



Comparison of Knowledge, attitude and practice towards diabetes between hemodialysis patients and non-hemodialysis patients with type 2 diabetes: A cross-sectional study

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Article History

Received: 03 January 2020

Reviewed: 04/January/2020 to 16/February/2020

Accepted: 17 February 2020

E-publication: 22 February 2020

P-Publication: May - June 2020

Citation

Salehoddin Bouya, Elham Abdolahi, Mahnaz Abavisani, Saeid Movahed. Comparison of Knowledge, attitude and practice towards diabetes between hemodialysis patients and non-hemodialysis patients with type 2 diabetes: A cross-sectional study. *Medical Science*, 2020, 24(103), 1176-1183

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General Note

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ABSTRACT

Background: Today, diabetes is one of the health challenges that put a lot of burden on the health system. Having a good knowledge, positive attitude are important elements for proper practice for timely control of diabetes among dialysis patients. The purpose of this study was to comparing of Knowledge, attitude and practice towards diabetes between hemodialysis patients and non-hemodialysis patients with type 2 diabetes. **Methods:** This cross-sectional study was performed on 100 hemodialysis and non-hemodialysis patients with diabetes in two teaching hospitals (Ali Abitaleb Hospital and Khatam Al Anbia Hospital) affiliated to Zahedan University of Medical Sciences from Jan 1 2019 to Jul 30 2019. The available sampling method was used to select patients. A standard questionnaire was used for data collection. SPSS software version 18 using descriptive and inferential statistical tests were used for data analysis. P value less than 0.05 was considered as significant level. **Results:** mean age of participants was 55.35 years. Most participants were female (74%), illiterate (40%), housewife (47%), with normal BMI (29%), high blood pressure (56%), fasting blood sugar above 130 (67%), and HbA1C was higher than 7 (58%) in most of them. The mean score of knowledge, attitude and practice for the study population was 61.7, 9.8 and 59.7. **Conclusions:** Despite the knowledge and proper performance of participants, it seems necessary to strengthen their attitudes to conduct diabetes management training programs and their symptoms.

Keywords: Knowledge; Attitude; Practice; Diabetes; Hemodialysis

1. INTRODUCTION

Type 2 Diabetes is one of the two major types of diabetes in which pancreas beta cells produce insulin, but due to resistance of cells, the body is not able to use it. Although this type of diabetes is not fatal as type 1 diabetes (T1DM) due to ketoacidosis, it involves most of the complications of T1DM (Control & Prevention, 2004; Keleidari et al., 2018; Kim et al., 2019). Nephropathy is one of the most important complications of diabetes. T2DM is one of the main leading causes of chronic kidney diseases (CKD), and according to statistical reports it is responsible for 30-40% of CKD and upto 45% of end stage renal disease (ESRD) (Hadjadj et al., 2016). In the last two decades, the incidence rate of ESRD among patients with diabetes, specifically patients with T2DM, is continuously increasing (Kim et al., 2019; Mostafa et al., 2018; Narres et al., 2016; Ohkuma et al., 2019). As patients with diabetes experience renal failure, dialysis or kidney transplantation must be conducted (Dabelea et al., 2017; Grujicic et al., 2019). Nowadays, physicians do not hesitate to perform dialysis and kidney transplantation for patients with diabetes due to better management of diabetes and improvement of post-treatment survival rate (Association, 2020a; Rawshani et al., 2017).

If diabetes is not considered seriously at early stages, it can lead to acute and chronic complications (Association, 2020b; Reynolds et al., 2018). These complications can affect quality of life of patients, and might lead to increase in mortality rate. One of the major problems with diabetes is high costs for both the patient and the society (Dambha-Miller, Feldman, Kinmonth, & Griffin, 2019). Complications, specifically when are along with involvement of arteries and arteriols, can lead to decline in quality of life (Iglay et al., 2016; Reynolds et al., 2018; Xu, Gao, Wang, Huang, & Wang, 2017). Prevention, pathogenesis and mortality caused by the complications of disease are of most health concerns around the world, and this is why investment on management of diabetes is pointed (Liu et al., 2019). Currently, survival rate of transplanted kidneys in patients with diabetes is the same as survival rate of transplantation in individuals without diabetes. Dialysis is a good option for patients with diabetes in short-term. By the way, patients with diabetes underwent dialysis, experience more rate of mortality due to side complications, such as damage to heart, eyes, and nerves (Rangel et al., 2009). Better management of blood sugar in patients with diabetes not only requires prescription an appropriate dietary and pharmaceutical regimen by physician, but also requires growing training for the patient (Saadia, Rushdi, Alsheha, Saeed, & Rajab, 2010). Many studies noted and used measurement of associations such as HbA1c, lipid, KAP, and self-efficacy as diabetes management index (Malathy, Narmadha, Jose, Ramesh, & Babu, 2011). Using self-care programmes in chronic diseases is approximately known, and these programs showed partial success in the context of disease control (Chodosh et al., 2005). By the way, a few studies are specifically expanded or examined for renal problems of diabetic patients.

