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Effectiveness of Structured Teaching Programme on Knowledge Regarding Self Administration of Insulin among Insulin-Requiring Diabetic Patients in Selected Hospitals of Jaipur, Rajasthan

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ABSTRACT

Introduction: During the last twenty years the prevalence of diabetes has increased dramatically in many parts of the world and the disease is now a worldwide public health problem. Insulin is one of the oldest valuable antidiabetic medications available and also the most effective agent in dropping hyperglycemia when used in appropriate doses. Better insulin self-administration is associated with good knowledge and a favourable attitude of a patient on insulin self-administration.
Aims and objectives: the present study aimed to assess the effectiveness of structured teaching programme regarding self administration of insulin among insulin requiring diabetic patients in selected hospitals of Jaipur, Rajasthan.
Material and methods: this one group pretest post test research included 50 diabetic patients who were on insulin therapy. They were provided with structured teaching programme on self administration of insulin. Written informed consent was taken from patients and post test data was collected using structured knowledge questionnaire.
Result: most of the (38%) diabetic patients were in the age group of 51-60 years, majority of them (76%) were male, 30% were educated up to graduation. Majority of the patients (86%) were married and Hindu (74%). Most of the patients (44%) were in government job and majority (86%) of the patients belonged to urban area. The structured teaching programme was found to be effective as the post test knowledge score (26.3±3.02) was significantly higher ($p<0.0001$) as compared to pretest knowledge score (12.56±2.42). Male patients score significantly higher in post test as compared to their female counterparts. Similarly, urban patients scored significantly higher in post test as compared to rural patients.
Discussion: The findings of the study revealed that structured teaching programme was effective to enhance the knowledge regarding insulin self administration among diabetic patients. Results of the present study support findings of the previous research. Nurses led diabetic clinics should focus on this important aspect of diabetic self care.
Conclusion: Structured teaching programme was effective to improve the knowledge regarding insulin self administration among diabetic patients. Gender, place of stay and education was significantly associated with knowledge among diabetic patients.

Key words: *Diabetes, structured teaching programme, insulin self administration*

BACKGROUND AND INTRODUCTION

During the last twenty years the prevalence of diabetes has increased dramatically in many parts of the world and the disease is now a worldwide public health problem. The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030[1]. In Denmark at the end of 2007 proximately 240,000 people had been diagnosed with diabetes[2]. The mortality rate is higher among people with diabetes than among the rest of the population with an excess

mortality of 65% in 2007[3]. Excess mortality is mainly due to diabetes-related diseases developed because of poorly controlled diabetes.

Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. It is a public health problem as the disease is epidemic in both developed and developing counties. It is recognized as one of the leading causes of premature illness, death, and disability globally[4]. Its prevalence for all age groups worldwide was estimated to be 2.8% in 2000 and 4.4% in 2030 and projected to rise from 171 million in 2000 to 366 million in 2030[1]. An estimated 14.2 (9.5-29.4) million people aged 20-79 have diabetes in the sub-Saharan Africa (SSA) region, representing a regional prevalence of 2.1-6.7% [3].

Insulin is one of the oldest valuable antidiabetic medications available and also the most effective agent in dropping hyperglycemia when used in appropriate doses. Type 1 Diabetes mellitus patients are treated by multiple-dose insulin injection or continuous subcutaneous insulin infusion. To control the burden, patients need to use insulin therapy as ordered by the health care providers[5]. The insulin injection technique is one of the most common areas with the likelihood of errors[6]. It requires sound knowledge and attitude on self-insulin administration by patients so that they can contribute meaningfully to the management of their lives [7].

Better insulin self-administration is associated with good knowledge and a favourable attitude of a patient on insulin self-administration. Different studies conducted worldwide reported that 52.5% in India, 50.3% in Turkey, 46% in Nepal, 98.7% in Ethiopia, and 33.3% in Egypt had good knowledge on insulin self-administration. Regarding attitude, 68.0% in Ethiopia, 50.3% in Turkey, 98% in Ethiopia, and 60.1% in Egypt were found to have favourable attitudes on insulin self-administration [6-11]. Diabetes knowledge was a significant predictor for attitudes of self-management [12]. The factors that influence knowledge and attitude on insulin self-administration are varied and might include age, sex, marital status, educational status, occupation, urban residence, disease duration, duration of insulin use and family history of DM [13-15].

Knowledge and attitude of patients regarding insulin self- administration could lead to better management of diabetes and eventually a good quality of life. However, the knowledge and attitude gap exists in type 1 diabetes mellitus management that does not allow patients to independently take their medication to reduce the morbidity and mortality associated with diabetes[2]. Even though these patients in Ethiopia face the high risk of treatment complications like patients elsewhere, the evidence that showed the knowledge and attitude on insulin self-administration is a substantial deficiency. The significance of this study was assessing the level of knowledge, attitude, and associated factors on insulin self-administration among type 1 diabetic patients to address the gap and also to provide opportunities for future studies to fill in the gaps that this study could not address.

Optimal care of patient with diabetes mellitus includes education about diabetes and self management skills, including home blood glucose monitoring and insulin injection technique. In addition, proper technique for drawing up insulin and insulin injection with syringe. Diabetes mellitus can be tackled in several ways: by the development of improved medicines, by taking steps to improve diet, exercise avoiding obesity, and maintaining blood pressure under control. This study was aimed to evaluate the effectiveness of structured teaching programme on knowledge regarding self-administration of insulin among insulin-requiring diabetic patients.

