



E-ISSN: 2663-2268
P-ISSN: 2663-225X
www.surgicalnursingjournal.com
IJARMSN 2023; 5(2): 187-191
Received: 11-09-2023
Accepted: 14-10-2023

Dr Ankush Patrick
Professor, Index Nursing
College, Indore, Madhya
Pradesh, India

Dr. Naveen Jaiswal
Professor, Index Nursing
College, Indore, Madhya
Pradesh, India

Effectiveness of individual planned teaching programme on knowledge and skill in self-administration of insulin among patients with diabetes mellitus receiving insulin in a selected diabetes centre of Indore, M.P

Ankush Patrick and Naveen Jaiswal

DOI: <https://doi.org/10.33545/surgicalnursing.2023.v5.i2c.207>

Abstract

It was found that the pre-test and post-test knowledge scores of the diabetic patients ranged from respectively. The mean post-test knowledge scores ($\bar{X}=17.63$) were higher than the mean pre-test knowledge scores ($\bar{X}=13.03$). The computed 't' value ($t' = 11.20$; $p < 0.05$) showed a significant difference suggesting that the IPT was effective in increasing the knowledge of diabetic patients on self-administration of insulin. The post-test ability score of 60 diabetic patients on self-administration of insulin were higher than (range 18-21) the pre-test ability scores (range 14-18). The mean post-test ability scores were found to be significantly higher ($\bar{X}=16.5$) than their pre-test ability scores ($\bar{X}=11.35$). The computer's 't' value ($t' = 14.64$; $p < 0.05$). The relationship between knowledge and ability level scores were tested using Karl Pearson co-efficient of correlation and there was a significant positive correlation ($r=0.80$) existing between knowledge and ability level on self-administration of insulin. It showed that by increasing the knowledge of the subjects proportionately increases the ability level also on self-administration of insulin. That means the IPT was statistically effective in improving the ability of the diabetic patients on self-administration of insulin.

Keywords: Effectiveness, individual planned teaching, self-administration of insulin, patients with diabetes mellitus

Introduction

Diabetes mellitus continues to remain an important health problem in the Indian subcontinent with increased number of patients every year, patients of younger decades getting diagnosed early, patients presenting with end organ damage at greater percentage.

The discovery of insulin and its application in patients of diabetes mellitus has hugely revolutionized the treatment approach for an incurable disease. It prolongs life, improves the lifestyle, and most importantly prevents the end organ damage allowing a person to lead a healthy, normal and active life style (Ferdinando Carlo Sasso 2018) ^[10].

In 1869, a German medical student, Paul Langerhans, found that within the pancreatic tissue that produces digestive juices there were clusters of cells whose function was unknown. Some of these cells were eventually shown to be the insulin-producing beta cells. Later, in honour of the person who discovered them, the cell clusters were named the islets of Langerhans (Nobel Prize.Org 2012) ^[12].

On 30th July 1921 a young surgeon Fredrick Banting and his graduate student assistant Charles Best working in Toronto in the physiology lab of professor Macleod prepared active extract of pancreas, which lowered the elevated level of glucose in diabetic dogs. The first patient who received active extract prepared by Banting and Best was Leonard Thompson a boy aged 14 years. He came with blood sugar of 500mg/dl. He received the pancreatic extract and improved (Nobel Prize.Org 2012) ^[12].

Insulin being an injection has some rigorous and stringent storing conditions compared to any other tablets or syrup. it needs to be refrigerated at cooler temperatures. Insulin plays a key role in making sure that our body runs with a full supply of fuel. Insulin acts like a key that fits into little locks on the surface of the cells. It creates a series of reactions on the surface of the cell and inside the cell that allows glucose to enter. Without insulin, the sugar

Corresponding Author:
Dr Ankush Patrick
Professor, Index Nursing
College, Indore, Madhya
Pradesh, India

would back up in the blood, unable to get into the cell for use as energy. People with diabetes, is unable to take the energy or sugar from the blood stream and into the cells. That is why the first symptom of diabetes is loss of weight, thirst and frequent trips to the restroom (Krall L, 2008)^[13].

