ORIGINAL RESEARCH PAPER

Nursing

EFFECTIVENESS OF STRUCTURED EDUCATION ON LIFESTYLE MODIFICATION AMONG TYPE 2 DIABETIC PATIENTS

KEY WORDS: Lifestyle modification, Structured education, Diabetic complications.

Dr. K. Maheswari Vinayaka Missions University, Tamil Nadu, India.

V. Sarasvady* Vinayaka Missions University, Tamil Nadu, India. *Corresponding Author

ABSTRACT

Diabetes mellitus in India is in epidemic proportions. As it causes huge complications, empowering patients in taking care on their own is an important component in diabetic treatment. Since Lifestyle modification is needed to lead a normal life with diabetes, investigators planned for a structured education. A quasi experimental study was done with one group pre-test – post-test design to assess knowledge and practice on lifestyle modification and to assess the effectiveness of structured education among type2 diabetic patients. Non-probability convenient sampling technique was used to select 100 known type2 diabetic patients from selected primary health centres in Puducherry UT. Data collected by validated questionnaire containing demographic data and set of twenty questions to assess knowledge and practice of lifestyle modification. Post assessment was done 15 days later with the same questionnaire. Findings of the study revealed that there is significant improvement in both knowledge and practice on lifestyle modifications related to control of diabetes.

I. INTRODUCTION

Diabetes is one of the most common and challenging health problems in the twenty first century. Though diabetes is a non-communicable disease, it affects the large number of people as that of communicable diseases. WHO gives prime importance to diabetes mellitus and introduced the theme "HALT THE RISE AND BEAT THE DIABETES" in the world health day 2016. This goal may be achieved by creating awareness on control and prevention of complications. **IDF** represents diabetes as the growing menace and it gives some facts about diabetes as followed. Eighty percentages of people with diabetes live in low and medium income countries. Every eight second a person dies of diabetes or diabetes related complications. Every ten seconds three or more new people develop diabetes. Every year 60 lakhs people newly develop diabetes. In India, type2 diabetes prevalence is increased rapidly due to younger age onset – A decade earlier. Proposed reasons are Central obesity, Rapid urbanisation, more access to food, Obesity, less exercise and sedentary lifestyle. Studies from Puducherry show among the adult population of above twenty years of age, 16% are affected by diabetes mellitus. Since diabetes in India is in epidemic proportions it causes huge economic burden due to its complications. Prevention must be emphasized by Healthy lifestyle, Healthy eating and Physical activity.

In Diabetes Mellitus, metabolic deregulation produces changes in multiple organs. When we eat, our body breaks food down into glucose. Glucose is a type of sugar which is body's main source of energy. As blood glucose rises, the body sends a signal to the pancreas, which releases insulin. Acting as a key, insulin binds to a place on the cell wall (an insulin receptor), unlocking the cell so glucose can pass into it. There, most of the glucose is used for energy right away. In Type 2 diabetes, body cells do not use insulin properly. The insulin can't fully "unlock" the cells to allow glucose to enter, called Insulin resistance. Fatigue, Dry, itchy skin, Numbness, tingling, Polydipsia, Polyuria, Blurred vision, Impaired healing, Yeast infections, Sexual dysfunction are the Clinical manifestations of diabetes. Blindness, Cardiovascular disease, Stroke, Heart attack, Kidney disease, Nerve damage, Loss of circulation in arms and legs often leads to lower limb amputation are the main complications due to chronic uncontrolled diabetes mellitus. Fatal results in diabetes are usually due to its complications. Following are the **ABCs of controlling Diabetes.**

A – A1c, or hemoglobin A1c test. Goal is 7% or less.
B – Blood pressure. Goal is less than 130/80 mmHg.
C – Cholesterol. Goal is HDL cholesterol – more than 40 mg/dl

(men); - more than50 mg/dl (women). LDL cholesterol – less than 100 mg/dl. Triglycerides – less than 150 mg/dl.

Prevention of dangers of diabetes: Study results show, lifestyle modifications decreased symptoms of hypo and hyperglycemia, improved HbA1C, decreased health distress, and decreased emergency room visits. Research studies also have found that lifestyle changes can prevent or delay the onset of type 2 diabetes among high-risk adults. Need for continued treatment, periodic monitoring of blood glucose and complication screening are the most important advises to be given to diabetic patients. The following ten point formula can be used to prevent diabetes menace. Early identification, Good control of diabetes, Control of hyper lipidemia, Blood pressure control, Aspirin where indicated, Dietary modification, Exercise, Weight reduction, Quit smoking, and Relaxation techniques.

Key pieces of Lifestyle modification in diabetes mellitus:
Healthy eating: Healthy eating begins with breakfast. A well balanced, adequate amount and in right time is recommended.