MATERIAL AND METHODS

In this one group pretest post test pre-experimental research 50 insulin requiring diabetic patients were recruited conveniently from the Liberty Hospital and Soni Manipal Hospital in Jaipur, Rajasthan. Those patients who were diagnosed with diabetes mellitus type II and were on insulin therapy and were willing to participate in the study were enrolled in the study. After collecting pre test data Diabetic patients were provided with structured teaching regarding self administration of insulin. It included about the diabetes mellitus type II, techniques and sites of insulin administration. The teaching programme took 1 hour in groups of 10 patients in each session. Power point slides were used to teach the patients. Lesson plan and power point slides were validated by the experts on the diabetes management. After the intervention post test data was collected. Data was collected through structured sociodemographic sheet and structured knowledge questionnaire. Tools were translated in to Hindi and back translation was done in English. Test retest reliability of the structured knowledge questionnaire was 0.82 and it was validated from ten experts in the field of diabetic care. After collection data were entered in excel and were analysed using SPSS Version 15. Inferential and descriptive statistics were used in data analysis. Informed consent was taken from the study participants after full disclosure about the study. Participants were asked to clarify any doubt if they have about the study and their role. Institutional ethical committee approved the study protocols.

RESULT

Table 1: Sociodemographic Profile of study sample, N=50

Sociodemographic variables		f	%
Age	30-40 years	06	12%
	41-50 years	11	22%
	51-60 years	19	38%
	>60 years	14	28%
Gender	Male	38	76%
	Female	12	24%
Education	Illiterate	04	08%
	Primary	08	16%
	Secondary	12	24%
	Senior secondary	11	22%
	Graduate and above	15	30%
Marital status	Unmarried	02	04%
	Married	43	86%
	Widow	05	10%
Religion	Hindu	37	74%
	Muslim	04	08%
	Christian	06	12%
	Others	03	06%
Occupation	House maker	10	20%
	Government Job	22	44%
	Private Job	18	36%
Habitat	Rural	07	14%
	Urban	43	86%
Duration of illness (Mean±SD)		6.64 ± 1.03	

Table 2: Comparison of pretest and post test knowledge score among diabetic patients N=50

Knowledge score about self administration of Insulin	Pretest Mean Score	Post test Mean Score	T statistics
	12.56 ± 2.42	26.3 ± 3.02	t=25.10 df=98 P<0.0001

P<0.0001 Significant at 0.05 level

Table 3: Association of post test knowledge score with selected socio-demographic knowledge score, N=50

Sociodemographic variables		Post test mean knowledge score	Statistics
Age	30-40 years	25.9 ± 2.01	F=1.21; df=3,46 P=0.31
	41-50 years	27.2 ± 2.12	
	51-60 years	26.4 ± 1.99	
	>60 years	25.7 ± 2.03	
Gender	Male	27.8 ± 2.02	t=4.490; P=0.0001* df=48
	Female	24.8 ± 2.01	
Education	Illiterate	23.1 ± 2.30	F=5.92 Df=4,45 P=0.0006*
	Primary	25.9 ± 2.02	
	Secondary	26.8 ± 2.04	
	Senior secondary	27.4 ± 1.98	
	Graduate and above	28.3 ± 2.01	
Marital status	Unmarried	27.7 ± 2.04	F=0.9117 df=2,47 P=0.40
	Married	25.8 ± 2.10	
	Widow	25.4 ± 1.97	
Habitat	Rural	25.1 ± 2.06	t=2.90 df=48 P=0.005*
	Urban	27.5 ± 2.02	

**p value significant at 0.05 level*

The data was analysed by applying descriptive and inferential statistics. As per data depicted in table 1 most of the (38%) diabetic patients were in the age group of 51-60 years followed by 28% in more than 60 years age group. Majority of the patients (76%) were male followed by 24% female. 30% of the patients were educated up to graduation followed by nearly one fourth (24%) of the patients were educated up to secondary and 22% were educated up to senior secondary. Majority of the patients (86%) were married followed by 10% were widow. Majority (74%) of the patients were Hindu followed by 8% Christian. Most of the patients (44%) were in government job followed by 36% in private job. Majority (86%) of the patients belonged to urban area as compared to 14% rural patients.

As depicted in table 2 pretest knowledge score was 12.56±2.42 as compared to 26.3 ± 3.02 in the post test. The structured teaching programme was found to be effective as the post test knowledge score was significantly higher ($p<0.0001$) as compared to pretest knowledge score.

Table 3 shows that male patients score significantly higher in post test as compared to their female counterparts. Similarly, urban patients scored significantly higher in post test as compared to rural patients. Education was also found to be significantly associated with post test score. Those patients who were educated up to graduation or higher scored significantly higher as compared to others.

The results of the study indicated that the structured teaching programme using CD-ROM is effective in improving knowledge regarding self administration of insulin among insulin requiring Diabetic patients at selected hospitals of Jaipur. It was well accepted and appreciated by Diabetic patients.

DISCUSSION

The present study explored that diabetic patients can be trained in self administration of insulin using a structured teaching programme using CD-ROM which will enhance their competence in this skill which is required for life. Sample of the present study involved patients aged 30 years or more. Previous studies also reported the similar findings[12-14]. Majority of the patients in the present study were male and belonged to urban area. Our findings are consistent with findings of previous studies[16-17].

Research in past reported that internet education generally resulted in significantly improved glycemic control compared with usual care. Web-based education was not comparatively better at im- proving glycemic control outcomes than printed education materials when both were compared with usual care in one study.

Previous meta-analyses have revealed that self-management interventions in diabetes have produced modest short-term improvements in glycaemic control[18-21].

CONCLUSION

The present study concluded that male urban diabetic patients can be educated in self administration of insulin. Structured teaching programme is effective to educate the diabetic patients about the self administration of insulin.

Conflict of interest

The author declared no conflicts of interest with respect to authorship and/or publication of this article.

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Ethical clearance

Voluntary written informed consent was taken from every patient after explaining the study protocols. Institutional ethical committee approved the study protocols.

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