

Original Research Article

Evaluation of knowledge and education of physicians to diabetic patients in primary care in Saudi Arabia

Khaled M. Hassan^{1*}, Eman A. Altooarki², Ahmad A. Alshomali³, Othman A. Alhejeely⁴, Mohammed A. Almutairi⁴, Ghassan K. AlHarazi⁵, Fahad W. Aljawi⁵, Maha F. Alluqmani⁶, Abdulrahman M. Tashkandi⁶, Nasser S. Almohussein⁷, Abdulrahman T. Albishri⁸, Dania M. Kordi⁹, Rodinah M. Sharaf¹⁰, Rami F. Alzahrani³, Ghadeer N. Alzaher³, Rayan A. Barakat¹⁰

¹Department of Medicine, Consultant Family Medicine, Saudi Arabia

²Department of Medicine, Wrocław Medical University, Poland

³Department of Medicine, Imam Abdulrahman bin Faisal University, Saudi Arabia

⁴Department of Medicine, Taibah University, Saudi Arabia

⁵Department of Medicine, King Abdulaziz University, Saudi Arabia

⁶Department of Medicine, Ibn Sina National College, Saudi Arabia

⁷Department of Medicine, Prince Sattam Bin Abdulaziz University, Saudi Arabia

⁸Department of Medicine, University of Jeddah, Saudi Arabia

⁹Department of Medicine, King Abdulaziz University, Faculty of Dentistry, Saudi Arabia

¹⁰Department of Medicine, Umm Al-qura University, Saudi Arabia

Received: 06 October 2020

Revised: 14 October 2020

Accepted: 22 October 2020

*Correspondence:

Dr. Khaled M Hassan,

E-mail: Khaled-h-8@outlook.sa

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Effective treatment of diabetes is not enough alone, there must be education and training from physicians and nurses to patients. To achieve education in correct manner there must be enough knowledge of physicians to apply care and teaching of these patients. The aim of the study was to evaluate the knowledge and education of physicians to diabetic patients in primary care in Saudi Arabia.

Methods: Successive evaluation investigation through questionnaire. The work universe was made up of the 83 service areas of the 15 municipalities of Saudi Arabia, the sample of the total of the incorporated areas was initially made up of 625 health providers and 2,171 people with diabetes.

Results: At the beginning of the study, the highest percentage of health providers surveyed declared that they did not know (78%) or that it was not defined (16.6) who should educate the person with diabetes, while the results at the end of the study show that 32% mentioned the doctor and the nurse and 62.7 the entire team of work ($p=0.000$) with a more adequate vision on the definition of responsibility for the fulfilment of this task and a generalized knowledge (97.5) of the existence of an education program in d diabetes that was useful for their compliance.

Conclusions: Extension of the diabetes education program to Saudi Arabia achieved a significant change in the opinions of health providers on the health problem.

Keywords: Knowledge, Education, Physicians, Diabetic patients primary care in Saudi Arabia

INTRODUCTION

The best treatment of diabetes mellitus (DM) loses effectiveness if the person with the disease does not know how to benefit from it or is not motivated to take responsibility for their daily self-care.^{1,2} However, despite the wide recognition of education as an essential element in the care of people with DM, it is still difficult to find a service where care and education are integrated into a single action. To overcome this contradiction, the Diabetic care center (CAD) of the National institute of endocrinology (INEN) developed a Diabetes education program (PED) since the 1980s whose continuous evaluation and improvement have allowed the design of an interactive strategy with 3 main lines of action: training of health providers for education, education of the patient and their relatives, information to the population to avoid risk factors and promotion of a healthy lifestyle.^{1,2,3,4} Research carried out at the CAD (national reference center for comprehensive care diabetic patient) in order to evaluate said program, they showed its effectiveness in achieving the proposed objectives, but it cannot be forgotten that it is in primary health care, where the highest percentage of the population diabetic receives her care and education, so it was necessary to extend this experience to that level of care.^{1,5,6,7} In this context, the researchers of the present work asked the following questions:

- What was the situation of patient education in primary care and what are its difficulties and what are its priority needs?
- According to this situation, would it be useful and feasible to introduce the program in primary care services?
- Were the principles and methods adapted to the particular needs of primary care services where type 2 diabetics predominate and with an average age of over 65 years?

There was also a lack of training for health providers to educate and motivate the patient in daily self-care. All this made the final result a patient with certain information about diabetes but did not know what to do practically with that information, and therefore did not influence their metabolic control. Although the national diagnosis gave rise to the design of an action project that responded to these general needs, the methodology proposed in said design for the gradual extension of the program implied that each municipality and area of care carried out their own diagnoses and action plan, that complying with the general principles of the extension plan will guarantee the participatory nature and adaptation to the particular needs of each area. The purpose of this study is to evaluate this process in the Saudi Arabia before and 4 years after the extension began from the PED to its different municipalities, in order to determine to what extent the expected influence of the extension action was achieved in a better performance of diabetes education activities and better results in people with this disease.

