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Short Communication

Educating lifestyle modification to diabetic patients

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ABSTRACT

The burden of non-communicable diseases (NCDs) is steadily increasing, making them a major health concern. Diabetes mellitus (DM) is one of the major non-communicable diseases that affects the public health and the community. DM is a chronic, complex disease that requires multi-factor risk reduction strategies apart from its maintaining blood glucose level. One of the community-based strategy is to educate diabetic patients about life style modifications. Keeping that as a guideline, a nurse-led intervention was carried out to ring about a change in life style in these patients. About 60 diabetic patients with equal number of control subjects were taken for the pilot study. Data were collected through interviews with a semi-structured questionnaire before (pre-test) and after nurse-led intervention (post-test) The data were analyzed using descriptive and inferential statistics; the calculated data were tabulated and graphed. The results of the study show that diabetic patients included in the study have improved their knowledge of life style modification. The community nurse intervention improved their perspective and understood the importance of life style medication (from 16.19 to 24.98%). This was tested using the student paired t test. Outcome of the test before the intervention showed significant change. Pre-test value was (53.97%) and the post-test intervention was 83.27%. The effect of such intervention was influenced the age, gender, education, and family structure. The intervention was found to be more effective in male patients of the age group 30-40 years with educational background and stable family structure having a joint family. The awareness created by nurse led intervention is effective and is significant taking age, sex, education level and the family structure. The pilot study indicates that further studies may be carried out in the community with general population and then specifically in patients with diabetes.

Keywords: DM, Lifestyle modification, Effectiveness, Nurse-Led intervention

INTRODUCTION

There is considerable body of evidence to show that life style modification helps to prevent and control the progression of DM.[1-4]

Indian population has some unique features like young age of onset of diabetes, lower body mass index (BMI), high rates of insulin resistance and lower threshold for the risk factors for diabetes including visceral obesity. There is high prevalence of population with impaired glucose tolerance (IGT-pre diabetes). There are not many studies to indicate the beneficial effects of life style modifications preventing the progress of pre-diabetes to diabetes.[5]

DM is one of the most common and widespread diseases, affecting a large number of people worldwide. Type 2 DM (T2DM), which is characterized by elevated blood sugar levels. To avoid these extremely stressful disease processes, strategies must be developed to reduce the likelihood of these disorders occurring. Lifestyle changes greatly aid in controlling blood glucose levels and prevention are greatly aided by lifestyle changes. Insufficient insulin production and increased insulin resistance, defined as decreased sensitivity of tissues (especially the liver, adipose tissue, and muscle) to insulin, are primary pathophysiological causes of T2DM.

Diet, physical activity including exercise, awareness about the disease, behavioural challenges like personality traits and disciplined mind will play a major role and controlling T2DM. Normally, insulin binds to specific receptors on the cell surface and initiates a chain of processes that are crucial for glucose metabolism. As a result of the reduced intracellular responses in T2DM make insulin is less effective in promoting glucose uptake by the liver. Insulin resistance, increased glucose production in the liver, and decreased glucose uptake in skeletal muscle are all effects of physical inactivity and obesity. Insulin production serves as a beta cell replacement, but when beta cells gradually die, hyperglycemia and eventually T2DM occur. [6]

As a routine policy patients attending diabetic clinic have to be educated and guided by a nurse who spends more time with the patient. Community nurse therefore, assumes a prime responsibility to educate such patients.[7-8]

In the present preliminary study the nurse-led intervention of life style modification was carried out in a small group of patients to find out how effective is the nurse-led intervention to bring glycemic control in the diabetic patients.

METHOD

The current study was undertaken during the month of August 2023. The 100 patients with DM attending the NCD clinic at the urban primary health centre, Choolai, who are all available at the time of data collection and who fulfill the inclusion criteria were taken for the study. Informed consent was obtained from the mothers after explaining the purpose of the study. Self-structured questionnaires including demographic data and knowledge questionnaire were used to collect data during pretest and post-test. Non-probability convenience sampling technique was used for the present study. After obtaining formal administrative permission and the ethical clearance, a pilot study was conducted.

Table 1: The characteristics participants selected for the study.