The study by Ghannadi et al. at 2016 evaluated the effect of knowledge; attitude and practice in regard with self-care on 117 patients with diabetes underwent dialysis. Scores of knowledge, attitude and practice of self-care and quality of life were 59.9 ± 23.1 , 44.2 ± 23.3 , 45.1 ± 12.8 , 46.2 ± 23.1 , and 26.8 ± 23.1 , respectively. Negative association was observed between knowledge and attitude of the patients with the glycosilated hemoglobin and FBS. There was significant correlation between knowledge and practice of the patient with self-care activities. Therefore, this study showed that scores of knowledge, attitude and practice of patients have positive effect on self-care behavior, and this issue shows the need for effective diabetes training programs in

developing countries such as Iran (Ghannadi et al., 2016). In addition, Butler and Geller stated that 27% of the hospitalization due to diabetes complications in one year results from lack of training, and the other 20% is a result of social, economic and psychological deficits (Geller & Butler, 1981). World Health Organization (WHO) stated that training is the fundamental basis in treatment of the patients (Organization, 2011). Training and learning lead to permanent change in attitude and practice of individuals and finally change in their lifestyle (Bloom, 1956). Kozier and Lea Erb found that nurses have important role in support patients to change their attitude, and can help them to overcome obstacles and support positive activities (Kozier, Erb, Berman, & Snyder, 1979). The study by Mohammadi et al. at 2015 showed that there is no significant association between scores of attitude, knowledge and practice with blood glucose control (Mohammadi, Karim, Talib & Amani, 2015).

Toobert et al. showed that attitude and practice of patients with diabetes are not significantly associated with their self-assessment (Toobert, Hampson & Glasgow, 2000). Since various studies reported different results on rate of knowledge, attitude and practice of diabetic patients, and regarding with pointing the importance of metabolic control of diabetes and determinative role of training interventions in this context, and considering high prevalence of this disease in Iran, there is need to perform an appropriate training program based on information technology and communication; Firstly, necessary sub-constructs in this context should be provided. It is done through determination of level of knowledge, attitude, practice and self-efficacy on diabetes and association of mentioned factors with each other. Therefore, this study aimed to investigate knowledge, attitude, and practice of diabetic patients underwent dialysis or not at training hospitals of Zahedan at 2019.

2. MATERIALS AND METHODS

Participants

This descriptive study was conducted on 100 patients with diabetes (50 patients undergoing dialysis, and 50 patients without dialysis) referred to three training hospitals (Imam Ali and Khatam Ol-Anbia hospitals, and BuAli clinic) covered by Zahedan University of Medical Sciences from Jan 1 2019 to Jul 30 2019. Convenience sampling was used to select participants. Inclusion criteria were as follow: all the patients were with diabetes diagnosis confirmed by physician, those underwent dialysis should be dialyzed since at least six month ago. Patients in acute status of the disease, so that could not participate in the study were excluded. Sample size was determined based on previous study. The *c* was used for reporting the study (Von Elm et al., 2007).

Tools

Data was gathered by questionnaire that consists of two sections: demographic characteristics, questions on knowledge, attitude and practice on diabetes. Fifty patients with T2DM who underwent dialysis and fifty diabetic patients without dialysis were investigated in this descriptive-analytical study. This study was performed at hemodialysis wards of Ali-ebne-AbiTaleb and KhatamOl-Anbia in Zahedan and BuAli clinic of the hospital. Questionnaire of knowledge, attitude and practice (KAP) extracted from the study by Ghannadi et al. was used in this study. This questionnaire includes four sections of demographic data, knowledge questions (10 questions), attitude (10 questions) and practice (11 questions). Questions of knowledge sections of 0-4 and practice of 0 and 1 were multiple choice questions with scores and based on number of correct selections. Questions on attitude consist of score of -2 to +2 (definitely agree, agree, no opinion, disagree, and definitely disagree) (Ghannadi et al., 2016). Demographic data includes age, gender, marital status and educational level and job. In addition, data on disease includes: duration of disease, treatment method, and risk factors, systolic and diastolic blood pressure, BMI, FBS and HbA1c were assessed.