Objectives

The objectives of the study were as follows: identify the opinions of doctors and nurses from the different areas of care about the health problem - diabetes and the educational actions to face it, before and after extending the PED; determine what were the main activities carried out in the health areas for the education of diabetic patients, before and 4 years after the program was introduced and; to determine the notions and opinions that diabetic patients from different health areas had about their disease, before and 4 years after the program was introduced.

METHODS

The study consisted of a successive evaluation investigation (from March, 2011 of study to August, 2015).

Study design

The design of the present study was a survey study.

Study place and period

83 service areas of the 15 municipalities of Saudi Arabia. The health providers were interviewed by second-year residents of the specialty of medicine general.

Selection criteria

All municipalities were invited to participate in the study, and the care areas were being incorporated on a voluntary basis.

Exclusion criteria

In the case of the diabetic population that was part of the study, being 80 years of age or older and / or having limitations for understanding or communication (deafness, muteness, mental retardation, psychiatric disorders, etc.).⁵

Sample

Sample size was calculated using the following formula:

$$\frac{z^2 \times p(1 - p)/e^2}{1 + (z^2 \times p(1 - p)/e^2 N)}$$

625 health providers and 2,171 people with diabetes. Four years later, the sample consisted of 612 health-care providers and 2 432 people with diabetes were selected by systematic random sampling.

Procedure

The questionnaire procedure was used for the study.

Ethical approval

The patient received an explanation from the resident on how to fill out the questionnaire.

The work universe was made up of the 83 service areas of the 15 municipalities of Saudi Arabia. As part of the PED outreach actions in diabetes, all municipalities were invited to participate in the study, and the care areas were being incorporated on a voluntary basis. In each incorporated care area, 1 out of 3 clinics in which doctors and nurses were interviewed, and a representative sample of their adult diabetic population, selected by the same random method, were selected by systematic random sampling. This sample size was established to have a similar distribution of selection in areas of care with different number of clinics and corresponds to the methodology previously used in the national diagnosis (diagnostic investigation of the situation of diabetes education in primary health care). Development of an interactive communication strategy for the education of the adult diabetic patient in primary health care. The health providers were interviewed by second-year residents of the specialty of medicine general, trained for this purpose, to determine the perception that they had on the health problem - diabetes and on the education of diabetic patients in their care area, who emphasized some aspects of organization and training of personnel for the care and education of these patients. The notions and opinions of the patients about their disease and the service they receive were collected through a questionnaire created for this purpose.^{6,8} In all cases, the patient received an explanation from the resident on how to fill out the questionnaire. If he had the ability to answer it alone, he was left to do. If he had visual or other problems to fill in himself, the resident was reading the questions and marking the answers that the patient selected.

Description of the techniques

The interview with the health provider was semi-structured and direct. The questionnaire for diabetic patients was direct and structured and the instruments used were the same ones made and piloted at the INEN, also used in the national diagnostic study.

The response rate at the beginning of the study was 96.8% in health providers and 94.3 in people with diabetes. At the end of the study, 98% responses were obtained from health providers and 96.1 from people with diabetes. The causes of non-participation were vacations and travel outside the province for health providers, while for patients they were travel outside the province and 2 hospital admissions. In no group was there an express refusal to participate. The group of health providers comprised specialists and residents of comprehensive general medicine and technicians and graduates in nursing.^{9,10}

RESULTS

As general characteristics of the diabetic population, the female sex (68.9%), the average level of education (52.9), the treatment with oral hypoglycemic compounds (62.6) and a mean of 12 4.3 years of duration of illness.^{11,12}

Table 1: Distribution of the group of patients according to criteria on their knowledge of diabetes.

Criteria	Start		Frequency of people	% of people
	No	%	Final	%
Knows nothing	22	1	-	-
Are not enough	1478	72.2	563	26.4
Sufficient knowledge	505	23.6	1826	73.6
She can't say	43	3.1	-	-
Total	2048	100	2389	100

Results derived from the interview with health providers. When analyzing the opinions that health providers had about the health problem - diabetes and the education activities for people with this disease, it was found that while in the initial diagnosis only 82.4% of the interviewees considered the disease as a health problem; 4 years later, everyone considered it that way. The figure shows the frequency of health providers who declared that they were aware of the existence of national standards for the care of people with diabetes, and there was a significant increase in favor of the last moment of the study ($p=0.001$).¹²⁻¹⁴