Independent variable	Nurse-led intervention package includes teaching regarding low glycemic index diet and drug compliance, self-monitoring blood glucose, physical activity, and foot care.
Dependent variable	Lifestyle modification among clients with DM
Inclusion criteria	Who are willing to participate. Who have had the disease for more than 1 year Who is available at the time of data collection Who can speak and read Tamil and English. Both male and female
Exclusion criteria	Who are paramedical professionals Who participated in some other studies Who are having co-morbid illness
Group	Clients with DM
Place	NCD clinic at urban primary health centre, Choolai, Chennai

RESULTS

Statistical analysis was carried out using the statistical package for social sciences (SPSS, version 22) statistical software. Demographic variables in categorical/ dichotomous were given in frequencies with their percentages. Knowledge scores were given in mean and standard deviation quantitative data The difference between the pre-test and post-test was calculated using paired t-tests.

Qualitative data difference between the pre-test and post-test was calculated using McNemar's test. Association between the level of the score and demographic variables is assessed using the chi square test. Pie diagram,

Multiple bar diagram, and simple bar with 2 standard errors were used to represent the data. $P<0.05$ was considered statistically significant. All statistical tests are two-tailed tests.

The majority of clients with DM are aged between 30-40 years, representing 42%.65% of the diabetic clients are female. 57% of the clients follow Hinduism, making it the most common religion among them. The largest educational group is those who have completed high school, accounting for 40%. The 41% of the clients work in the private sector, the largest occupational group. A significant majority, 85%, were married. The most common income range is 5000 to 10000 rupees per month, reported by 42% of clients. Nuclear families are

the most prevalent, with 62% of the clients belonging to this category. A paternal history of diabetes is the most common family history, noted in 39% of cases. Dominant dietary pattern is mixed, followed by 84% of clients.

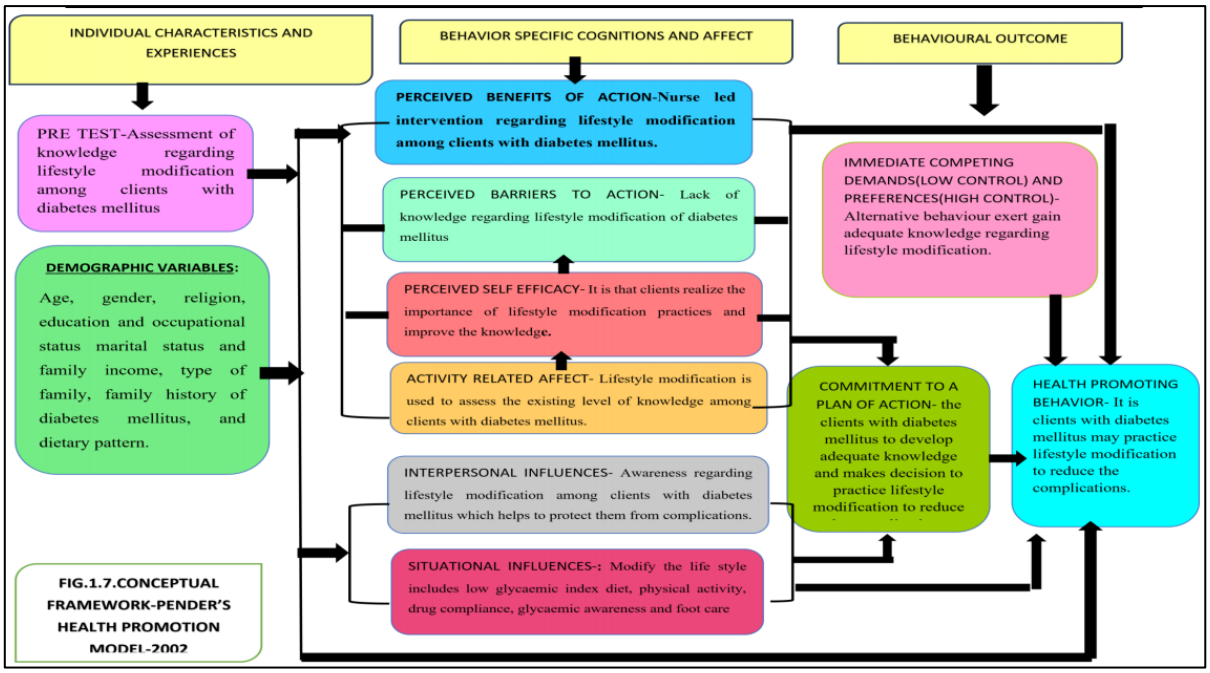
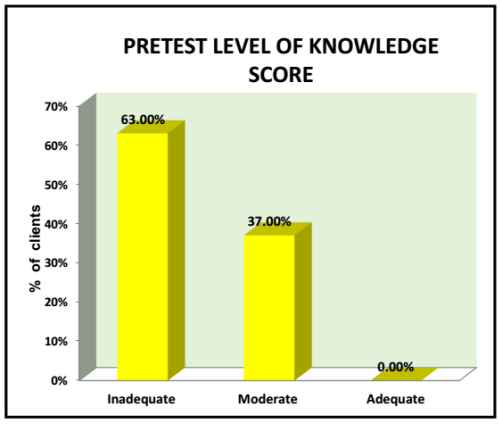
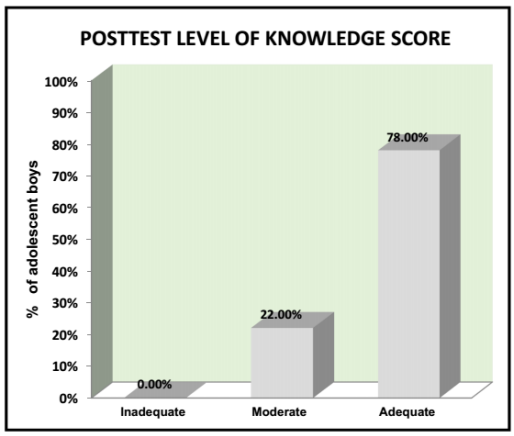