Data collection

The study was conducted after obtaining approval from research ethical committee of Zahedan University of Medical Sciences and by obtaining written letter from the university. The samples were selected based on inclusion criteria among study population. At first, after coordination with authorities of hospital ward, the objectives of the study were explained to the eligible patients, and then informed consent form was obtained from those were willing to enter the study. At the next stage, questionnaires were provided to patients by the researcher. Each patient had 15-minute time to fulfill the questionnaires. The questionnaires were fulfilled by the researcher and through interview for illiterate patients. At last, the questionnaires were gathered.

Ethical Considerations

This study was approved by ethics committee of Zahedan University of Medical Sciences with the ethical code of ZUMS.REC.1395.115. Written and oral informed consent was obtained from all the participants. The participants were assured that their information will be kept confidential.

Statistical Analyses

Descriptive tests (percentage, frequency, mean and standard deviation) were used to describe demographic characteristics. Spearman correlation test was used to assess association between educational behaviors of professors and educational motivation. SPSS Version 18.0 for Windows (SPSS Inc., Chicago, IL, USA) was used to analyze the data. Confidence interval of 95% and a significance level of P-value less than 0.05 was considered significant.

3. RESULTS

Data on 100 individuals was analyzed in the current study, in which 50 individuals were with dialysis. Twenty seven individuals in dialysis group and 37 individuals in the other group (74%) were woman. Mean age of the participants in two groups was 55.35 and 40.6 ± 10.5 years. Most participants in both groups were illiterate, housewife, and had hypertension and FBS less than 130 mg/dl (Table 1) (figure 1).

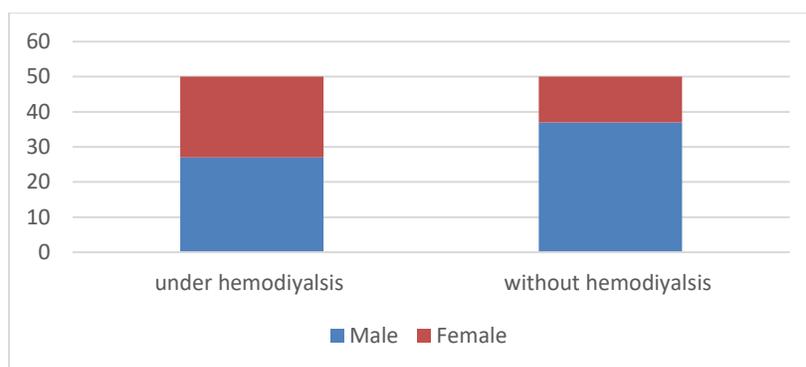


Figure 1 Gender of participants among patient with diabetes under doing of dialysis and without of hemodialysis

Table 1 demographic characteristic of participants in two groups

Variables		Diabetic patients under hemodialysis	Diabetic patients without hemodialysis
		Mean± SD	Mean± SD
Age		59.1±19.33	40.6±10.5
Gender		N (%) N=50	N (%) N=50
	Male	27 (54%)	37 (74%)
	Female	23 (46%)	13 (26%)
Education	Illiterate	20 (40%)	20 (40%)
	Elementary school	6 (12%)	15 (30%)
	Middle school degree	7 (14%)	6 (12%)
	Diploma	11 (22%)	1 (2%)
	University degree	4 (8%)	8 (16%)
	Unknown	2 (4%)	-
Job status	Housewife	25 (50%)	33 (66%)
	Governmental job	17 (34%)	12 (24%)
	Self-employed	3 (6%)	3 (6%)
	Unemployed	1 (2%)	1 (2%)
	Unknown	4 (8%)	1 (2%)
Blood pressure	Normal (120/80)	5 (10%)	9 (18%)
	Pre-hypertension (120-139/80-89)	13 (26%)	16 (32%)

	Hypertension stage 1 (140-159/90-99)	32 (64%)	24 (48%)
	Unknown	-	1 (2%)
FBS	More than 130	22 (44%)	11 (22%)
	Less than 130	28 (56%)	39 (78%)

Mean total score for knowledge, attitude and practice for study population was 61.7 (SD=11.0), 9.8 (SD=3.3). Highest mean score among the three dimensions was for knowledge and the lowest mean score was for attitude (Table 2) (figure 2).

