Knowledge Attitude Practices and associated factors towards glycemic control among geriatric diabetes mellites patients

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Abstract

Diabetes mellitus is increasing worldwide and Iraq is showing an increasing trend in diabetes with a prevalence that ranges from 8.5% to 13.9% following in the footsteps of other countries in the region. Assessing knowledge, attitude, and diabetic practice are vital to manage and treat the disease in elderly as this would contribute to the distinguishing of any gaps in the existing knowledge, and direct educational programs to ensure a better management and practice.

Objective: To explore knowledge, attitudes and practices in a sample geriatric population regarding glycemic control of diabetes mellites. **Patients and Method:** A cross-sectional survey conducted in three health centers in Baghdad on a convenient sample of 225 geriatric patients. Knowledge, attitude, and practice were calculated using a structured questionnaire with two-degree-likert scale. Categorical data were presented in frequencies and percentages. Chi-square was applied to illustrate the significance of the association between variables, and binary logistic regression was used to calculate odd ratios. In all statistical analysis a p-value ≤5% considered significant **Results:** The average age was 68.2±5.4 years. Family and friends were the main source of information. The average of glycated hemoglobin was 8.19±0.9 around 138 (61.3%) had uncontrolled DM. Good knowledge, attitude and practice was reported among 47.1%, 47.1% and 46.7% of the studied sample respectively. The odds of having good knowledge, attitude and practice were higher among those with higher education, controlled DM, urban residency and positive family history.**Conclusion:**A structured nutrition and health education program should be implemented on each geriatric-health facility visit. Community based behavioral change communication might also be needed to expand the level of knowledge towards diabetic mellitus, enhance attitude and eventually improve practice.

Keywords: KAP, geriatric, Diabetes knowledge, diabetic mellitus

Introduction

Diabetes is a highly prevalent health condition in the aging population. Over one-quarter of people over the age of 65 years have diabetes, and one-half of older adults have prediabetes. Diabetes management in older adults requires regular assessment of medical, psychological, functional, and social domains. [1]

There is growing evidence that people affected with the disease often have inadequate knowledge about the nature of diabetes, its risk factors and associated complications, and that this lack of awareness may be the underlying factor affecting attitudes and practices toward its care [2]

Diabetes mellitus is increasing worldwide and it is estimated that the prevalence will increase by 110% in the MENA region and will reach 629 million worldwide in 2045. Iraq is showing an increasing trend in diabetes with a prevalence that ranges from 8.5% to 13.9% following in the footsteps of other countries in the region. Thus around 1.4 million of Iraqis have diabetes. Geriatric population represents the elite group for such metabolic disease, with a prevalence ranging from 25% to 29.7% among them. [3-6]

Assessing knowledge, attitude, and diabetic practice are vital to manage and treat the disease in elderly[7] as this would contribute to the distinguishing of any gaps in the existing knowledge, and direct educational programs to ensure a better management and practice. The anticipated impact of diabetes on public health might pose significant problems to healthcare systems and economies, particularly in a country that had a pressured health system such as Iraq. Therefore, additional efforts are required to educate patients about the importance of DM management to achieve optimum health outcomes

Diabetic patients with a poor understanding of the disease have shown higher hospitalization rates for unstable diabetes. In contrast, patients with excellent knowledge and understanding of diabetes can adhere to the principles of self-management and have documented better glycemic control along with better health outcomes. [8]

As for all people with diabetes, diabetes self-management education and ongoing diabetes self-management support are vital components of diabetes care for older adults and their caregivers. Self-management knowledge and skills should be

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reassessed in synchronization with the treatment plan and accordingly changes are made or when an individual's functional abilities diminish. [1]

Aim: To explore knowledge, attitudes and practices in a sample geriatric population regarding glycemic control of diabetes mellites.

Patients and Method

This was a cross-sectional survey conducted in three centers:National Diabetes center , Medical city- baghdad teaching - hospital and Al Yarmouk Teaching Hospitals. A convenient sample of 225 Geriatric patients attending the above-mentioned centers in Baghdad/ Iraq during the time period of four month from the beginning of January till the end of march 2023, were interviewed, examined, and treated.