Need for the study

The greatest challenge faced by the modern world is Diabetes mellitus (DM). The lifestyle disease known to be restricted to urban population in the country till a few years ago has now invaded rural India as well, with as much as 3% of the total rural population being diagnosed with diabetes. Urban diabetic patients are estimated to account for nearly 10% to 11% of the total 25 million patients in India. The disease presently affects 10% of the affluent class and nearly 33% of the lower levels of population. The prevalence of diabetes is 16.6% in Hyderabad, followed by Chennai with 13.5%, Bangalore with 12.4%, Delhi with 11.6%, and Mumbai with 9.3%. By 2025, the number of diabetes patients is expected to increase by 41% in developed countries to 72 million from the present level of 51 million. In developing countries, the incidence of the disease would surge by 170% to 228 million from 84 million.

In patients with diabetes, physicians are often concerned about increasing functional limitations that may impede a successful self-management. In particular, the correct handling of the insulin injection requires complex self-management abilities. Among these functional limitations, loss of visual acuity, loss of manual abilities and cognitive decline are of most importance.

A Nation's prosperity lies in the health of its citizens. Healthy people make the nation strong and wealthy. The past few decades have revolutionised the life style of human beings in the whole world. However, this age of speed and competition has increased the stresses and strains which man is subjected to. Diabetes is a growing threat to global public health and affects all societies regardless of age, sex, ethnicity or race. The countries with largest number of diabetic people will be in India, China and U.S.A by 2030. (IDF)

World Health Organizations (2016) stated that globally, an estimated 422 million adults are living with diabetes mellitus. The global prevalence of diabetes in the year 2000 was 171,000,000 and it is expected and approximated to be raised to 366,000,000 by 2030.

According to international diabetes federation (2019) 425 million people have diabetes in the world and 82 million people in the SEA (South East Asia) Region; by 2045 this will be rise to 151 million. There were over 72.946.400 cases of diabetes in India in 2017.

International Diabetes Federations estimated that India currently represents 49 percent of the world's diabetes burden, with an estimated 72 million cases in 2017, a figure expected to almost double to 134 million by 2025.

Times of India reports that one among the nine diabetic patients in the world is an Indian. By 2025, it is estimated that every fifth diabetic patient in the world will be an Indian. Diabetes is one of the most economically burdensome chronic diseases of our time.

Review of Literature

(Mukhtar, Ya'UYunusa 2019) Diabetes mellitus is one of the most common endocrine disorders that affect the body's ability to make or use insulin. Diabetes mellitus (DM), or simply diabetes, is a group of chronic metabolic diseases in which a person experience high blood sugar, either because

the pancreas does not produce enough insulin or because the body cells do not effectively use or respond to the insulin that is produced. This high blood sugar produces the classical symptoms of polyuria (frequent urination), polydipsia (increased thirst) and polyphagia (increased hunger). Conventionally, diabetes has been divided into three types namely: Type 1 DM or insulin-dependent diabetes mellitus (IDDM) in which body fails to produce insulin, and presently requires the person to inject insulin or wear an insulin pump. This is also termed as "juvenile diabetes". Type 2 DM or non-insulin-dependent diabetes mellitus (NIDDM), results from insulin resistance, a condition in which cells fail to use insulin properly, with or without an absolute insulin deficiency. This type was previously referred to as or "adult-onset diabetes". The third main type is gestational diabetes which occurs when women without a previous history of diabetes develop a high blood glucose level during her pregnancy and may metamorphose to type 2 DM after giving birth. Currently available pharmacotherapy for the treatment of diabetes mellitus includes insulin and oral hypoglycemic agents. Thus, the present review underscores the issues surrounding the symptoms, diagnosis and treatment (especially use of anti-diabetic herbal species) of this killer disease with a view to suppressing its global spread and resurgence.