A significant change was also observed in the opinion that health providers had about their patients' knowledge of the disease ($p=0.00$) as well as in the reasons on which they based their opinion. At the beginning of the study, the prevailing opinion was that the patients had sufficient knowledge about their disease (45%) but did not follow the instructions received, while at the end 67% stated that they knew about the disease, which was supported by knowledge tests applied in basic information courses given to patients and in the results of ongoing meetings to learn to live with diabetes (diabetic circles).¹⁷ At the beginning of the study, the highest percentage of health providers surveyed declared that they did not know (78%) or that it was not defined (16.6) who should educate the person with diabetes, while the results at the end of the study show that 32% mentioned the doctor and the nurse and 62.7 the entire team of work ($p=0.000$) with a more adequate vision on the definition of responsibility for the fulfillment of this task and a generalized knowledge (97.5) of the existence of an education program in the diabetes that was useful for their compliance.¹⁹ With regard to the opinions about whether they actually fulfilled the task or not, at the beginning of the study 68% considered that they did not carry it out and

23 that they only partially performed it. At the end of the study, 73.2 declared that they did it in part, and 13.5 totally ($p=0.000$). Although all health providers declared that they recognize the importance of education for people with diabetes, at the beginning of the study only 12.5 declared it within their work plan, while at the end, 256 (42.6) stated that it was implicit within their tasks but it did not appear in their work plans. At the beginning of the study, the frequency of health providers who had received specific guidance to educate the diabetic patient was 10%, and a statistically significant increase was observed ($p=0.001$) in favor of the final moment of the study (90.5). While at the beginning only 6.7% declared having received a course to educate the diabetic patient, at the end of 58.9% they had already participated in workshops for the care and education of people with diabetes ($p=0.002$).

Table 2: Controls and criteria for each diabetic patient that should be known through the healthcare clinic.

Variables		Start	Final
Doctors explain	64	93.9	$p=0.000$
Easy to understand	25.6	76.8	$p=0.000$
They tell you blood glucose only if it's out of control	80	68.7	$p=0.01$
They send you to the ophthalmologist when you have to graduate your vision	95.8	58.5	$p=0.001$
Your feet are checked when you have problems	97.8	90.7	NS
NSLo are weighed at each visit	70	98.9	$p=0.01$
Your blood pressure is taken at each visit	99.3	98.5	NS

NS: No significance

Educational activities carried out and the necessary auxiliary means, it was found that at the beginning the orientation of a consultation predominated (71.4%) while at the end there was a significant increase in education in group activities (80.4), and a greater use of the different educational spaces ($p=0.001$). 100.0% of the health providers declared at the beginning of the study that they did not have written guidelines or auxiliary means to carry out educational activities. Four years later, 532 (88.6) stated that they had received the guide to educate people with diabetes in primary health care, 60.8 of the providers interviewed suggested designing posters and murals to help them in transmission of the message, while 65 (10.8) had received materials through pharmaceutical firms. It was also found that at the beginning of the study, health providers declared in 100%, that they had never supervised their diabetes education work and that they were only asked to fill out a general model where the number of educational talks held during the month was reported.^{15,16} At the end of the study, 392 (65.3%; $p=0.000$) declared that the educational activities in diabetes were supervised by

the municipal endocrinologist, the municipal health educator or the person responsible for this task by the provincial center of education and health promotion. Once the first and second objectives of the evaluation process have been answered, the following are will proceed to present the information that responds to the third objective of the research, and that shows the influence of these actions on the notions and opinions that the people with diabetes who formed the study sample have about their disease. Both at the beginning and at the end, the highest percentage of patients (1,325; 64.7) at the beginning and 2,130 (89.2%) at the end, declared that it was very important for them to know about their disease, but with a significant increase ($p=0.002$) at the end of the study.¹⁷

DISCUSSION

The results found in the survey of people with diabetes were also similar to those reflected in the national study: a high percentage of people who declared not having knowledge or being insufficient for daily living with DM and a high average of error in the questions about different aspects of the treatment. Actions for the introduction of the diabetes education program focused on the work of the doctor and the nurse in the office, interacting with the basic working groups, endocrinologists and health educators in the area and began with the health provider training, directly integrated into professional practice, covering both clinical updating and skill development in the selection and implementation of educational techniques oriented in the diabetes education program with an emphasis on the importance of the daily experience of the person with this disease as well as the advantages of interactive methodology in small groups, which responds to the important challenge of the educational dimension: to overcome the reductionism of a medical-care approach to achieve a more comprehensive "know-how" that ventures into the principles and methods of behavioral sciences.^{14,18,19} The evaluation of the 4 years since the introduction of the diabetes education program in the province of Saudi Arabia showed, once again, that although there is numerous diseases in which therapeutic education can significantly change the quality of services and the quality of life of patients, this action should begin with the training of the health provider, based on both motivation and administrative requirements; thus, in the case at hand, it was achieved that at the end of the study there was a complete incorporation of the municipalities, a significant increase in the understanding of the problem by the number of health providers trained for the task and a better organization and greater degree of creativity in the planning of educational activities with patients.^{18,20,21,22}

The final survey of people with diabetes also made it possible to verify some progress in compliance with the standards by health personnel, such as the frequency of indication of blood glucose, referral to the ophthalmologist and measurement of body weight and blood pressure, and was maintained as a weak point, the review of the feet, the Achilles heel of the person with diabetes and an element

that in previous studies showed the same deficiencies and disastrous consequences in these patients.²³

Limitations

There is no significant increase in the understanding of the problem by the number of health providers trained for the task and a better organization and greater degree of creativity in the planning of educational activities with patients.