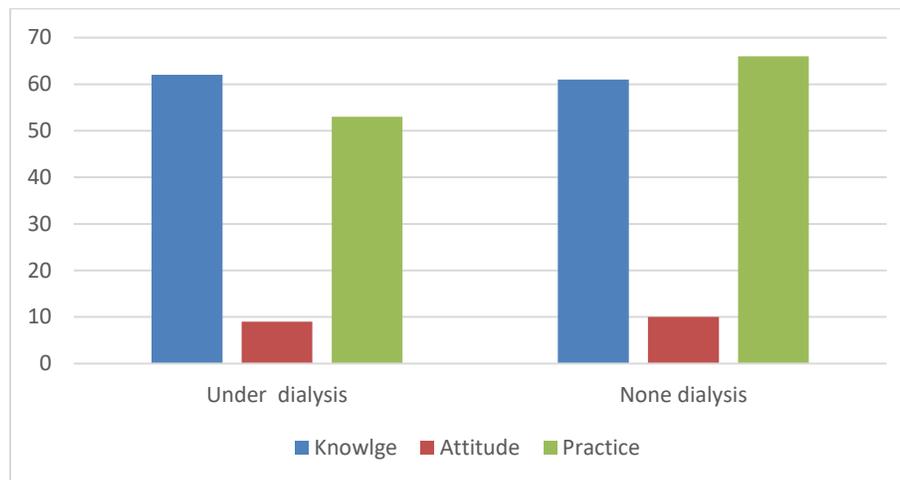


Figure 2 Knowledge, attitude and practice of participants

Table 2 Distribution of knowledge, attitude and practice rather than diabetes in participants

Patients' group	dimension	Minimum-maximum	Mean (Standard deviation)
Under dialysis	knowledge	75/0 – 30/0	62.1(8.7)
	attitude	14/0 – 0	9.2(3.2)
	practice	90/0 – 25/0	52.9(14.9)
None dialysis	knowledge	82/5 – 30/0	61.2(13)
	attitude	17/0 – 1/0	10.4(3.4)
	practice	95/0 – 40/0	66.6(15.3)

4. DISCUSSION

Chronic diseases are today the main leading cause of high costs on health system. Diabetes is one of the major causes of chronic renal failure. Appropriate knowledge and attitude to chronic disease help to patient for better practice and management. This descriptive study aimed to investigate knowledge, attitude and practice of diabetic patients with and without dialysis on diabetes at training hospitals of Zahedan at 2017. Demographic characteristics showed that most of the participants were woman (64%). This result was in line with the results of the studies by Al-Maskari F (2013) (Al-Maskari et al., 2013), Herarth HM (2017) (Herarth, Weerasinghe, Dias, & Weerathna, 2017), Kassahun T (2016) (Kassahun, Gesesew, Mwanri, & Eshetie, 2016) in which most of the participants were woman, and was inconsistent with the studies by Koley M (2016) (Koley et al., 2016), Asmelash D (2019) (Asmelash, Abdu, Tefera, Baynes, & Derbew, 2019), Wolde M (2017) (Wolde, Berhe, Van Die, Medhin, & Tsegaye, 2017), in which most of the participants were man. Mean age of the participants was 55.35 years that was in line with previous studies in which mean age of the participants was 55.3 years (Wolde et al., 2017). While mean age of the participants in the study by Wolde M et al. (30.7 years) (Wolde et al., 2017) was lower than the current study. Most of the participants were married (85%) that this was in line with studies by Koley M (2016) (Koley et al., 2016), Al-Maskari F (2013) (Al-Maskari et al., 2013) in which most of the participants were married.

Most of the participants were illiterate (40%) that this was consistent with studies by Koley M (2016) (Koley et al., 2016), Al-Maskari F (2013) (Al-Maskari et al., 2013), and Asmelash D (2019) (Asmelash et al., 2019) in which all the participants were illiterate.

