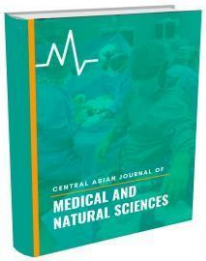

CENTRAL ASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES
https://cajmns.centralasianstudies.org/index.php/CAJMNS
Volume: 05 Issue: 03 | July 2024 ISSN: 2660-4159

Nurses' Competencies in Managing Diabetes Mellitus: Does Educational Qualification Matter?

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Abstract: Diabetes mellitus is a major worldwide disorder that has significant adverse effects on people's lives as well as the economies and societies of every developed and developing countries. Competency relates to the knowledge, attitude, and skills of primary healthcare nurses in providing care for diabetes mellitus. This study aims to identify the association between nurses' age, years of experience in nursing, years of experience in primary healthcare centers, duration of the course, number of courses in diabetes management and nurses' competencies related to diabetes management. A descriptive correlational design was used to guide this study which was conducted in primary healthcare centers in the Nasiriya City for the period from January 7th, 2024 to February 21th, 2024. The study included a convenience sample of 239 nurses. The study instrument includes participants' sociodemographic characteristics and Nurses' Competencies Scale. Data were collected through self-report and analyzed using the statistical package for social science, IBM version 27. The results revealed that there is a statistically significant positive correlation between number of training courses and professional attitudes. There are statistically significant differences in nurses' competencies in terms of human understanding and communication skills, professional attitudes, general clinical performance, and nursing competencies among educational qualification groups. The researchers concluded that the more the training courses nurses participate in, the sounder the professional attitudes they constitute toward diabetes mellitus management. The higher the educational qualification, the better the nurses' competencies in terms of human understanding and communication skills, professional attitudes, general clinical performance.

Keywords: Diabetes Mellitus, Educational Qualification, Nurses' Competencies

Citation: Ilham Abd Doaim, Zahid Jasim Mohammed. Nurses' Competencies in Managing Diabetes Mellitus: Does Educational Qualification Matter?. Central Asian Journal of Medical and Natural Science 2024, 5(3) 599-605.

Received: 11th June 2024
Revised: 15th June 2024
Accepted: 17th June 2024
Published: 20th June 2024

Introduction

Diabetes mellitus (DM), a chronic and progressive metabolic disease, is the cause for hyperglycemia that arises from defects in insulin action, secretion, or both, and linked to disruptions in the metabolism of fats, carbohydrates, and proteins. (1)

According to data from the World Health Organization (WHO), the prevalence of diabetes increased by 80% between 1980 and 2014 (2). The International Diabetes Federation (IDF) estimates that 9.3% of adults worldwide between the ages of 20 and 79 had diabetes in 2019 (3). About 462 million people worldwide (4.4% of those in the 15–49 age group, 15% of those in the 50–69 age group, and 22% of those over 70) had type 2 diabetes in 2017. This represents 6.28% of the global population and a

prevalence rate of 6059 cases per 100,000 people [4]. Regarding diabetes prevalence, the Middle East and North Africa (MENA) region had the highest rate in 2019 (12.2%), and between 2019 and 2045, it is predicted to rise by 96%, second only to the African region (143%) [5]. The Middle East and North Africa Region exhibits the highest regional prevalence rate of diabetes at 16.2%, along with the second highest expected increase (86%) in the number of individuals affected by the condition, projected to reach 136 million by 2045. Within the MENA Region, there is a notably high percentage (24.5%) of diabetes-related mortality among individuals of working age. Despite this concerning statistic, only 32.6 billion USD was allocated towards diabetes in the MENA Region, accounting for just 3.4% of the global expenditure on the disease, despite the region being home to 13.6% of the world's diabetic population [6]. In Iraq, the prevalence rate of T2DM is 9.4 with 2,011,400 total cases of diabetes in adults [7].

In Saudi Arabia, the annual overall burden of Type 2 Diabetes Mellitus (T2DM) ranges from $53,700 to $116,632, with cardiovascular disease (CVD) complications costing between $37,859 and $47,324, serving as the primary factor driving these costs [8]. The annual statistical report issued by the Iraqi Ministry of Health (2020) stated that there were 415.187 cases of T2Dm with an incidence rate of 41.4. In Dhi Qar, southern to Iraq, there were 19.674 cases of T2DM with an incidence rate of 55.5 which comes in the third rank among Iraqi governorates [9].

The concept of nursing competency is commonly seen as a comprehensive collection of knowledge, professional judgment, skills, values, and attitude, highlighting the broad acceptance of a holistic approach [10]. Nurses play a crucial role in delivering diabetes clinical treatment and education. Their basic competencies in diabetes are the primary factors that impact the quality of diabetes management [11]. This study aims to identify the association between nurses' age, years of experience in nursing, years of experience in primary healthcare centers, duration of the course, number of courses in diabetes management and nurses' competencies related to diabetes management.

Materials and Methods

Study Design

The descriptive approach was used to guide this study.

Study Sitting and Sample

The study was conducted in Dhi Qar Health Department/Nasiriya Sector first and second that include (22) Primary health care centers, which were distributed in Al-Nasiriya City. By a Convenience (non-probability) sample of (239) Male and female nurses was chosen based on a set of criteria include: 1) Nurses who agree to participate in the study, 2) Nurses who were working in the primary health care (PHC) Centers in Al-Nasiriya city, 3) Male and female nurses.

Study Instrument

The study instrument includes sociodemographic characteristics include age, gender, marital status, and educational level. It also includes years of service in nursing, years of experience in health centers, participation in a training course on diabetes measures, duration of the course, and number of courses.