Figure 1: Conceptual frame work.



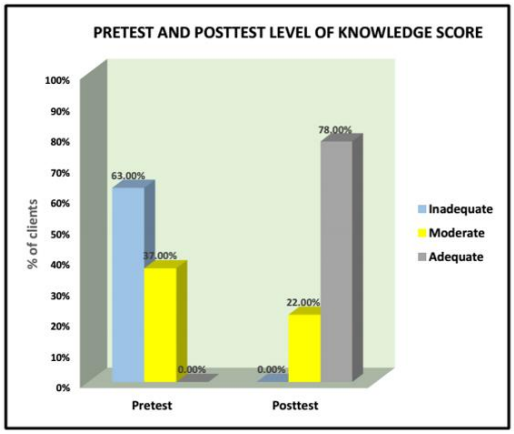
LEVEL OF KNOWLEDGE	NO. OF DM CLIENTS	%
INADEQUATE	63	63.00%
MODERATE	37	37.00%
ADEQUATE	0	0.00%
TOTAL	100	100.0%

Figure 2: Pre test level of knowledge.



LEVEL OF KNOWLEDGE	NO. OF DM CLIENTS	%
INADEQUATE	0	0.00%
MODERATE	22	22.00%
ADEQUATE	78	78.00%
TOTAL	100	100.0%

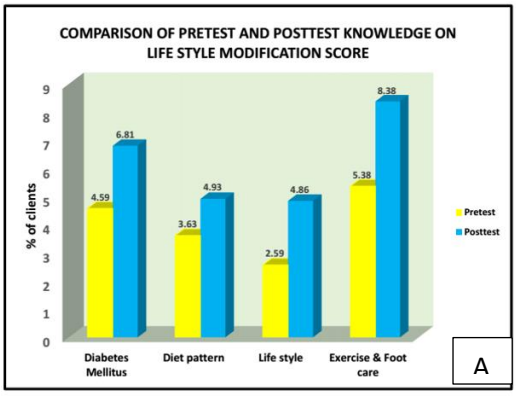
Figure 3: Post test level of knowledge.



LEVEL OF KNOWLEDGE	ASSESSMENTS				MCNEMAR'S TEST
	PRETEST		POSTTEST		
	N	%	N	%	
Inadequate	63	63.00%	0	0.00%	
Moderate	37	37.00%	22	22.00%	x2=85.46 p=0.001*** (S)
Adequate	0	0.00%	78	78.00%	
Total	100	100.0%	100	100.0%	

P =0.05 significant, ***S = highly significant

Figure 4: Pre test and post test level knowledge score.



