

DOI: 10.21767/2254-9137.100078

## Experiences of Clinic Nurses Regarding Diabetes Education in Turkey' Health System

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### Abstract

**Background and aim:** No study is available determining the occupational characteristics and profiles of nurses working in the internal medicine units, regarding the education of patients with type 2 diabetes in Turkey. The aim of this study was to determine the profile of clinic nurses regarding diabetes education.

**Materials and methods:** Nurses (n=180), who were working in the internal medicine clinics between September and October 2015, were included in this cross-sectional study. The data were collected using a questionnaire. This study was approved by the ethical review boards at the authors' institution (and each hospital). In consequence of the research, the Statistical Package for Social Sciences 16.0 program was used for statistical analyses while acquired data were being assessed.

**Results:** The mean age of the nurses was 29.26 ± 6.12 years; the vast majority of nurses were female and with bachelor's degree; more than half of them were working in the Southeastern Anatolia region, others were equally in the Aegean region, and Black Sea region. Nurses work mostly in the following clinics: general internal medicine clinic, neurology clinic, and chest clinic. In the study, 55.1% of nurses were found to provide diabetes education for patients in their clinics, and 83.5% of the education was individual patient education. The first three subjects of education given by the nurses were "the importance of insulin therapy, insulin injection sites, site rotation, side effects of insulin therapy, and preservation of insulin" (16.0%); "the definition of antidiabetic drugs and how to use them" (14.0%); and "the definition and symptoms of diabetes" (13.8%).

**Conclusion:** The in-service diabetes education should be increased, and the number of nurses who can provide in-service diabetes education should be increased.

**Keywords:** Diabetes; Nurses; Patient education; Type 2 diabetes

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**Citation:** Samancioglu S, Donmez RO, Surucu HA, Cevik AB (2017) Experiences of Clinic Nurses Regarding Diabetes Education in Turkey' Health System. Health Syst Policy Res. Vol. 4 No. 3:59

**Received:** July 14, 2017, **Accepted:** July 28, 2017, **Published:** August 04, 2017

### Introduction

According to the World Health Organization (WHO), the prevalence of diabetes has gradually increased in developing countries such as Turkey, and the disease and its complications still remain an important concern in public health [1]. According to the latest edition of International Diabetes Federation (IDF) Diabetes Atlas, the highest diabetes prevalence is observed in Turkey [2]. In Turkish Diabetes Epidemiology Study II (TURDEP II), the prevalence of diabetes in the Turkish adult population was found to increase from 7.7% to 13.7% in 10 years [3]. In other words, the number of diabetic individuals in Turkey has reached

6.5 million [3]. However, it is estimated that 5.8 million of patients are Type 2 diabetes and 0.7 million are type 1 diabetes. In Turkey, approximately 163 people die because of diabetes-related causes each day. This is approximately equal to 59,786 adult deaths per year. In Turkey, diabetes patients are almost 10 times more likely to have a stroke than healthy individuals. About half of the individuals entering the dialysis are diabetic and 19% of the diabetic patients experience possible depressive symptoms and 28% have diabetic retinopathy [4]. 45% of diabetic patients are not aware of their illness [4].

According to the WHO, the key element of diabetes treatment is to educate patients with diabetes [5,6]. The American Diabetes

Association (ADA) and the American Association of Diabetes Educators (AADE) have defined the role and responsibilities of nurses through standardizing the patient education for diabetes educators [7]. According to the data of National Certification Board for Diabetes Educators (NCBDE) [8], approximately 1723 health professionals received a diabetes educator certificate in 2014. It is stated that the percentage of nurses having the certificate is 0.02%–19.6% in Turkey [9]. In 2015, it is emphasized that 491 nurses received a diabetes nursing certificate in Turkey [10]. The number of patients per certified diabetic nurse is high and the number of certified nurses is seriously inadequate to meet the training requirement of 6.5 million diabetics in Turkey. In Turkey, the Diabetes Nursing Certificate Program was first provided by the Diabetes Nursing Association in 2002. The program has been jointly provided by the Ministry of Health and Diabetes nursing since 2015 [10]. In Turkey, the Diabetes Nursing Program was established by the Diabetes Nursing Association. And, all inspections are conducted by the association with the partnership of the Ministry of Health [10]. However, in Turkey, no study is available determining the occupational characteristics and profiles of nurses working in the internal medicine units, regarding the education of patients with type 2 diabetes. It is thought that this study will increase the awareness of clinic nurses about diabetes education and contribute to the formation of a database that will help individuals understand better the relationship between the patient education, which is an important role of nurses, and the attitude toward diseases [11]. Since patients with diabetes always encounter with nurses in clinics as a result of any acute or chronic situations. The aim of this study is to analyze the diabetes education content offered by internal clinical nurses who always encounter a patient with diabetes regardless of their units.

