The Effect of a Training Program on the Diabetic Patients Utilizing Skills of Insulin Injection Technique

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الخلاصة

الـهدف: يهدف البحث إلى تقويم أداء مرضى السكري في تقنية زرق ابر الأنسولين وتقديم برنامج تدريبي للمرضى لتطوير مهاراتهم فـي الزرق ومعرفة الاختلافات في المهارات عند زرق ابر الأنسولين مع بعض المتغيرات المستوى) الثقافي، طول فترة العلاج بالأنسولين(0

المنهجية: تم إعداد اختبار تقويم المهارات لحقن إبرة الأنسولين وتكونت أداة البحث من (37) فقرة تضم المهارات المطلوبة للأداء عند حقن الأنسولين والفقرات موزعة على أربعة أبعاد هي: تحضير الإبرةسحب الأنسولين ،تحضير الجلد وتهيئة مكان الزرق وإعطاء الأنسولين مْيو. الإجابة على الفقرات باختيار إحدى البديلين أمام كل عبارة وهي نعم أو لا.

شملت عينة البحث 30 مريضاً ومريضة من المصابين بالسكري المعتمدين على الأنسولين تم اختيارهم بصورة عشوائية مـن مركـز الوفـاء لعلاج مرض السكري في مدينة الموصل/العراق خلال شهر كانون الأول عام 2005 م.

النتائج: أظهرت نتائج الدراسة بان مهارات الأداء القبلي لتقنية زرق الأنسولين كانت 49.37% بينما كانت مهارات الأداء بعد إعطاء البرنامج 76.67% وعند استعمال مربع كاي أظهرت وجود فروق ذات دلالة معنوية عند مستوى)50، (0 وكانت قيمة مربع كاي مدع،(*2حـ1.625) وجود فروق ذات دلالة معنوية بين مهارات الأداء والمستوى التعليمي للمرضى. بينما أظهرت وجود فروق ذات دلالة معنوية عنـد مسـتوى 0.01() بين مهارات الأداء وطول فترة العلاج بالأنسولين 0

الاستنتاجات: كان للبرنامج التدريبي أثر إيجابي على مهارات مرضى السكري النوع الأول باستخدام تقنية الحقن.

Abstract

Objectives: The study aims to evaluate patients' performance toward insulin injection after training program to identify the variation in skill of patients in insulin injection technique with regard to some variable (i.e. educational level and duration of insulin injection.

Methodology: A quasi experimental study has been conducted on diabetic patients.

An observational checklist had been prepared which consisted of 4 main areas with 37 sub-items, which are syringe preparation for injection, insulin drawing; skin preparation for injection and insulin injection. Each of the sub-items has 2 options yes or no. One score for positive answer and zero for no.

The sample of the study consisted of (n =30) males and females patients with Type 1 diabetes mellitus, who were chosen randomly from AL-Wafa'a center for diabetic treatment in Mosul-Iraq during Dec. 2003.

Results: The results of the study showed that the skills performance of insulin injection was statistically different in pre from post-test (49.37%, 76.67%) respectively by using (X^2), the result showed significant difference at (P<0.05) level (2221.625), no significant difference between skill performance and the level of education, while significant difference appears at P 0.01 between duration of insulin injection and skill performance. The training programme has a positive effect on the skills of diabetic patients type 1 utilizing insulin injection technique.

Key words: Diabetes mellitus, injection technique, training program.

Introduction

Diabetes mellitus is a heterogeneous group of disorders characterized by varying degrees of insulin, hypo secretion or insulin insensitivity [12]. It is a group of metabolic disorders with one common manifestation hyperglycemia, chronic hyperglycemia causes damage to the eyes, kidneys, heart and blood vessels [3]. There are major ethnic and geographical differences in the prevalence and incidence of Type I diabetes. The prevalence is approximately 0.3% in the world in those under 20 years of age [1]. There are many complications caused by the disease. The patient can resists the dangers and lead a normal life by following the convenient remedial system [4]. Before the introduction of insulin, the average survival time for youngster's diabetes was only about 2 years from the time of onset of the disease [5] Although diabetes is incurable, it is controlled; and therefore diabetic patient needs a deeper understanding of his illness in order survive without complications [6].