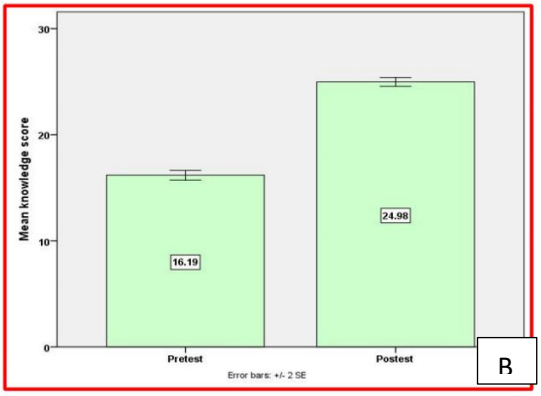
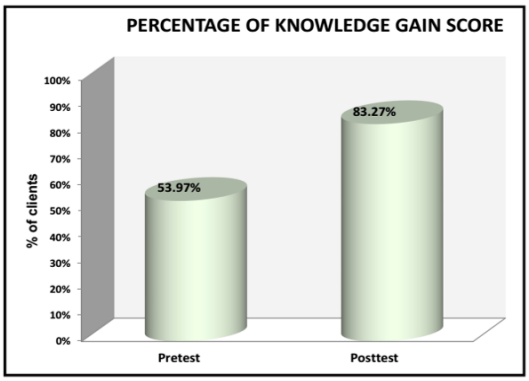


Figure 5 (A and B): Comparison of pre test and post test level of knowledge score.



		MAX SCORE	MEAN KNOWLEDGE SCORE	% OF KNOWLEDGE SCORE	PERCENTAGE OF KNOWLEDGE SCORE
Knowledge	Pretest	30	16.19	53.97%	29.30%
	Posttest	30	24.98	83.27%	

Figure 6: Percentage of knowledge gain score.

Table 2: Comparison of pre and post test level of knowledge score.

Knowledge on	Knowledge score				Mean difference	Student paired t-test
	Pre test		Post test			
	Mean	SD	Mean	SD		
Diabetes mellitus	4.59	1.00	6.81	.94	2.22	t=29.74 p=0.001***(s)
Diet pattern	3.63	1.23	4.93	1.06	1.30	t=9.83 p=0.001***
Life style	2.59	1.25	4.86	1.16	2.27	t=15.10p=0.001***(s)
Exercise and foot care	5.38	1.25	8.38	.91	3.00	t=16.90p=0.001***(s)
Total	16.19	2.29	24.98	2.07	8.79	t=36.81p=0.001***(s)

*Statistically significant.

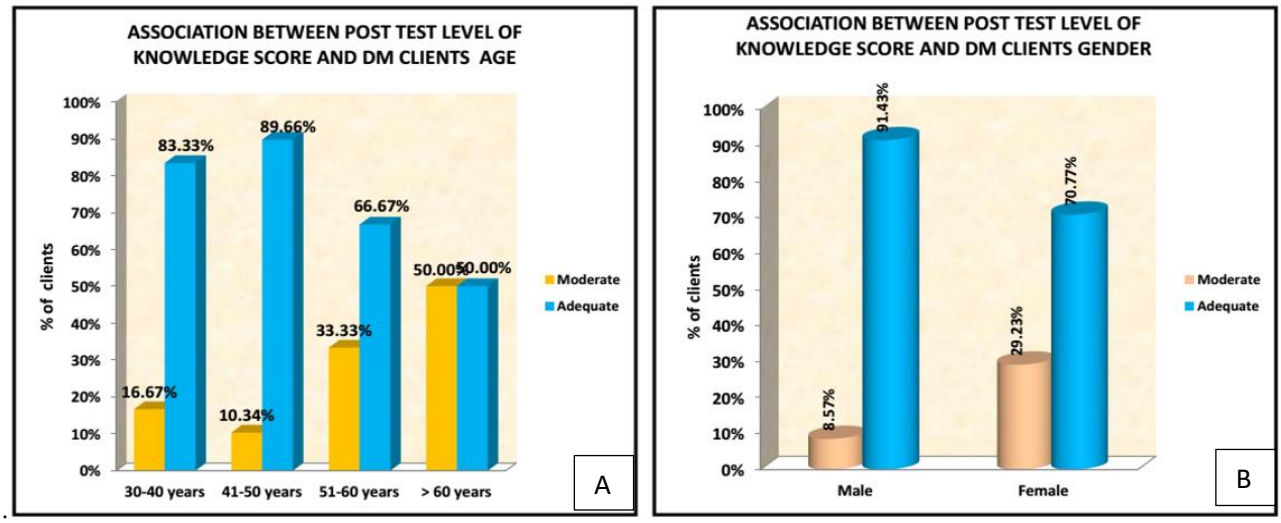


Figure 7 (A and B): Association between post test level of knowledge and age, gender.

