working



age population in developed and developing countries. The known risk of retinopathy is directly related to the degree and duration of hyperglycemic<sup>7</sup>.

According to World Health Organization, in the year 2012, Diabetes is the single most important metabolic disorder which can nearly affect every organ and system in the body. In India it is estimated that presently 19.4 million individuals are affected by this deadly disorder, which is likely to go up 57.2 million by the year 2025<sup>8</sup>.

In the current health care environment there will be no administrative movement toward improving quality of diabetes care unless there is a related profit incentive (or) a care deficit related penalty. Evidence based improved method and tools for achieving optional glycemetic control are now available. It is ironic that barriers exist simultaneously to prevent the delivery of state-of-the-art diabetes assessment, care and self management education to this population of clients in the most cost-effective care delivery setting the home<sup>9</sup>.

Recent researches suggested that Indians were genetically predisposed to diabetes. For a given body mass index, Indians have higher amount of fat around the middle as compared to other races.<sup>4</sup> According to Chennai based Diabetes Research center there were 1.02 lakh diabetes related death in India in 1999-2000.<sup>10</sup> In Bangalore 3lakh Clients are known diabetics. It is estimated that 30 million Clients in India are affected by diabetes and India is the country with highest rate of diabetes.<sup>2</sup>

A study was conducted to assess the effectiveness on demonstration regarding urine testing in practice among client with diabetes mellitus. The aim of the study was to investigate the awareness of diabetes and related factors in diabetes. The study reported that the participants were having adequate knowledge regarding the risk factors and lack of awareness of diabetes controlled programme. Diabetes cannot be cured, but can be controlled. Clients with Diabetes must incorporate a complicated regimen of self management in to their lives that is, taking medication, adherence of diet, exercise and also recognition of symptoms associated with glycosuria and hypoglycemia.<sup>11</sup>

Diabetes self management is the corner stone for controlling Diabetes and preventing Diabetes complication.<sup>12</sup> If inadequately treated develop multiple chronic complications leading to irreversible disability and death.

Diabetes can be effectively controlled and complications can be prevented by self care like diet, exercise, medication, self monitoring of blood glucose level, foot and skin care.<sup>13</sup> The client who is knowledgeable about his or her condition and treatment can practice the instruction given to prevent further complications. In order to carry out these functions client must be thoroughly instructed in self care management and their knowledge and practice should be checked periodically.

The investigator observed from experience that Clients do not have adequate knowledge about the consequences of diabetes due to their ignorance. That is reason make the Clients for irregular checkup and medications. Instead of making to avail regular checkup, the better convenient way for the Clients to have diabetes in their control is self care management. So the investigator had an idea to demonstrate the Clients for self monitoring of blood glucose level and self administration of insulin injection.

Hence the investigator felt need to assess the effect of self care management demonstration to practice routinely among Clients with diabetes mellitus.

#### Aim of the Study

- To assess the knowledge and practice on demonstration of regarding blood sugar testing and insulin injection administration among client with diabetes mellitus in pre and post test.
- To determine the effectiveness of demonstration regarding self care management in knowledge and practice among client with diabetes.
- To find out the association between knowledge and practice score of client with selected demographic variables.

#### MATERIALS AND METHODS

**Research Approach:** Evaluative research approach was used.

**Research Design:** In quasi experimental research design one group pre and post test design was used.

**Population:** Clients affected with diabetes mellitus and they are under the need of treatment by insulin injection residing at urban area.

**Setting of the Study:** The study was conducted at Ayanavaram urban area. Around 60% of the Clients crossed 40years were having diabetes mellitus.

#### Variables

**Dependent variable-** Knowledge and practice regarding blood glucose monitoring and self administration of insulin injection among the Clients with diabetes mellitus.

**Independent Variable-** Demonstration of blood glucose monitoring and self administration of insulin injection among the Clients with diabetes mellitus.

**Extraneous variable-** Age, gender, education, occupation, monthly income, types of family, food habits, and source of health information.

**Sample:** Clients affected with diabetes mellitus and they are under the need of treatment by insulin injection residing at Ayanavaram, Chennai city.