Adequate fluid intake: Oral fluids – water 2-3 Litres/day is needed for good health.

Physical activity: At least 30 minutes/day brisk walking with appropriate footwear is needed daily to maintain good health. Any suitable physical activity can be started slow and increased gradually.

Stress reduction: Stress increases blood glucose levels and weight. Stress management is recommended with good coping skills, family support, healthy work environment and relaxation techniques like Yoga, Meditation etc.

Adequate sleep: At least 8 hours sleep at night is essential to refresh the body. Good sleep keeps the body active and healthy.

No Alcohol: Alcohol and tobacco use should be avoided.

The above lifestyle modifications can be done by empowering patients so that the patient becomes knowledgeable and the expert in control of diabetes and prevents its complications. The patient understands the importance of taking control of their diabetes. A well-treated diabetic with disciplined life style can live longer than a non-diabetic! So education is the most important factor to lead a normal life with diabetes. Hence the investigators planned for a structured education on Lifestyle modification strategy and

to assess the effectiveness of Structured Education among Type 2 Diabetic Patients to empower them on controlling and preventing them from developing complications due to chronicity of the problem.

Objectives of the study:
1. To assess the knowledge and practice on lifestyle modification among type2 diabetic patients.
2. To assess the effectiveness of structured education on lifestyle modification among type2 diabetic patients.

II. METHODS AND MATERIALS
A. Research design: Quasi experimental pre-test – post-test design was chosen.
B. Setting of the study: Study was conducted in selected primary health centres in Puducherry UT.
C. Population: Type2 diabetic patients who attend diabetic clinic of selected Primary Health Centres at the time of data collection.
D. Sample size: One hundred number of type2 diabetic patients.
E. Sampling technique: Known type2 diabetic patients were selected using non-probability convenient sampling technique.
F. Criteria for sample selection: Type2 diabetic patients who attend the diabetic clinic regularly and willing to participate in the study were included. Those who were not willing and not able to understand Tamil or English were excluded.
G. Development and description of instrument:
Section A: Consist of Demographic data.
Section B: Consist of set of ten questions to assess the knowledge of lifestyle modification related to control and

Prevention of dangers of complications due to diabetes. The ten point formula suggested by world health organization as given above was used to develop the questionnaire.

Section C: Consists of Consist of set of another ten questions to assess the practice of lifestyle modification related to control and Prevention of dangers of complications due to diabetes using the same ten point formula suggested by world health organization.

H. Data Collection Procedure: An informed consent obtained from the subjects with necessary permission from the concerned authorities. A set of questionnaire was given and the subject was asked to fill it up by ticking the response which was most applicable to him / her. All the responses were counted for pre-test individual score on knowledge and practice. Structured education given to the participants on lifestyle modification to control and prevent the complications of diabetes. Pamphlet with the diet plan was issued to each participant. This was done during their weighting time in the diabetic clinic. Post assessment of knowledge and practice was done 15 days after the structured education with the same questionnaire during the next clinic visit (usually scheduled every fortnight).

III. STATSTICAL ANALYSIS AND DISCUSSION
The collected data had been analysed by descriptive statistics and paired "t test was done as inferential statistics to find out whether there is any significant difference between pre-test and post-test which means before and after the structured education. The above computed values were given in tables and presented in figures as multiple bar diagrams and pie diagrams.

Table 1: Percentage distribution of subjects according to demographic variables. (N=100)

S.No	Demographic Variables		Frequency	Percentage (%)
1	Age in Years	Below 50 years	49	49
		Above 50 years	51	51
2	Gender	Male	39	61
		Female	39	61
3	Literacy level	Illiterate	18	18
		School level	58	58
		College level	24	24
4	Income level	Below Poverty Line	33	33
		Above Poverty Line	67	67
5	Religion	Hindu	80	80
		Muslim	11	11
		Christian	09	09
6	Activity level	Sedentary worker	50	50
		Moderate worker	45	45
		Heavy worker	05	05
7	Duration of diabetes	Less than 2 Years	39	39
		2– 5 Years	37	37
		Above 5 Years	24	24

Figure 1: Distribution of samples according to their age (41, 59)
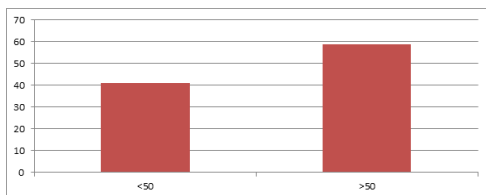

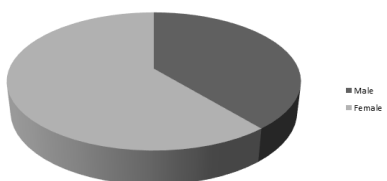*Figure 2: Distribution of samples according to their gender (39, 61)*