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Adequate information about the reasons for balancing the diet, the exercises and insulin intake can help to reduce fear that patients have because of patients' misinformation [7]. In order for diabetic patient to live successfully with diabetes, he needs to become so well informed in managing his disease. He can assume responsibility for changing his behavior nutritionally, medically, recreationally, psychologically and if necessary economically [8]. Patients must be willing to assume substantial responsibility for day-to day care, understand; demonstrate use of insulin pump and self-monitoring of blood glucose19'. Keeping up with the medical technology, regarding insulin therapy, there is a need to assess the patients' knowledge, skills regarding insulin injection technique. The nurse is considered the best health professional in evaluating the patient's knowledge and skills and teaches them the appropriate skill in performing insulin injection. The specific objectives of the study are: find out the differences between the skills of diabetic patients utilizing insulin injection technique in pre and post test, construct and implement a training program for diabetic patients regarding insulin injection technique and to find out the differences between the skills of diabetic patient in post- test with regard to some variables (level of education, duration of insulin therapy).

Methodology:

A quasi- experimental study was carried out in order to evaluate the skills of diabetic patients. In order to evaluate the skills of diabetic patient's utility insulin injection, a special check list was prepared by the investigator, which mainly based on the review of related literature. For testing the validity of check list, the investigator exposed it to 6 experts in medicine and nursing fields. All experts agreed with the final draft of check list. A pilot study was conducted on a sample consists of 8 patients to test the reliability of check list. After a gap of two weeks the same check list re- administered to the same sample to find out the correlation between scores of the pre and post test. The result was significant at $P < (0.01)$ level.

The final drafts of observation check list consists of 2 parts.
Part (1) includes information related to socio-demographic data and variables of study.
Part (11) includes observational check list included a variety of psychomotor technique which are usually performed by the insulin dependent diabetes for every day life at home. The observational check list consists of 4 main areas with (37) sub-items which are: preparation of insulin injection (7 items), drawing up insulin (11 item), selection and preparation of the site of injection (5 items) and administration of insulin therapy (14 items). Each of the sub items in the check list are of dichotomous scale of (Yes and No, and rated as (1) for (Yes) and (0) for (No). The total scores for the skill.ranged from (0-37).

The sample consisted of 30 diabetic patient of Type I, who was chosen randomly from Al-Wafaa diabetes center in Mosul in the period from 1' to 31'' December 2005. 60 % of them were males, 33.33% were from age group from 41 year or above, and 36.67% were graduate from primary school.

The implementation of the training program was done by the investigators. Each patient was observed for evaluation of skills regarding self-insulin injection technique according to the check list. The socio- demographic data were collected. After that the investigators planned to introduce the program to the patients after a week. The investigator re-evaluates the skills of patients regarding insulin injection technique after introducing the program to them by using the same checklist of pre-test.

Results

Table (1): Evaluation of diabetic patient utilizing skills of insulin injection technique in pre and post – test according to each category (n = 30).

	Skills	Pre-test		Post-test			
		F	%	F	%	12	p. Value
1	Preparation of injection	14	46.67	22	73.33		
2	Drawing up of insulin	16	53.33	23	*16.61*		
3	Preparation of site and skin for injection	15	50.	20	66.67	1.654	0.05
4	Insulin administration	14	46.67	27	90.		
			x=49.17		*M6.61*		

Table (1) shows the positive psychomotor skills of the patients regarding insulin injection technique. It appears that the mean of positive skills of the patients in pre-test was 49.17%, while the mean of the positive skills in post-test after introducing the program was 76.67%. The table also shows significant difference at $(P=0.05)$ between pre and post-test skills of the patients (72, 1.654).

Table (2): Evaluation of diabetic patient skills score in regard to the level of education in post-test by using ANOVA test.

Source of variance	8.8	d.f.	Ms	F-Value	P <0.05
Between Groups	1.713	3	0.571	0.2134	N.s
Within groups	69.498	26	2.673		
Total	71.211	**29**			

It appears from table (2) that there is no significant difference in the post – test scores of the patients skills in relation to their level of education (FO2134).