(Nishita Singh, RoohiKeshwani 2016) Diabetes mellitus", is one of the most common non-communicable diseases worldwide. India faces several challenges in diabetes management, including a rising prevalence in urban and rural areas, lack of disease awareness among the public, limited health care facilities, high cost of treatment, suboptimal glycemic control and rising prevalence of diabetic complications. Insulin therapy for diabetes is most commonly delivered via subcutaneous injections, up to four times a day. Long-term insulin therapy, compounded by the invasive nature of its administration, has caused problems with patient compliance, ultimately influencing patient outcomes. There is an increase in the prevalence of type 1 diabetes also, but main cause of diabetic epidemic is type2 diabetes mellitus, which accounts for more than 90 percent of all diabetes cases. Type2 diabetes is a serious and common chronic disease resulting from a complex inheritance- environment interaction along with other risk factors such as obesity and sedentary lifestyle

Diabetes mellitus is one of medical conditions that have been extensively investigated. Despite these enormous developments cure for diabetes still remains virtual. The history is backdated to the Egyptian antiquity. As the history became unraveled with regard to the pathophysiological and biochemical bases, medical and surgical treatments and other management strategies, roadmap towards achieving success in curbing the menace of diabetes is promising. It is only in the 21st century that diabetes has been considered a chronic and heterogenous endocrine disorder which requires interdisciplinary and multidisciplinary approaches in its management, with the role of genetics looking exciting. However, there are lots of lessons to be learnt from the past. This review aims to explore the timeline of diabetes journey, and correct the inconsistencies in the historical perspectives of diabetes with intent to project the future.

(Kaul K., Tarr J.M. 2013) The chronic metabolic disorder diabetes mellitus is a fast-growing global problem with huge social, health, and economic consequences. It is estimated that in 2010 there were globally 285 million people (approximately 6.4% of the adult population) suffering from this disease. This number is estimated to increase to 430 million in the absence of better control or cure. An ageing

population and obesity are two main reasons for the increase. Furthermore, it has been shown that almost 50% of the putative diabetics are not diagnosed until 10 years after onset of the disease, hence the real prevalence of global diabetes must be astronomically high. This chapter introduces the types of diabetes and diabetic complications such as impairment of immune system, periodontal disease, retinopathy, nephropathy, somatic and autonomic neuropathy, cardiovascular diseases and diabetic foot. Also included are the current management and treatments, and emerging therapies.

Results

Socio demographic characteristics

This section deals with the data pertaining to the sample characteristics of the subjects. It is presented and analysed in terms of frequency and percentage distribution.

Show the distribution of sample characteristics with respect to subject, Age in years, Sex, Marital Status, Education, Occupation, Monthly Income, Dietary Habit, Place of residential area, Family history, Duration of illness.

Table 1: Frequency and Percentage Distribution of Subject According to Sample Characteristics N=60

Variable	Frequency (f)	Percentage (%)
Age in years		
0-20	4	6%
20-40	4	7%
40-60	19	32%
60 and above	33	55%
Sex		
Male	32	53%
Female	28	47%
Education		
Illiterate	4	7%
Primary	28	46%
Secondary	22	37%
Graduate	6	10%
Occupation		
Unemployed	24	40%
Private	4	7%
Govt. Job	6	10%
Business	26	43%
Monthly income in Rupees		
10000-20000	28	47%
20001-40000	20	33%
40000-60000	7	12%
60001 and above	5	8%
Dietary habits		
Vegetarian	6	10%
Non-vegetarian	54	90%
Family history of diabetes		
Yes	46	77%
No	14	23%
Duration of illness in years		
0 < 5	42	70%
5-10	10	17%
10-15	6	10%
15 and above	2	3%

Knowledge Level of Diabetic Patients on Self-administration of Insulin

Table 2: Grading of sample based on pretest and posttest score N=60

Score %	Pre-test		Post-test	
	No.	%	No.	%
Very good (80 -100%)	20	33	54	90
Good (70-79%)	22	37	6	10
Average (50-69%)	18	30	00	00
Poor (0-50%)	00	00	00	00
Total	60	100.0	60	100.0

Data in the Table No. 2 shows that maximum Knowledge level, score of pretests were 33% (20) between 80-100% score and were 37% (22) 70-79%, were 30%(18) 50-69%

score & posttest 90% (54) were between 80-100%, were 10%(06) 70-79% score and 00% (00) were between 50-69% and 0-50% score.