It also includes Nurses' Core Competencies Scale – Arabic version [12] which measures nurses' level of competencies. The Nurses' Core Competencies Scale (NCCS) was originally developed by Lee and Kim [13]. The NCCS includes 70 items that are distributed into 4 subdomains: human understanding and communication skills (21 items), professional attitudes (13 items), critical thinking and evaluation (14 items), general clinical performance (13 items), and specific clinical performance (9 items). These items are measured on a 5-point Likert scale of 1 for (Strongly disagree), 2 for (Disagree), 3 for (Neutral), 4 for (Agree), 5 for (Strongly agree). The total score ranges between 70-350 with higher score indicates better nurses' competencies. The NCCS – Arabic version displayed excellent internal consistency reliability. The Cronbach's alpha for communication skills (.940), professional attitudes (.910), critical thinking and evaluation (.930), general clinical performance (.951), and specific clinical performance (.930).

Data Collection

Data were collected from nurses in primary health care centers at Dhi Qar City, southern to Iraq. The researchers explained the purpose of the study, instructions about answering the study instrument, and answered their questions regarding the form. The time required fir answering it ranged between (10-15) minutes. Data were collected for the period from January 7th, 2024 to February 21st, 2024.

Statistical Analyses

Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 27.0. Descriptive statistical measures (frequency and

percent), arithmetic mean, and standard deviation were used. The inferential statistical measures of Spearman's rho correlation, and Kruskal-Wallis test were also used.

Results and Discussion

Table 1. Spearman's rho correlation between nurses' age, years of experience in nursing, years of experience in primary healthcare centers, duration of the course, number of courses in diabetes management and nurses' competencies related to diabetes management

	1	2	3	4	5	6	7	8	9	10
1. Age	-									
2. Years of experience	.952**	-								
3. Years of experience in primary healthcare center	.832**	.869**	-							
4. Duration of the course	.118	.115	.163*	-						
5. Number of courses	.206**	.213**	.256**	.874**	-					
6. Human understanding and communication skills	-.062	-.050	.007	.069	.088	-				
7. Professional Attitudes	-.035	-.034	.018	.097	.136*	.626**	-			
8. Critical thinking and evaluation	-.004	.010	.011	.121	.126	.633**	.741**	-		
9. General clinical performance	-.040	-.054	-.049	.118	.107	.566**	.661**	.737**	-	
10. Nursing Competencies	-.033	-.035	-.002	.107	.122	.834**	.847**	.873**	.828**	-

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

There is a statistically significant positive correlation between number of training courses and professional attitudes ($r = .136$ at $p = 0.01$).

Table 2. Differences in nurses' competencies related to diabetes mellitus management among educational qualification groups

Ranks			
	Educational Qualification	N	Mean Rank
Human understanding and communication skills	Nursing high school	86	106.98
	Associate degree	113	122.68
	Bachelor's degree	40	140.41

	Total	239	
Professional Attitudes	Nursing high school	86	105.24
	Associate degree	113	126.34
	Bachelor's degree	40	133.83
	Total	239	
Critical thinking and evaluation	Nursing high school	86	111.29
	Associate degree	113	119.00
	Bachelor's degree	40	141.54
	Total	239	
General clinical performance	Nursing high school	86	106.70
	Associate degree	113	123.81
	Bachelor's degree	40	137.83
	Total	239	
Nursing Competencies	Nursing high school	86	108.42
	Associate degree	113	121.44
	Bachelor's degree	40	140.84
	Total	239	

Asymp. Sig.: Asymptomatic Significance, df: Degree of freedom, N: Number

The study results display that there are statistically significant differences in nurses' competencies in terms of human understanding and communication skills, professional attitudes, general clinical performance, and nursing competencies among educational qualification groups (p-value = .034, .037, .044, .047) respectively.

Discussion

This descriptive correlational study aims to identify the association between nurses' age, years of experience in nursing, years of experience in primary healthcare centers, duration of the course, number of courses in diabetes management and nurses' competencies related to diabetes management.

There was a statistically significant positive correlation between number of training courses and professional attitudes. This finding implies that the more the training courses the nurses have, the more positive professional attitudes the nurses develop toward caring of clients with

DM. This finding can be explained nurses enroll in more training courses, they can develop more positive professional attitudes toward caring of clients with DM as these courses can offer comprehensive literature relevant to multidimensional aspects of caring with clients with DM.

The study results display that there were statistically significant differences in nurses' competencies in terms of human understanding and communication skills, professional attitudes, general clinical performance, and nursing competencies among educational qualification groups. The Kruskal-Wallis test demonstrated that nurses who hold bachelor's degree demonstrated better competencies in terms of human understanding and communication skills and professional attitudes. This finding could be explained as the baccalaureate program in nursing offer various resourceful courses that enable graduates to develop competencies in terms of human understanding and communication skills, professional attitudes, general clinical performance, and nursing competencies. These findings could be explained as nursing education in Iraq has various levels starting from a 3-years program after middle school, an associate degree (2-years program after high school), bachelor's degree (4-years program after high school), master's degree, and doctoral degree. There are great discrepancies in the quality of these programs. Particularly, the baccalaureate program in nursing started to achieve accreditation on the national level within the last few years. The endeavor requires nursing curricula that best fulfil the requirements of accreditation in nursing education. On the other hand, the curricula of programs below the baccalaureate lack the curricula that are built on scientific basis that could help in preparing competent graduates. Another important element in baccalaureate program is the quality of nurse educator who hold doctoral degrees in nursing and other ancillary specialties. This in turn can facilitate creating optimal learning environment that helps in preparing graduates who would be satisfactorily competent.

Conclusion

The more the training courses nurses participate in, the sounder the professional attitudes they constitute toward diabetes mellitus management. The higher the educational qualification, the better the nurses' competencies in terms of human understanding and communication skills, professional attitudes, general clinical performance.

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