Table (3): Evaluation of the skills of diabetic patient in post – test with regard to duration of insulin therapy by using ANOVA test.

Source of variance	5.5	d.f.	Ms	F-Value	120.05
Between Groups	41.499	3	13.833	3.052	0.01
Within groups	117.806	26	4.531		
Total	**159.305**	**29**			

Table (3) indicates highly significant differences at 1<0.01 level between post-test scores of diabetic patient's skills with regards to duration of insulin therapy (F = 3.052).

Discussion:

The main goal of diabetes treatment is to normalize insulin activity and blood glucose levels to reduce the development of the vascular and neuropathy complication [I]. Diabetes mellitus is ٩ chronic illness requiring a life time special self-management behavior in terms of diet, physical activity; physical and emotional stress.

Not only must patients learn daily self-care skills to avoid acute fluctuations in blood glucose, but they must also incorporate into their lifestyle many preventive behaviors to avoid of longterm diabetic complications. The diabetic patients must become knowledgeable about nutrition, medication effects and side effects; exercise; disease progression; prevention strategies; monitoring techniques and medication adjustment. In addition, the patient must learn the skills associated with monitoring and managing diabetes and must incorporate many new activities into his or her daily routine such as insulin injection technique which can helps the nurse in providing effective patient education and counseling [11]. In an attempt to improve knowledge and skills of Type I Diabetic regarding insulin therapy, nurses should focus on periodic evolution. This sort of evaluation helps the patient to correct and improve the obtained knowledge which enables him control the disease and prevent its complication. Knowledge and technology is apt to constant change. Therefore patients need to learn new styles and techniques [12]. Adequate knowledge and skills have been recognized as a necessary component in the patient's ability to lead a normal and productive life [13] the findings of the present study revealed the positive psychometric skills of patients regarding. Insulin injection technique shows a significant difference between pre and post-test skills of patients.

The educational program regarding insulin injection can increase the knowledge, skills and psychological abilities of patients [14]. Many of the challenges and discomfort of insulin injections can be overcome with guidance and training [15]. During the past three decades, the concept of shared responsibility between diabetic care team and patient had been emphasized in the management of type I diabetes. When a patent regularly shares information with a health team, he can help to identify factors that may improve diabetes control such as alteration in diet and nutrition, practices of insulin injection, physical activity or exercise patterns, responses to environmental stress, and careful attention to foot care [16].

The significant difference might be due to the program which makes patient aware of the insufficient practical measures, so that they concentrate more on the practical measures of the program in order to overcome the mistakes in introducing the insulin injection.

Concerning the evaluation of the patient's skills with regard to their level of education, the result showed no significant difference in the patients' scores in the post-test (Table 3). This result is in harmony with the results of which showed that there was no statically significant difference in skills with regard to the level of education. However, the result is in contrast with result who found that patients with higher education had scored more than those with a lesser level of education, so that the emphasis is laid on giving more attention on diabetic person with less level of education and more frequent evaluation for them than the rest of the group with higher educational level. This result indicates that the programs given to the patients was clear, simple and insightful to the effect that it made them aware of the importance of the information in the program, so that they began to concentrate on its content and the skills of insulin injection technique. The results also indicate highly significant difference at 160.01 level between post-test scores with regard to the duration of insulin therapy. (Table 4). Moreover, the scores of knowledge and skills are increased with the increasing of the duration of insulin therapy, and the diabetic patient can live safely if he had adequate information about the disease and if he is being exposed to a training program of insulin injection technique [19].

Nurses on other hand, should plan for a periodic evaluation more frequently for all patients equally regardless of the duration of illness and length of treatment, because the knowledge and skill should be changed according to the technological changes in medical filed, or the knowledge be less used if there is no refreshing course or additional knowledge according to the advances in the treatment of diabetes [20].

Conclusion

In general, the study concludes:

1- Significant differences between the skills of the patients regarding insulin injection techniques in pre and post test in benefit of a training program.
2- Significant differences between the skills of diabetic patient in post test with regard to the duration of insulin therapy.
3- No significant differences between the skills of diabetic patient in post test regarding insulin injection technique in relation to their level of education.

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