## Materials and Methods

### Design

#### A descriptive research design was used in this study: Study setting and sample

The study was conducted in three different regions including the western, southeastern, and northern regions of Turkey in 2015. The development indexes of these regions were different. This difference affects many factors from demographic data such as health and education to financial status and quality of life. Power analysis was performed to calculate the sample size (STATISTICA 2016 Quest Software Inc.). Based on the principle of voluntary, 180 clinic nurses (1-5 working year in the services, participation rate, 73.0%) who were working in the internal medicine services of the central hospital in three different regions of Turkey were included in the study. All nursing worked in internal medicine. They were chosen by the head nurse of the hospital. If nurses have got diabetes certificate, they have chosen for internal medicine department. If vocational high school nurses have got long time working duration also is preferred for internal medicine department. When nursing taken from diabetes certificate from the Diabetes Nursing Association, They must have two years experiences worked with diabetes patient and must have degree of bachelor degree.

### Demographic and Nurses-related information form

The study data were collected by means of a questionnaire prepared through a literature review [12-16]. The questionnaire consisted of 20 questions including open-ended and closed-ended questions for determining the socio-demographic details (age, gender, marital status, residence, and income level), educational qualification (school from where the nurses graduated), working experience (years of nursing), and diabetes education characteristics (having a certificate or not, providing diabetes education, and the content of diabetes education) of the nurses.

### Data collection

The study was conducted in three different regions including the western, southeastern, and northern regions of Turkey. The development indexes of these regions were different. This difference affects many factors from demographic data such as health and education to financial status and quality of life. Data were collected by the researchers through individualized interviews with nurses at the internal medicine clinics. The participants were briefly informed by the researchers about the aim and methods of the study as well as the questionnaire. The questionnaire was administered through face-to-face interviews and took approximately 30 minutes to complete. The participants were also given the opportunity to ask any question related to the study.

### Ethical considerations

Permission was received from the Ethics Committee of the Faculty of Medicine, Gaziantep University (No: 429). Informed consent was obtained from the nurses after they were given necessary explanation about the aim of the study.

### Statistical analysis

In consequence of the research, the Statistical Package for Social Sciences 16.0 program was used for statistical analyses while acquired data were being assessed. The number and percentage distributions were used for data analysis. The effect of some independent variables on providing diabetes education was analyzed using a chi square test. Statistically significant levels were set at p value of less than .05.

## Results

The mean age of the nurses (n=180) was  $29.26 \pm 6.12$  years (76.7% female and 73.3% with bachelor's degree); 57.8% were working in the Southeastern Anatolia region, 21.1% in the Aegean region, and 21.1% in the Black Sea region. The nurses were working as a nurse for  $6.96 \pm 6.25$  years, and 60.7% of them were working for 1–5 years. Of them, 37.8% were working in the general internal medicine clinic, 18.9% in the neurology clinic, and 12.8% in the chest clinic (**Table 1**).

Moreover, 75.6% were found to provide diabetes education for

**Table 1** The sociodemographic characteristics of nurses (n=180).

Participant characteristics	N (%)
<b>Regions where they were working</b>	
Aegean	38 (21.1)
Black Sea	38 (21.1)
Southeast	104 (57.8)
Age, y, mean (SD)	29.26 (6.12)
<b>Sex</b>	
Female	138 (76.7)
Male	42 (23.3)
<b>Marital status</b>	
Married	88 (48.9)
Single	92 (51.1)
<b>School from where they graduated</b>	
Nursing high school	36 (20.0)
Bachelor's degree	132 (73.3)
Postgraduate	12 (6.7)
<b>Service where they were working</b>	
General internal medicine-endocrine	68 (37.8)
Neurology	34 (18.9)
Chest	23 (12.8)
Cardiology	20 (11.1)
Other (gastrology, nephrology, rheumatology, etc.)	35 (19.4)
<b>Working year</b>	
<1 year	71 (39.3)
1-5 years	109 (60.7)
Total	180 (100.0)