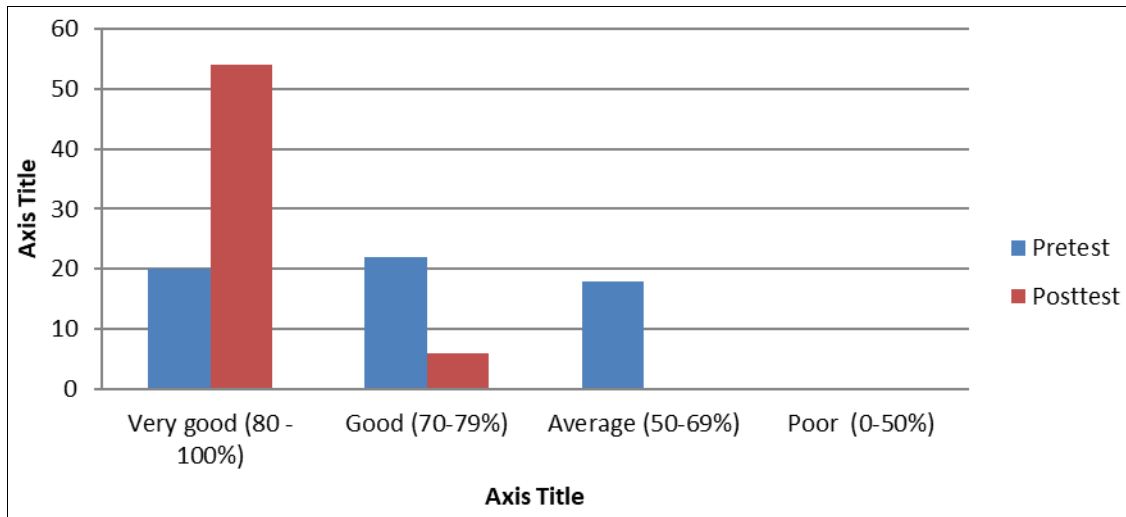


Fig 1: Showing the knowledge score level pre test and post test

Table 3: Mean Standard Deviation of Difference ‘t’ value on Pre and Post-test on Self-Administration of insulin

	Ability Level [Mean ± SD]	‘t’ value	P value
Pretest	11.35 ± 3.39	14.64, df=59	1.29*
Posttest	16.5 ± 2.24		

Discussion

The present study conducted to assess the effectiveness of information booklet of hypertension patient in order to achieve the objective of the study, quasi experimental pre-test post-test control research design with Quantitative evaluator research approach was adopted. Nonrandomized purposive sampling technique was used to select the sample. The finding of the study has been discussed with reference to the objective and hypothesis.

Conclusion

The following conclusions were drawn based on findings of the study. When the mean and SD of pre-test and post-test were compared and ‘t’ test was applied. It can be clearly seen that the ‘t’ value was 12.126 and p value was 0.0001 which clearly show that information booklet was very effective in increasing the knowledge of client.

Based upon the analysis and interpretation of data we can conclude that there is statistically significant difference in the pre-test and post-test knowledge score Hence, the hypothesis H1, that is "There will be significance different between pre-test and post-test knowledge and skill on self-administration of insulin among patients with diabetes mellitus at the level of $p < 0.05$ " is being accepted.

Nursing implications

The findings of the present study have implications in the field of nursing education, nursing practice, nursing administration and nursing research.

Conflict of Interest

Not available

Financial Support

Not available

References

1. Kaul K, Tarr JM, Ahmad SI, Kohner EM, Chibber R. Introduction to Diabetes Mellitus. In: Ahmad SI, editor. Diabetes. Advances in Experimental Medicine and Biology, vol 771. New York: Springer; 2013. p. 1-10.