**Sample Size:** Totally 75 Clients with diabetes mellitus were selected.



**Sampling Techniques:** Purposive sampling technique was used.

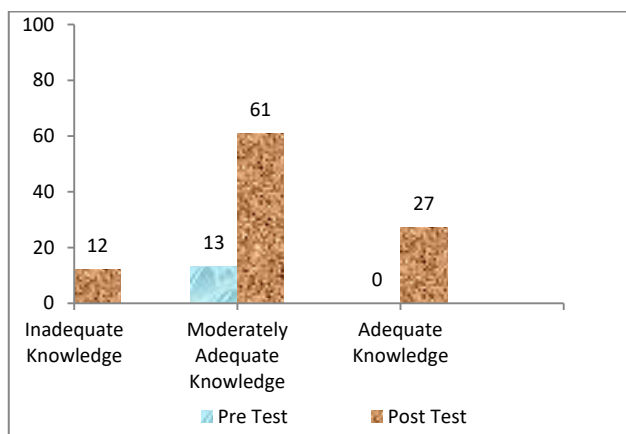
**Inclusion criteria:** Clients aged more than 40 years old inclusive of both male and female having minimum of primary education with known diabetes mellitus and under the treatment insulin injection and who is willing and affordable to buy standardized glucometer for blood glucose checkup.

**Description of the Tool:** The Tool developed based on professional experiences and guidance of experts. Tool consist of Section-A includes of demographic variables like age, gender, educational status, religion, occupation, monthly income, types of family, type of hospital visit & source of health information, Section-B includes of structured knowledge questionnaire to assess the knowledge regarding blood glucose monitoring and self administration of insulin injection and Section-C includes check list to assess the practice of blood glucose monitoring and self administration of insulin injection among Clients with diabetes mellitus.

**Data Collection:** Prior to study, informed consent was obtained from the samples. After 7 days of conduction of pretest from the sample followed by demonstration, post-test was conducted by using structure knowledge questionnaire and practice was assessed by using checklist regarding blood glucose monitoring and self administration of insulin injection among Clients with diabetes mellitus. The collected data was analyzed by using descriptive and inferential statistics.

**RESULTS**

The results were presented in tabular or graphical form. Totally from 75 Clients with diabetes mellitus 43(57.3%) were men and 32(42.7%) were women. Most of them 41(54.7%) were in the age group of 50-59 years and few 2(2.6%) were in 70years and above. Regarding the educational status of the clients 6(8%) were studied upto primary education and 21(28%) were graduates. Totally 24(32%) were housewives. Majority 63(84%) were getting treatment from private hospital (Table 1).



**Figure 1:** Knowledge Level on Blood Glucose Assessment of Clients with Diabetes Mellitus

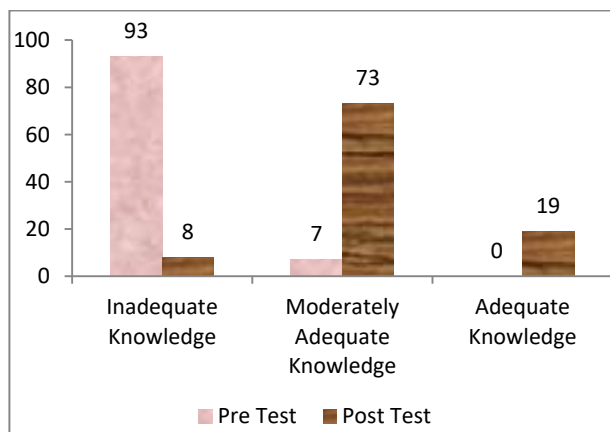
**Table 1:** Socio-demographic variables of Clients with diabetes mellitus

S. No	Demographic Variables	Frequency	Percentage	
1	Age in Years	(a) 40 – 49 years	18	24
		(b) 50 – 59 years	41	54.7
		(c) 60 – 69 years	14	18.7
		(d) 70 years & above	2	2.6
2	Gender	(a) Male	43	57.3
		(b) Female	32	42.7
3	Education	(a) Primary school	6	8
		(b) High School	15	20
		(c) Higher secondary school	33	44
		(d) Graduate & Others	21	28
4	Religion	(a) Hindu	41	54.7
		(b) Muslim	7	9.3
		(c) Christian	27	36
		(d) Others	0	0
5	Occupation	(a) Nil / housewife	24	32
		(b) Business/ Self employed	16	21.3
		(c) Government employee	05	6.7
		(d) Private employee	30	40
6	Monthly Income	(a) Below Rs. 5000	4	5.3
		(b) 5000 – 10,000	17	22.7
		(c) More than 10,000	54	72
7	Types of Family	(a) Nuclear family	71	94.7
		(b) Joint family	4	5.3
8	Type of hospital visit	(a) Government	12	16
		(b) Private	63	84
9	Source of Health Information	(a) Mass media	18	24
		(b) Health personnel	22	29.3
		(c) Relatives	14	18.7
		(d) Neighbour / Friends	21	28

Figure 1 is showing that assessing the level of knowledge on self blood glucose monitoring among clients with diabetes mellitus in pretest, 87% had inadequate knowledge, 12% had moderately adequate knowledge and none of them had adequate knowledge. In posttest, 12% had inadequate knowledge, 61% had moderately adequate knowledge and 27% had adequate knowledge.