patients in their clinics, 83.5% of which was individual patient education. Only 3.9% of the nurses were found to have a diabetes educator certificate. The first five subjects of education given by the nurses were found to be "the importance of insulin therapy, insulin injection sites, site rotation, the side effects of insulin therapy and the preservation of insulin" (16.0%); "the definition of antidiabetic drugs and how to use them" (14.0%); "the definition and symptoms of diabetes" (13.8%); "the essential nutrient that affects the level of nutrition and blood sugar: carbohydrates and snack options" (12.7%); and "measuring and evaluating the blood sugar level at home" (10.1%). The three subjects of education given least commonly by the nurses were found to be "the chronic complications of diabetes and the prevention of them" (7.0%); "foot care in diabetes" (7.9%); "the role of sugar in the body" (8.9%); and "the acute complications of diabetes and their prevention" (8.9%) (**Table 2**).

The difference between providing diabetes education was assessed using the chi square analysis by the region where the nurses were working, and some of their sociodemographic and professional characteristics. In this respect, variables such as the region where the nurses were working, their sex, the schools from where they graduated, and the years of working were found not to affect their providing patients with diabetes education ( $p>0.05$ ). However, the marital status of nurses and having received diabetes education earlier were found to influence their providing patients with diabetes education ( $p=0.027$ ). The nurses who were married and had received diabetes education earlier were found to give further diabetes education (**Table 3**).

**Table 2** Distribution of characteristics of nurses regarding diabetes education.

Characteristics	N (%)
<b>Providing diabetes education (n=180)</b>	
Yes	92 (55.1)
No	88 (44.9)
<b>Type of diabetes education (n=79)</b>	
Individual	66 (83.5)
Group	13 (16.5)
<b>Having a diabetes educator certificate (n=180)</b>	
Yes	7 (3.9)
No	173 (96.1)
<b>Subject of education (n=542)*</b>	
Definition of diabetes and its symptoms	75 (13.8)
What antidiabetic drugs are and how to use them	76 (14.0)
The importance of insulin therapy, its types and effects, injection sites, site rotation, the side effects of insulin therapy, and the preservation of insulin	90 (16.0)
Measuring and assessing the blood sugar level at home	55 (10.1)
The role of sugar in the body	48 (8.9)
The importance of nutrition, meal plans, and the essential nutrients that affect the level of blood sugar: Carbohydrates and snack options	69 (12.7)
Foot care in diabetes	43 (7.9)
The acute complications of diabetes and their prevention	48 (8.9)
The chronic complications of diabetes and their prevention	38 (7.0)

\*Nurses marked more than one answer to this question.

**Table 3** Factors that affect the nurses providing diabetes education.

Variables that affect providing education	Providing education for patients with diabetes			Importance test	
	Yes N (%)	No N (%)	Total N (%)	$\chi^2$	P
<b>Region</b>					
Southeastern Anatolia	55 (52.9)	49(47.1)	104 (100)	0.363	0.834
Aegean	19 (50.0)	19(50.0)	38(100)		
Black Sea	18(47.4)	20(52.6)	38(100)		
<b>Sex</b>					
Female	72(52.2)	66(47.8)	138(100)	0.267	0.657
Male	20(47.6)	22 (52.4)	42(100)		
<b>Marital Status</b>					
Married	52(59.1)	36(40.9)	88(100)	4.388	0.026
Single	40(43.5)	52(56.5)	92(100)		
<b>School from where they graduated</b>					
Nursing High School	34(53.1)	30(46.9)	64(100)	1.649	0.438
Bachelor's degree	50(48.1)	54(51.9)	104(100)		
Postgraduate	8(66.7)	4(33.3)	12(100)		
<b>Having received diabetes education before graduation</b>					
Yes	76(55.9)	60(44.1)	136(100)	5.609	t0.027
No	16(36.4)	28 (63.6)	44(100)		

## Discussion

Diabetes is the most important chronic disease, the prevalence

of which has increased most in Turkey as much as in the world. Accordingly, the education of patients with diabetes has gained more importance for the control of the disease [2,3]. The health education given on the chronic diseases increases the patient autonomy and feeling of confidence, while it decreases the complications and cost [16,17].