2. Raman PG. Diabetes Mellitus. 2nd ed. Delhi: AITBS Publishers; c2000.
3. Park K. Preventive and Social Medicine. 7th ed. Jabalpur: M/s. Banarsidas Bhanot Publishers; c2002.
4. Basvanthappa BT. Nursing Research. 2nd ed. New Delhi: Jaypee Brothers Publishers; c2010.
5. Polit DF, Beck CT. Nursing Research. 8th ed. New Delhi: Wolters Kluwer Publishers; c2015.
6. Sharma KS. Nursing Research and Statistics. 2nd ed. Haryana: Elsevier Publishers; c2014.
7. Thomas N, Kapoor N, Velavan J, SenthilVasan K. A Practical Guide to Diabetes Mellitus. New Delhi: Jaypee Brothers Publishers; c2018.
8. Sasso FC, Rinaldi L, Lascar N, Marrone A, Pafundi PC, Adinolfi LE, Marfella R. Role of tight glycemic control during acute coronary syndrome on CV outcome in Type 2 Diabetes. J Diabetes Res 2018;2018:3106056. <https://doi.org/10.1155/2018/3106056>.
9. Raman P. Diabetes mellitus in India. J Gen Med 2002;14:11-15.
10. Sasso FC, Rinaldi L, Lascar N, Marrone A, Pafundi PC, Adinolfi LE, Marfella R. Role of tight glycemic control during acute coronary syndrome on CV outcome in Type 2 Diabetes. J Diabetes Res 2018;2018.
11. Cremona A, O’Gorman C, Cotter A, Saunders J, Donnelly A. Effect of exercise modality on markers of insulin sensitivity and blood glucose control in pregnancies complicated with gestational diabetes mellitus: A systematic review. Obesity Sci Pract 2018;4(5):455-457.
12. Nobel Prize Org. The discovery of insulin. NobelPrize.org. 2012 [cited 2012 Dec 6]. Available from: <http://www.nobelprize.org/educational/medicine/insulin/discovery-insulin.html>
13. Krall L, Beaser R. The importance of insulin. Joslin Diabetes Centre Manual. 2008 [updated 2008 Aug; cited 2008 Jan]. Available from: <https://www.nutrihand.com/Nutrihand/showHealthCenterArticle.do?>
14. Nikitha L. First place in due time. Diabetes and its social network. Health Screen 2012 Jul;8(5):6.
15. Mostafa M, Elhadary S, Fayez R, et al. Identification of diabetics' knowledge regarding safe insulin therapy at

- outpatient clinics in Cairo University Hospital. *Med J Cairo Univ* 2014;82(1):737-741. Available from: www.medicaljournalofcairouniversity.net
16. World Health Organization. Prevalence of diabetes. Data and statistics by World Health Organization. Available from: <http://www.who.int/research/en/>
 17. India to have 57 million diabetics by 2025. Dance with Shadow [Serial online] 2007 Aug 31 [cited 2009 Nov 10]. Available from: <http://www.dancewithshadows.com/business/pharma/in-dia-diabetes.asp>
 18. 9% prevalence of diabetes in persons above 30 among survey population. *The Hindu*. 2009 Oct 17 [cited 2009 Nov 10]. Available from: <http://www.thehindu.com/2009/10/17/stories/2009101752360300.htm>
 19. *Journal of Diabetes & Metabolic Disorders*. 2014;13(10). Available from: <https://jdmndonline.biomedcentral.com/articles/10.1186/2251-6581-13-10>
 20. Shalini GS, Venkatesan L, Ben A. Effectiveness of structured teaching programme on home care management of diabetes mellitus. *Nightingale Nurs Times* 2006 Nov;4-7.

How to Cite This Article

Patrick A. Effectiveness of individual planned teaching programme on knowledge and skill in self-administration of insulin among patients with diabetes mellitus receiving insulin in a selected diabetes centre of Indore, M.P. *International Journal of Advance Research in Medical Surgical Nursing*. 2023;5(2):187-191.

Creative Commons (CC) License

This is an open-access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 International (CC BY-NC-SA 4.0) License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.