Figure 3: Distribution of samples according to their literacy level (18, 58, 24)
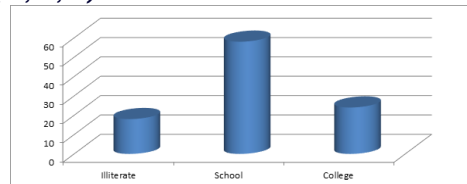

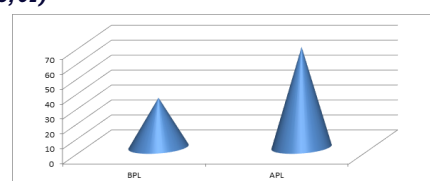*Figure 4: Distribution of samples according to their income level (33, 67)*

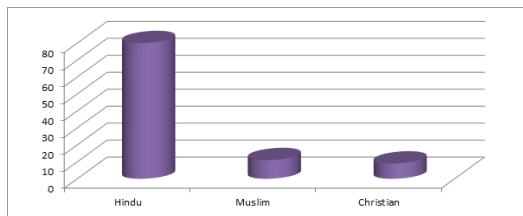*Figure 5: Distribution of samples according to their Religion (80, 11, 09)*

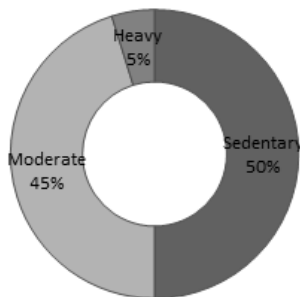*Figure 6: Distribution of samples according to their Activity level*

Figure 7: Distribution of samples according to their duration of Diabetes (39, 37, 24)
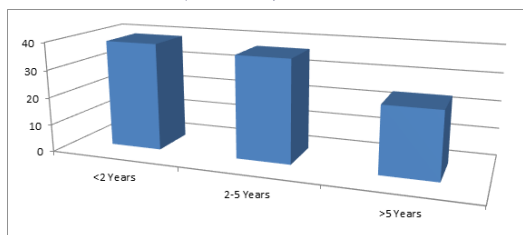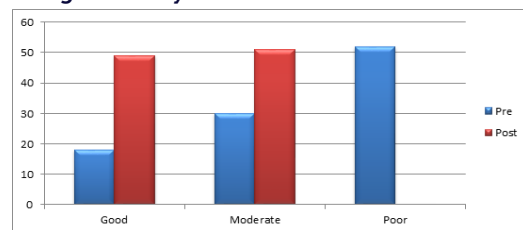

Table 2: Frequency and percentage wise distribution regarding level of knowledge on Lifestyle modification among Type 2 Diabetic Patients.

Level of Knowledge	Pre test		Post test	
	F	%	F	%
Good	18	18	49	49
Moderate	30	30	51	51
Poor	52	52	0	0
Total	100	100	100	100

Figure- 8: Distribution of samples according to their knowledge on Lifestyle modification

The above table and bar diagram show that before structured education 52% (52 out of 100) of the participants had poor knowledge, 30% (30 out of 100) had moderate knowledge and only 18% (18 out of 100) of the participants had good knowledge level on lifestyle modification. Whereas after structured education 49% (49 out of 100) of the participants had good knowledge, 51% (51 out of 100) had moderate knowledge and nobody was with poor knowledge level on lifestyle modification.

Table - 4: Assessment of knowledge before and after structured education

Knowledge	Mean score	SD	'P' value
Pre-test	4.20	1.15	0.003
Post-test	7.64	0.96	<0.001

The above table depicts that there is significant improvement in level of knowledge among type2 diabetic patients as evidenced by pre-test mean is 4.20 and post-test mean is 7.64 with P value as <0.001.

Table-5: Frequency and percentage wise distribution regarding level of knowledge on Lifestyle modification among Type 2 Diabetic Patients.

Level of Practice	Pre test		Post test	
	F	%	F	%
Good	6	6	31	31
Moderate	46	46	51	51
Poor	48	48	18	18
Total	100	100	100	100

Figure – 9: Distribution of samples according to their Practice on Lifestyle modification
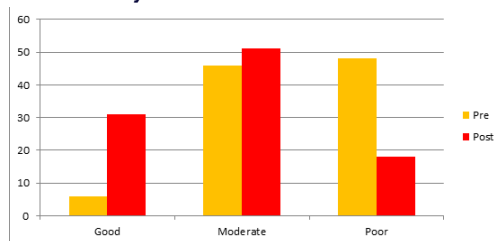
The above table and bar diagram show that before structured education 48% (48 out of 100) of the participants had poor practice, 46% (46 out of 100) had moderate practice and only 6% (6 out of 100) of the participants had good practice level on lifestyle modification. Whereas after structured education 31% (49 out of 100) of the participants had good practice, 51% (51 out of 100) had moderate practice and only 18% of the participants (18 out of 100) were with poor practice level on lifestyle modification.