Although only nurses participated in this study, approximately half of them were found to provide diabetes education for patients in the clinics where they were working. This finding supported the fact that determining the knowledge levels of clinic nurses about diabetes education is necessary. Similarly, in other studies it is shown that the nurses have lack of knowledge in diabetes education [8,18]. It is suggested that the health education for patients should be provided by the nurses who have become experts in their fields [5,14]. However, the number of nurses having a diabetes educator certificate in Turkey is quite low. According to the data of National Certification Board for Diabetes Educators (NCBDE) [9], approximately 1723 health professionals received a diabetes educator certificate in 2014. It is stated that the percentage of nurses having the certificate is 0.02%–19.6% in Turkey [19]. In the present study, 3.9% of the nurses had the educator certificate.

It has been reported in the literature that the individual patient education is provided twice as much as group education [20]. This study involved individual patient education. Nurses participating in this study prefer individual diabetes education. Individual patient education has several advantages such as having more time for the patient, but the group education is frequently assessed in the literature in terms of improving the diabetes results and developing the problem-solving skills in patients [17,20].

Similar to the present study, studies reported that patient education consists of subjects such as basic information about diabetes, nutrition, exercises, measuring blood sugar, drugs, and living with diabetes [9,13,18,21]. Studies stated that the first three subjects of education given to the patient with type 2 diabetes include the definition of diabetes and its complications, healthy diet, and physical activity [22,23].

No statistically significant difference was found between the regions where they were working in terms of providing diabetes education. The reason may be the fact that all three hospitals were university hospitals and they had similar care standards. Although sex did not have a statistically significant effect on providing diabetes education, female nurses were found to provide approximately 1.09 times more education than male nurses did. Mogre and Odili and Eke stated in their studies that males scored higher than female nurses [7,24]. Along with the amendment to the Nursing Law in Turkey (2007), male individuals are also employed as nurses. Considering the increasing number of male nurses, this finding was regarded as an important result in terms of taking into consideration the potentials of male nurses for providing less education [25].

The marital status of the clinic nurses and the fact that they had

received diabetes education earlier affect the patient education in clinic. The nurses who were married and had received diabetes education earlier were found to provide more education. Most of the nurses participating in this study have bachelor's degree. Studies have shown that the care by nurses who have bachelor's degree and postgraduate education has a positive impact on mortality and morbidity, and they focus on patient education more [24,26,27].

The most important limitation of the present study was that it was conducted only in the university hospitals and did not include state and private hospitals in Turkey. Further studies should include clinic nurses working in all kinds of hospitals. This study had the feature of being one of the rarest studies determining the profiles of nurses working in the internal medicine units regarding their type 2 diabetes education.

## Conclusion

This study had the feature of being one of the rarest studies determining the profiles of nurses working in the internal medicine units regarding their type 2 diabetes education.

The tendency to provide more patient education increased with the educational level, years of working, and relevant knowledge of nurses. The region or the hospital where the nurses were working did not have an effect on providing education on type 2 diabetes. The subjects of education given by the nurses to the patients in this study were found to be similar to the subjects in other relevant studies.

In hospitals, it is proposed that the hospital management plan diabetes education to be given to nurses (especially nurses working in internal medicine departments) in order to increase the rates of education given to diabetic patients. In addition, it is recommended that institutional policies to be established for the distribution of nurses, especially married nurses in the internal medicine services because married nurses are more likely to provide diabetes education.

The present findings suggest providing further in-service education on diabetes, focusing on the subjects determined by meta-analysis, particularly those about whom nurses give less education, generating standard education content, and increasing the number of nurses who can provide in-service diabetes education.

## Acknowledgments

The authors are grateful to the nurses who participated in this study.

## Financial Support and Sponsorship

This is a self-funding study.

## Conflicts of Interest

The authors declared no conflicts of interest.



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