Inclusion criteria

patients 60 years old and older, diagnosed with type 2 DM, according to the diagnostic criteria

Exclusion criteria

Patients unable to complete the questionnaire or communicate (including those with severe medical conditions, mental disorders, or cognitive impairment) Data were collected using a structured questionnaire that included two parts. The first was the demographical section included age, gender, marital status, residency, education, and occupation. In addition to questions about disease characteristics, duration, treatment, ability to afford the medicines, family history, episodes of hypoglycemia, co morbidities. Glycated hemoglobin (HbA1C) was retrieved for each patient. Good glycemic control was categorized into controlled and uncontrolled, depending on the framework of glycemic control proposed by the American Diabetes Association. [1]

The second section tacked knowledge (10 questions), attitude (7 questions), and Practice (10 questions) using a two-degree Likert scale, each question in the knowledge, attitude and practice sections earned 1 point for correct answer and 0 points for incorrect answer. Scores were summed then categorized into two groups (good or poor) using the mean as a cut-off point, so that patients scoring equal or above the mean were classified as "good", those scoring below mean were described as having "poor" knowledge, attitude and practice respectively [9]

Approvals from the Ethical Committee in the Ministry of Health and the Arab board of health specialization/geriatric department were obtained. Verbal consent was obtained after explaining the study's aim to each respondent.

Statistical analysis

Categorical data were presented in frequencies and percentages. Chi-square was applied to illustrate the significance of the association between knowledge, attitude and practice with demographical and disease characteristics. Significant variables in the univariate analysis were submitted to binary logistic regression analysis to calculates odd ratios of the predicting variables. In all statistical analysis a p-value ≤5% considered significant.

Results

Majority of the sample were 60-69 years of age, the average age was 68.2±5.4 years, ranging from 60-80 years of age. Table (1) shows the demographical distribution of the studied sample

Table (1) The socio-demographical distribution of the studied sample (n=225).

Variables		Frequency	Percentage
Age in years	60-69	135	60.0
	70-79	81	36.0
	80-89	9	4.0
Gender	Male	111	49.3
	Female	114	50.7
Marital status	Unmarried	64	28.4
	Married	161	71.6
Education	Illiterate	62	27.6
	Primary	58	25.8
	Secondary	50	22.2
	College or institute	55	24.4
Occupation	Housewife/unemployed	111	49.3
	Free lancer	13	5.8
	Retired	101	44.9
Residency	Urban	181	80.4
	Rural and periphery	44	19.6
Total		225	100

Positive family history of diabetes was reported among 128 (56.9%) of patients. Table (2) shows the distribution of the sample by disease characteristics.

Table (2) The distribution of the sample by disease characteristics			
Variables		Frequency	Percentage
Family history of DM	No	97	43.1
	First degree relative	78	34.7
	Second degree relative	50	22.2
DM duration	<10	88	39.1
	10-20	66	29.3
	>20	71	31.6
Treatment type	Insulin only	17	7.6
	Oral hypoglycemic	152	67.6
	Combined	56	24.9
Able to pay for diabetic treatment	No	60	26.7
	Yes	165	73.3
Hypoglycemia ever occurred	No	151	67.1
	Yes	74	32.9
Co-morbidities	0-2	90	40.0
	3 or more	135	60.0
Total		225	100

Family and friends were the main source of information reported among 93 (41.3%) of patients, followed by healthcare workers 85(37.8%), social media 30(13.3%) and self-reading 17 (7.6%). The average of glycated hemoglobin was 8.19±0.9, around 138 (61.3%) had uncontrolled DM.

Table (3) displays patients' responses to knowledge, attitude, and practice questions. Participants responded correctly to questions about the cause of diabetes (62.7%), and source of insulin production (39.1%). Medications, diet and exercise were needed for DM control according to only 36% of participants. Participants responded positively to exercise (22.7%), diet (44.4%), and maintaining healthy weight (29.3%) in controlling blood glucose. Participants measured their blood glucose (64.4%), and checked HbA1C (50.2%).