Table - 6: Assessment of Practice before and after structured education

Practice	Mean score	SD	'P' value
Pre-test	3.11	2.65	0.002
Post-test	7.24	1.30	<0.001

The above table depicts that there is significant improvement in level of practice among type2 diabetic patients as evidenced by pre-test mean is 3.11 and post-test mean is 7.24 with P value as <0.001.

IV. RESULTS

Diabetic patients irrespective of their demographic variables had inadequate knowledge and practice on lifestyle modifications with regard to control and prevention of complications.

After structured education patients had good improvement in knowledge.

After structured education patients had considerable improvement in practice.

The first objective was to assess the knowledge and practice on lifestyle modification among type2 diabetic patients. This study reveals that 52% and 48% of the participants had poor knowledge and practice respectively; 30% and 46% of the participants had moderate knowledge and practice respectively whereas only 18% and 8% of the participants had good knowledge and practice respectively.

The second objective was to assess the effectiveness of the structured education on lifestyle modification among type2 diabetic patients. This study reveals that only 18% of the participants had poor practice after structured education and nobody was with poor knowledge; 51% of the participants had both knowledge and practice moderately whereas 49%

and 31% of the participants had good knowledge and practice respectively.

The inference made out of the above study result is that diabetic patients need to be educated on the subject concerned. The conclusion arrived at the end of the study was that Health education need to be incorporated in diabetic patients' treatment protocol and may be insisted periodically to ensure lifestyle modification practice continuously.

REFERENCES

1. David Trouilloud & Jennifer Regnier, (2012). Therapeutic education among adults with type 2 diabetes, Oxford Index.
2. Elizabeth A. Beverly et al, (2014). Impact of Reinforcement of Diabetes Self-Care on Poorly Controlled Diabetes, American Diabetes Association, ISSN, 1040-9165.
3. Floor M. Kroese, Marieke A. Adrriaanse & Denise T.D De Ridder, (2013). Are Self-Management Interventions Suitable for ALL? Comparing Obese Versus Non obese Type 2 Diabetes Patients, Health education & Behaviour, 40(5); 552-558.
4. Ishan C. Williams et al, (2014). Enhancing Diabetes Self-Care among Rural African Americans with Diabetes, The Diabetes Educator, 40(2); 231-239.
5. Karen Carlisle & Robin Warren, (2014). Qualitative case study of tele health for in-home monitoring to support the management of type 2 diabetes, Health education & Behaviour, 41 (5).
6. International Diabetic Federation Atlas of Diabetes (2013), 6th edition.
7. Mohan V et al, (2001). J Am Coll Cardiol. 38; 682-687.
8. Mohan V et al, (2012). Journal of Diabetes Science and Technology, 6: 1355-1364.
9. Neilson L. Gary, Pasternack A. Bruce & Van Nuys E. Karen, (2005). The Passive – Aggressive Organization, Harvard Business Review.
10. Polit, F. Denise & Hungler, P. Bernadetlle (1999), Nursing Research Principles and Methods, 6th ed., Philadelphia: Lippincott.
11. Pradeepa, et al, (2008). Diabetic Medicine, 25: 407 – 412.
12. Premalatha G et al, (2000). Diabetes Care, 23: 1295-1300.
13. Ranjit Unnikrishnan I et al, (2007). Diabetes Care, 30: 1527-23.
14. Rema M et al, Invest Ophthalmol Vis Sci, 46: 2328-33, 2005.
15. Shyamsundr Jasgdish Raithatha, Singh Uday Shankar & Kumar Dinesh, (2014). Self – Care Practices among Diabetic Patients in Anand District of Gujarat, ISRN Family Medicine (2014); Article ID 743791.
16. Sigurdardottir, A K (2005). Self –care in diabetes: model of factors affecting self-care, Journal of Clinical Nursing, 14(3); 301-14.
17. Sundar Rao, P.S.S & Richard, J (2001). An Introduction to Bio statistics – A manual for students in Health Sciences, 3rd. ed., New Delhi: Prentice Hall.
18. Susan L. Norris et al, (2016). Increasing diabetes self-management education in community settings, DOI 5(2); 749-797.
19. Thomas Bodenheimar M D, Kate Lorig R N, Halsted Holman M D & kevin Grumbach, M D (2002). Pateint Self-management of Chronic Disease in Primary Care, JSMS, 288(19); 2469-2475.
20. Tina Camphell, Dunt D, Fitzgerald J L. & Gordon, I (2014). The impact of patient narratives on self-efficacy and self-care in Australians with type 2 diabetes, Health Promotion International, 29(4).
21. Weihrich & Harold Koontz. Management – A Global Perspective, Mc Grow – Hill.