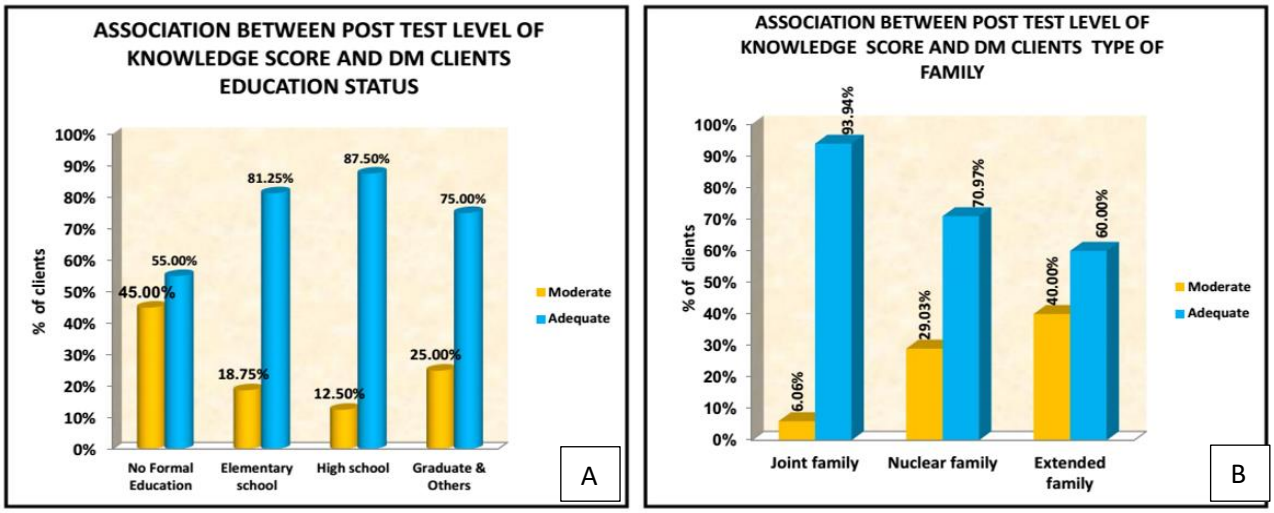


Figure 8 (A and B): Association between post test level of knowledge and educational status, type of family.

Table 3: Association between post test level of knowledge and socio demographic variables.

Demographic variable		Post test level of knowledge score					Chi-square Test
		Moderate		Adequate		N	
		N	%	N	%		
Age in years	30-40	7	16.67	35	83.33	42	x2=10.51 p=0.05*(S)
	41-50	3	10.34	26	89.66	29	
	51-60	5	33.33	10	66.67	15	
	> 60	7	50.00	7	50.00	14	
Gender	Male	3	8.57	32	91.43	35	x2=5.65 p=0.05*(S)
	Female	19	29.23	46	70.77	65	
Educational status	No Formal Education	9	45.00	11	55.00	20	x2=8.51 p=0.05*(S)
	Elementary school	6	18.75	26	81.25	32	
	High school	5	12.50	35	87.50	40	
	Graduate & Others	2	25.00	6	75.00	8	
Type of family	Joint family	2	6.06	31	93.94	33	x2=7.61 p=0.05*(S)
	Nuclear family	18	29.03	44	70.97	62	
	Extended family	2	40.00	3	60.00	5	

*Statistically significant.

DISCUSSION

The study was carried out in an urban city. There are indicators that differ between an urban city and rural one. A rural region is defined by its population density, economic and social factor, age, gender, and educational background including local language. The Gandhian public health system believed in skill-based environment with education being imparted in local language for better communication and reach.[9,10]

This is a preliminary study conducted in one of the primary health centres in Chennai, Tamil Nadu. It caters to a small urban community with mostly nuclear family. Compared to village communities these families are mostly nuclear and both parents are employed. The life style of an urban city is different from the life style of people living in villages. Joint families live more in villages compared to cities.

Their diet, culture and physical activity follow the ancient pattern and culture. Their eating habits differ from the cities. Corporate culture and fast food have not influenced their lives compared to their city counterparts. They strongly believe in formal education as well as informal education. Heavy traffic and pollution are comparatively lesser than cities. The mode of transport is cycling and walking.[9]

CONCLUSION

A community nurse with such communication skills in local language was able to interact and conducted a focused intervention to promote the change in life style followed by the diabetic patients. Such an intervention done had a statistically satisfactory outcome shown by the results of the study.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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