Most of them were housewife (58%). Overweight and obesity is one of the most important sub-factors of diabetes. Obesity increases the risk of diabetes through disturbances in function of endothelial layer and inducing insulin-resistance. Lack of full function of non-esterified fatty acid also aggravates this risk in obese individuals. Another effective causing factor for diabetes resulted from obesity is the impairment in beta cells (Al-Goblan, Al-Alfi, & Khan, 2014; Harati, Hadaegh, Saadat, & Azizi, 2009). In the current study, more than half of the participants were overweight (65.0%), which was consistent with previous study by Mokdad (2003) that stated that most of the participants were obese (Mokdad et al., 2003).

In the current study, 56.0% of the patients were hypertensive. High blood pressure is one of the fundamental sub-factors among diabetic patients. Blood pressure in T2DM is mostly as a part of insulin-resistant metabolic syndrome along with obesity and dyslipidemia. Blood pressure leads to microvascular and macrovascular complications include brain stroke, cardiovascular diseases, peripheral vascular diseases, retinopathy, nephropathy and neuropathy (Bjornstad et al., 2019). Sixty seven percent of the patients had FBS greater than 130 mg/dl. Fifty eight percent of the patients had HbA1C greater than 7%, which shows that most of the patients adhere with glycemic control properly. This was inconsistent with study by Al-Maskari F (2013) (Al-Maskari et al., 2013), which showed that most of the patients (57%) manage their blood sugar poorly. This inconsistency can be due to different knowledge and practice level in these two groups. The results showed that more than 61.7% of the participants had proper knowledge on diabetes which this was in line with previous results of the study by Asmeash D (2019), in which 62% of the participants were proper knowledge on diabetes (Asmelash et al., 2019). Inconsistent with the current study, the study conducted by N Mossalemi Aghili et al. at 2019 in Iran showed that most of the participants (85%) of them had poor knowledge on diabetes (Mossalemi Aghili, Ala, Iranpour, Honarchian Masihi, & Ahangar, 2019). As seen in the study by Al-Maskari F (2013) conducted in UAE showed that most of the participants had poor knowledge on diabetes so that mean score of them was 15.7 (Al-Maskari et al., 2013). The study by Goudarzi et al. conducted in Iran, most of the participants (57%) had moderate knowledge on diabetes (Goodarzi, Ebrahimzadeh, Rabi, Saedipoor, & Jafarabadi, 2012). As seen in the study by Herath HM M conducted at 2017 in Srilanka, most of the participants (77%) had moderate and good knowledge on diabetes (Herath et al., 2017), this inconsistency can be due to difference in demographic characteristics, literacy level of the participants and the year study was done.

In addition, one of the main causes for this difference in various studies which leads to various prevalence of knowledge level on diabetes, is using various tools to measure knowledge on diabetes, in which various states were used in various tools, in addition the way of scoring for each tool can also affect rate of knowledge on diabetes. Another reason can be due to that the researcher produced the tools by his own. Other reasons for this inconsistency can be due to the difference in access rate to data sources need and the sample size. The results of this study showed that mean score of attitude was 9.8 despite of present study by Asmelash D (2019) reported lower attitude score (7.28) than the current study (Asmelash et al., 2019), which shows better attitude in the current study rather than the previous studies around various regions in the world. Better attitude in the current study can be due to that most of the participants were urban, and in addition the population was selected from the hospital which provides better access to data sources. Having correct attitude plays fundamental role in management of diabetes as a chronic disease with long-lasting required cares. Therefore, providing required facilities and training material for patients to improve attitude of patients is essential. The findings showed that more than 59.7% of the participants had proper function on behaviors related to management and control of diabetes, which was in line with previous study by Asmelash D (2019) (Asmelash et al., 2019).

Inconsistent with current study, the study by Al-Maskari D (2013) (Al-Maskari et al., 2013), less than half of the participants had proper practice on care behaviors required for diabetic patients. The reason for this difference can be due to the difference in health policies conducted by investigated various countries, more consideration on chronic and non-communicable diseases in the current study, and also difference in the demographic characteristics. The power of this study was the investigation of patients with T2DM who places a profound burden on health system. The main limitations of the current study were as follow: 1. Low sample size leads to limited generalizability of the results, 2. Descriptive design which the specific limitations of this method should be considered.

5. CONCLUSION

The current study showed that patients with T2DM have good knowledge and practice and moderate attitude on diabetes. Despite positive results, it seems that there is need for establishment of proper subconstructs to implement appropriate training programs to better inform patients, family members and finally the society in regard with diabetes to better manage diabetes especially in patients undergoing dialysis.

Conflicts of interest

The authors have no conflict of interest to declare.

Funding

This research funded by Zahedan University of Medical Science.

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