The level of knowledge assessment on self administration of insulin injection among clients with diabetes mellitus in pretest, 93% had inadequate knowledge, 7% had

moderately adequate knowledge and none of them had adequate knowledge. In posttest, 8% had inadequate knowledge, 73% had moderately adequate knowledge and 19% had adequate knowledge, which was shown in Figure 2.



**Figure 2:** Knowledge Level on Self Administration of Insulin Injection of Clients with Diabetes Mellitus

**Table 2:** Practice Level on Self Care Management of Clients with Diabetes Mellitus

Level of Practice		Blood Glucose Assessment	Self Administration of Insulin Injection
Pre Test	Poor	97	98
	Satisfactory	3	2
	Good	0	0
Post Test	Poor	12	16
	Satisfactory	14	15
	Good	74	69

Table 2 is depicting the Practice Level on Self Care Management of Clients with Diabetes Mellitus. Regarding the demonstration of self blood sugar monitoring 97% had poor practice and 3% had satisfactory in pretest and in post test 12% had poor practice 14% had satisfactory and 74% had good practice. Regarding the self insulin injection administration 98% had poor practice and 2% had satisfactory in pretest and in post test 16% had poor practice 15% had satisfactory and 69% had good practice.

The pre and post test results evidenced that there is effectiveness of demonstration regarding self care management in knowledge and practice among client with diabetes at  $P < 0.005$  significant.

There was significant association between the level of knowledge with the selected demographic variables such as age, education and source of health information at  $P < 0.005$ .

**DISCUSSION**

The major finding in this study was the level of knowledge on self blood glucose monitoring among clients with diabetes mellitus in pretest, 87% had inadequate knowledge and it was reduced to 12% in post test. About

the self administration of insulin injection among clients with diabetes mellitus in pretest, 93% had inadequate knowledge, and it was reduced 8% in post test.

A study by Muninarayana et al., reported that only 50.8% of population knew about the condition of diabetes mellitus. Remaining people were unaware. Therefore, there is a need to educate people on diabetes in rural as well as urban areas.<sup>14</sup>

Idongesit L. Jackson, Maxwell O. Adibe, Matthew J. Okonta, and Chinwe V. Ukwue (2013) had conducted a study on Knowledge of self-care among type 2 diabetes patients in two states of Nigeria. The study was aimed to assess the knowledge of self-care practices, as well as factors responsible for such knowledge. Descriptive, cross sectional survey research design was employed. The Diabetes Self-care Knowledge was used in evaluating knowledge of self-care practices. Total of 303 patients the majority of the study sample (79.5%) had more overall knowledge level about self-care. Self-care knowledge was associated with level of education ( $p < 0.001$ ), monthly income ( $p < 0.001$ ) and duration of diabetes ( $p = 0.008$ ). The study concluded that diabetes self-care knowledge was generally high among the population studied.<sup>15</sup>

Regarding the demonstration of self blood sugar monitoring practice 97% had poor practice and none had good practice in pretest and it was changed to 12% had poor practice 14% had satisfactory and 74% had good practice in post test. About the self insulin injection administration 98% had poor practice and 2% had satisfactory in pretest and 16% had poor practice 15% had satisfactory and 69% had good practice in post test.

Chamil Vidusha Madushan Jindasa et al.,(2011) had conducted the study to determine the knowledge and practice of foot care in patients with chronic diabetic ulcer in internal medicine and public health, Colombo with the sample of 137 patients. The study results showed that awareness of foot care measures is very poor among known diabetic patients and this is largely due to a lack of education of the patients by their health care providers.<sup>16</sup>

A cross-sectional study on knowledge and self-care practices regarding diabetes among newly diagnosed type 2 diabetics in Bangladesh was done by Farzana Saleh et al.,(2012). This study assessed the relationship between knowledge and practices among newly diagnosed type 2 diabetic patients. Newly diagnosed adults with type 2 diabetes (N = 508) were selected from 19 healthcare centers. Knowledge and self-care practices were assessed via interviewer administered questionnaires. Approximately 16%, 66%, and 18% of respondents had good, average, and poor basic knowledge respectively and 10%, 78%, and 12% of respondents had technical knowledge, about DM. About 90% of respondents did not test their blood glucose regularly. There was a significant relationship existed between basic knowledge and glucose monitoring. Approximately one-third of



respondents in each group partially followed rules for measuring food before eating. The study concluded that health education and motivation should create positive changes in diabetes-control-related self-care practices.<sup>17</sup>

The demonstration regarding self care management in knowledge and practice was effective among client with diabetes at  $P < 0.005$  significant.