Table (3) Distribution of participants' response on knowledge, attitude and practice questions.				
Questions	Answers			
	Incorrect	%	correct	%
Diabetes knowledge response [total mean knowledge score (out of 10 total points) = 5.1±3.6]				
Cause of diabetes is lack of effective insulin in the body	84	37.3	141	62.7
Pancreas produce insulin	137	60.9	88	39.1
The amount of sugar in the blood usually increases	62	27.6	163	72.4
The best way to check diabetes is by blood test	105	46.7	120	53.3
A fasting blood sugar level 210 is too high	41	18.2	184	81.8
Medications are important like diet and exercise to control	144	64.0	81	36
frequent urination and thirst are signs of high blood sugar	120	53.3	105	46.7
Shaking and sweating are signs of low blood sugar	123	54.7	102	45.3
Diabetes often causes poor circulation	113	50.2	112	49.8
Diabetes incurable	158	70.2	67	29.8
Diabetes attitude response [Total mean attitude score (out of 7 total points) = 2.9±2.6]				
Regular exercise helps to control blood glucose	174	77.3	51	22.7
planed diet or diet modification help control	125	55.6	100	44.4
maintaining health weight is important	159	70.7	66	29.3
having HbA1c test can bring positive effect of DM patients	106	47.1	119	52.9
Bl sugar close to normal help to prevent complications	110	48.9	115	51.1
diabetic complication can prevent if medicine prescribed	109	48.4	116	51.6
smoking increase complications	137	60.9	88	39.1
Diabetes practice response [Total mean practice score (out of 10 total points) = 3.9±3.3]				
Eat vegetables and fruits daily	143	63.6	82	36.4
Exercise to control Bl sugar	191	84.9	34	15.1
Reduce or maintain your weight	177	78.7	48	21.3
Use self-blood glucose test	80	35.6	145	64.4
Never miss your blood glucose test	140	62.2	85	37.8
Check HBA1C	112	49.8	113	50.2
Check eye, and feet	106	47.1	119	52.9
Medication taken regularly	127	56.4	98	43.6
if hypoglycemia is starting, eat or drink something sweet	108	48.0	117	52
Regular DM education program for self-care monitor	181	80.4	44	19.6

Good knowledge, attitude and practice was reported among 47.1%, 47.1% and 46.7% of the sample respectively. Figure (1) illustrates the diabetes knowledge, attitude and practice percentage by age. Though knowledge percentage increased to 77.8% among 80-89 years of age, while

attitude and practice decreased with age. No significant association was reported (p>0.05)

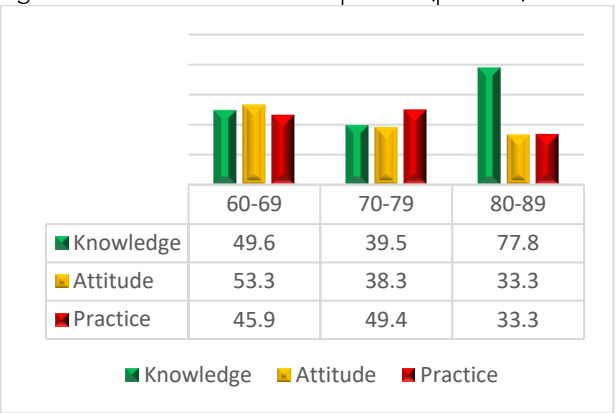

Figure (1) Distribution of patients by diabetes KAP according to age

Univariate analysis showed a significant association between having good knowledge and being married (p=0,007), higher education (p<0.001), retired (p<0.001), urban residency(p=0.023), positive family history (p=0.010), longer disease duration (p=0.001), affording treatment (p<0.001) and having a pervious episode of hypoglycemia (p=0.002)