CONCLUSION

It is concluded that the extension of the diabetes education program to Saudi Arabia achieved a significant change in the opinions of health providers on the health problem - diabetes and educational actions to face it, as there was an increase in educational activities for people with diabetes and a greater knowledge of the methodological guide for patient education in primary health care. People with diabetes significantly changed their opinions about the services received and increased their knowledge about different aspects of treatment.

Recommendations

It is recommended to maintain the supervision and control of these activities, reinforce action in the areas and municipalities that reflected less participation in this work, and promote similar studies in other provinces that contribute to the formation of a general vision on the progress and effectiveness of the program at the national level.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

- Romero MI, Portilla L. Interactive education vs conventional education in insulin-dependent diabetics. Rev Española Av Diabetol. 1994;9:45.
- Suárez R. Diabetes education in the elderly: Impact on quality of life. A 5-years follow-up. Patient educ counseling. 1994; 23(Suppl 1):21.
- Diabetes education in the elderly: a 5-year follow-up of an interactive approach. Patient Educ Counseling. 1996;29:87.
- Suárez R. Diabetes Mellitus education program, of the National Institute of Endocrinology of Cuba. An interactive communication strategy. Diabetes. 1993;1:111.
- Suárez R. Diabetes education program of the National Institute of Endocrinology (Cuba). Evaluation of its impact on the quality of life of the patient. Rev Asoc Latinoam Diabetes. 1995;3:101.
- Suárez R. Guide for diabetic patient education. Havana. Editorial Medical Sciences. 1992;9.
- Suárez R, Peralta R. Educational diagnosis on the disease in diabetic patients of the third age. Rev Cubana Endocr. 1996;7:15.
- Diabetic education and what then? Interactive learning or individual counselling in diabetic care. 1993;171.
- Suárez R. Guide for the education of non-insulin dependent diabetic patients in primary care. Medical Sciences. 1996:17.
- Suárez R. Diabetes education in Cuba. Retrospective of the last three decades. 1999;10:9.
- Diagnosis of the diabetes education situation in Primary Care. 1997;8:65.
- Assal J. Therapeutic Education of patients. New approaches to chronic illness. Paris: Ed. Vigot. 2000;149.
- Results of the extension of the diabetes education program to primary health care. National Strategy within the Educational Program of the National Institute of Endocrinology in Cuba. 1995;3:100.
- Suárez R. The educational dimension of caring for people with chronic diseases. 2001;12:3.
- Phiplips J. Patients can educate doctors about long-term disease. BMJ. 1999;319.
- Degive C, Guyot JP, Kos I, Jotterand S. Psycho-social care in Medicine: the joint consultation. Geneva University Hospital. Psychiatric Notebooks. 1997:22.
- Brown YES. Motivation strategies used by dieticians to counsel individuals with diabetes. The Diabetes Educator. 1998;24:313.
- Educating diabetes educators. An interactive methodology and an interdisciplinary team. Patient Education and Counseling. 1994;23:S78.
- Lacroix A, Jacquemet S, Assal J. Therapeutics and pedagogy. The added value of therapy. The DESG Teaching Letters. In: Continuing diploma in therapeutic patient education. Series of texts. Module 5. Teaching interactively while taking into account the patient as a whole. Volée. 1998-2001;218.
- National Network for training diabetes educators. The Cuban Diabetes Education Program. Patient educ counseling. 1994;23:S78.
- Valverde MA, Patin RV. Outcomes of obese children and adolescenys enrolled in a multidisciplinary health program. Int J Obes Relat Metab Disord. 1998;22:513.
- White MC, Goldensen J. A clinical trial of a financial incentive to go to the tuberculosis clinic of isoniazid after release from pact. Int J Tuberc Lung Disease. 1998;2:506.
- Suárez R, Edreira J. Knowledge about diabetes in a group of diabetic amputee patients. Diabetes. 1995;3:100.

Cite this article as: Hassan KM, Altooarki EA, Alshomali AA, Alhejeely OA, Almutairi MA, AlHarazi GK, et al. Evaluation of knowledge and education of physicians to diabetic patients in primary care in Saudi Arabia. Int J Community Med Public Health 2020;7:4370-4.