There was significant association between the level of knowledge with the selected demographic variables such as age, education and source of health information at  $P < 0.005$ .

## CONCLUSION

This study reflects that there is a need to improve diabetic knowledge among the patients which can be motivated through community health nurses and achieved through community health centres. It emphasizes to bring the awareness among the people in a right path and extend the diabetic health programs in mass campaigns thoroughly. It will be beneficial if a diabetic clinic and information center for teaching diabetic patients is established. Also nurses, doctors, dietitians and other health team members should join hands to help these diabetic patients live healthy by providing them with the right information at every available opportunity.

## REFERENCES

1. Todd Cade, Diabetes-Related Micro vascular and Macro vascular Diseases in the Physical Therapy Setting, *Journal of American Physical Therapy*. 2008 Nov; 88(11): 1322–1335.
2. Seema Abhijeet Kaveeshwar and Jon Cornwall, The current state of diabetes mellitus in India, *Australian Medical Journal*. 2004; 7(1): 45-48.
3. American Diabetes Association, Diagnosis and Classification of Diabetes Mellitus, *Diabetes Care Journal*. 2009 Jan; 32(Suppl 1): S62–S67.
4. Mohan.V, Sandeep.S, Deepa.R, Shah.B & Varghese.C, Epidemiology of type 2 diabetes: Indian scenario, *Indian Journal Medical Research*. 2007 March; 125: 217-230.
5. Wild. S, Roglic. G, Green. A, Sicree. R, & King. H, Global prevalence of diabetes: estimates for the year 2000 and projections for 2030, *Diabetes Care*. 2004 May; 27(5):1047-53.
6. Stephanie. C Wu, Vickie. R Driver, James. S Wrobel, & David. G Armstrong, Foot ulcers in the diabetic patient, prevention and treatment, *Journal of Vascular Health Risk Management*. 2007 Feb; 3(1): 65–76.
7. Andy K.H. Lim, Diabetic nephropathy – complications and treatment, *International Journal of Nephrology and Renal Vascular Diseases*. 2014; 7: 361–381.
8. Pradana Soewondo, Alessandra Ferrario and Dicky Levenus Tahapary, Challenges in diabetes management in Indonesia: a literature review, *Journal of Globalization Health*. 2013 Dec; 9: 63.
9. Patricia Landi Linekin, Home Health Care and Diabetes Assessment, Care, and Education, *Journal of Diabetes Spectrum* 2003 Oct; 16(4): 217-222.
10. Anjali D. Deshpande, Marcie Harris-Hayes & Mario Schootman, Epidemiology of Diabetes and Diabetes-Related Complications, *American Journal Physical Therapy*. 2008 Nov; 88(11): 1254–1264.
11. Surendranath. A, Nagaraju. B, Padmavathi. G.V, Anand S.V, Patan Fayaz & Balachandra. G, A study to assess the knowledge and practice of insulin self-administration among patients with diabetes mellitus, *Asian Journal of Pharmaceutical and Clinical Research* 2012 Oct; 5(1): 63-66.
12. Xu. Y, Toobert. D, Savage. C, Pan. W & Whitmer. K, Factors influencing diabetes self-management in Chinese people with type 2 diabetes, *Journal of Research Nursing Health*. 2008 Dec; 31(6): 613-25.
13. Clark, Physical activity efficacy and effectiveness among men and women diabetes care, 7<sup>th</sup> edition New Delhi: Lipponcott; 2004: 237-352.
14. Muninarayana. C, Balachadra. G, Hiremath. S.G, Krishna Iyengar, and N. S. Anil, N.S, Prevalence and awareness regarding diabetes mellitus in rural Tamaka, Kolar, *International Journal Diabetes Developing Countries*. 2010 Jan-Mar; 30(1): 18–21.
15. Idongesit L. Jackson, Maxwell O. Adibe, Matthew J. Okonta, and Chinwe V. Ukwé, Knowledge of self-care among type 2 diabetes patients in two states of Nigeria, *Pharmacy Practice (Granada)*. 2014 Jul-Sep; 12(3): 404.
16. Chamil Vidusha Madushan, A study to determine the knowledge and practice of foot care in patients with chronic diabetic ulcers, *International Journal of Collaborative Research on Internal Medicine & Public Health*, [internalmedicine.imedpub.com](http://internalmedicine.imedpub.com).
17. Farzana Saleh, Ferdous Ara and Fadia Afnan, Assessment of Gap between Knowledge and Practices among Type 2 Diabetes Mellitus Patients at a Tertiary-Care Hospital in Bangladesh, *Advances in Public Health*. 2016 Nov; (2016), Article ID 4928981, 7.

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