As for attituded, a significant association was reported between good attitude and higher education (p<0.001), retired (p<0.001), urban residency(p<0.001), good glycemic control (p<0.001), positive family history (p=0.002), and being able to afford treatment (p=0.001)

While for practice, significant association was seen between good practice and higher education (p<0.001), freelancer (p<0.001), urban residency(p=0.004), positive family history (p<0.001), and being able to afford treatment (p<0.001)

All significant variables were submitted to binary logistic regression analysis, as shown in table 4, the odds of having good knowledge were 3.8 more among married patients compared to single, divorced or widowed individuals. The odds of having good knowledge, attitude and practice were higher among those with higher education, controlled DM, urban residency and positive family history.

Table (4) Binary logistic regression analysis of factors associated with KAP towards diabetes

Variables	Knowledge		Attitude		Practice	
	OR	CI 95%	OR	CI 95%	OR	CI 95%
Marital status						
Unmarried	Reference					
Married	3.847	**1.01-14.62**	0.605	0.19-1.91	2.013	0.69-5.86
Education						
Illiterates	Reference					
Primary	2.332	0.60-8.92	0.948	0.29-3.03	1.326	0.45-3.84
Secondary	24.188	**5.50-106.3**	17.302	**4.13-72.4**	5.260	**1.58-17.4**
College	110.840	**16.3-753.3**	15.187	**2.88-79.9**	0.754	0.19-2.90
Occupation						
unemployed	Reference					
Free lancer	0.474	0.05-4.30	0.743	0.06-8.33	2.174	0.27-16.9
Retired	0.993	0.31-3.12	0.563	0.18-1.76	2.018	0.73-5.51
Place of residency						
Rural and peripherals	Reference					
Urban	11.524	**2.30-57.5**	78.025	**15.7-385.9**	15.830	**4.57-54.7**
Glycated Hemoglobin control						
Uncontrolled DM	Reference					
Controlled DM	3.347	**1.12-9.93**	11.681	**3.79-35.9**	4.084	**1.56-10.6**
Family History of DM						
No family history	Reference					
First degree	4.741	**1.42-15.7**	36.463	**8.68-153.1**	26.311	**8.50-81.3**
Second degree	1.576	0.47-5.1	6.133	**1.81-20.7**	21.367	**6.62-68.8**
Disease Duration						
<10	Reference					
10-20	0.613	0.21-1.72	0.428	0.15-1.17	1.266	0.50-3.17
>20	3.787	0.96-14.7	0.651	0.18-2.27	2.385	0.64-8.80
Afford Rx						
No	Reference					
Yes	1.008	0.27-3.64	0.771	0.20-2.86	0.548	0.18-1.60
Previous episode of hypoglycemia						
No	Reference					
Yes	1.359	0.34-5.3	3.457	0.91-13.0	0.743	0.21-2.56

Discussion

Diabetes mellitus and its complications are well known and continue to pose a considerable burden on millions of people living with that disease despite the advances in the management of diabetes mellitus [10]

The current study showed that more than half of participants had uncontrolled diabetes, as the average of glycated hemoglobin was 8.19±0.9 which agrees with the finding reported by Ishak N et al Malaysia (8.4) [11], and Rusdiana R et al 2020, (8.9).[2]

The current showed that 47.1% of participants

had good diabetes knowledge which was comparable to results reported by Mahzari M et al 2022 Saudi Arabia (48.8%) [12], yet it was lower than findings stated by Alaofè H et al 2019 (53%) [9] Daba A et al 2020 (55.2%) [13], Asmelash D et al 2019 (62%)[14], Ibrahim Abougalambou SS et al 2019 Saudi Arabia. (73.6%)[15], and Kifle Z et al 2022 in Ethiopia (85.6%). [8] But the current diabetes knowledge percent was higher than that reported by Afaya R et al 2020 (45.9%)[16], Mansy W et al 2022 Saudi Arabia (37.6%)[17], and Borba A et al 2019 Brazil [18] where only 22.3% of the diabetic elderly had sufficient knowledge regarding their disease and treatment. The difference might be inherent in health system and educational programs.

The current study showed that 47.1% of patients had positive diabetes' attitudes which was lower than results reported by Alaofè H et al 2019 (52%) [9], Daba A et al 2020 (52.8%) [13], Asmelash D et al 2019 (67.2%) [14], Ibrahim Abougalambou SS et al (87.7%) [15], Mahzari M et al 2022 Saudi Arabia (92.2%) [12]. This low attitude might be inherent to the socio-demographic characteristic of the geriatric patients. While the current attitude percentage was higher than that reported by Mansy W et al 2022 Saudi Arabia (30.9%)[17], Borba A et al 2019[18] where only 14.4% of the diabetic elderly had positive attitudes.

A regards for diabetic practice, good diabetes practice was seen in 46.7% of patients, which was comparable to the findings described by Mansy W et al (47.9%), Alaofè H et al (47%), and Ibrahim Abougalambou SS et al 2019 (45%). [9, 15,17] But lower than the practice percentage reported by Daba A et al (51.2%), Asmelash D et al (74.4%), and Mahzari M et al (75.2%) [12-14]

The current study showed the odds of having good knowledge was higher among married participants in comparison to their single, divorced or widowed mates, agreeing with results reported by Mahzari M et al, Alaofè H et al, and Asmelash D et al. [9, 12, 14] One explanation to this, is having a companion to discuss and share information with can help. In a similar context, Borba A et al incriminated being alone for low information seeking behavior, negative attitudes and poor practice. [18]

The present study showed a significant association between good diabetes KAP and higher education, as with good educational achievement, knowledge is inevitable. This is in alignment with Khurshid R et al in Erbil-Iraq [19], and many other literatures [7-9, 12, 13, 20], also the current finding was in alignment with results reported by Borba A et al Brazil [18] who declared low education as a risk factor to poor knowledge and negative attitudes.

As education opens opportunities, employment and income was significantly associated with good diabetic KAP, having a pension render exposure to information, awareness and service utilization easier and more affordable, the present finding is in agreement with Khurshid R et al in Erbil-Iraq. [19] and several published researches. [8,9, 12-14, 20] Along the same lines, affording medication showed a significant association with good KAP, which can illicit the financial superiority in obtaining both the medicine and the knowledge of using it.

The study showed also significant association between good diabetic KAP and urban residency, this might be related to easier access to health facilities. which agrees with findings described by Kifle Z et al, Nguyen A et al, and Daba A et al.[7, 8, 13]

Longer disease duration showed a significant association with good diabetic KAP, with longer disease duration more knowledge is built and better attitudes are obtained, and enhanced practice is achieved. which agrees with results reported by Mahzari M et al 2022 Saudi Arabia [12], and several others [8, 9, 13]. Correspondingly, having an episode of hypoglycemia was significantly associated with good diabetic KAP. This can be explained by the learnt-by-experience, as these participants have lived a decade with diabetes through its ups and downs, and have explored information regarding diabetes mellitus. Thus, those with good knowledge, attitude, and diabetic practice showed higher odds for having controlled disease which is in alignment with Borba A et al 2019 Brazil[18], and Bukhsh A et al 2019 Pakistan. [21]

The current study showed a significant association between good KAP and having a family history of DM, agreeing with Bukhsh A et al 2019. [21] A reason might be related to previous experience of the disease in family, so more knowledge are obtained. The current study also showed that family and friends were the main source of information reported (41.3%), followed by healthcare workers (37.8%) which shows the importance of social support to achieve good control and better outcomes in diabetic patients. Patients may get support from friends, family members, nurses or physicians. As it had been reported that family care and support during illness period is crucial in influencing self-care and better practice. [11]

Conclusions and recommendation

This study found that there is a low level of KAP towards diabetes among geriatric patients. Therefore, a structured nutrition and health education program should be implemented on each geriatric-health facility visit. Community based behavioral change communication might also be needed to expand the level of knowledge towards diabetic mellitus, enhance attitude and eventually improve practice.

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