

Association Between Knowledge, Awareness, And Attitudes Of Elderly Patients With Type 2 Diabetes With Socio-Economic Status, Adherence To Medication And Disease Complications In Makah Al-Mokarramah 2023

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Abstract:

Background:

*Diabetes is a self-managed condition; therefore, knowledge, attitudes, and practices about the condition among DM patients can influence the overall treatment outcomes and complications of the disease. The prevalence of diabetes in various regions has attracted significant attention of the medical experts. The prevalence of diabetes is expected to increase in the future due to changes in lifestyle and unhealthy diets of individuals in Saudi Arabia. More than two-thirds (70%) of patients with diabetes mellitus (DM) reside in lower middle-income countries. Population growth, improved access to health services, and increased life expectancy have contributed to an increased elderly population and a more significant number of diabetes cases. The overall prevalence of the disease in people aged 60-79 is 18.6%, more than 35.34 million people, accounting for 35% of cases in adults, and is expected to reach 23.9% million by 2030. In Saudi Arabia, data from the National Health Survey (PNS) found a prevalence of diabetes of approximately 20% among the elderly over 65 years, a contingent of more than 3.5 million people. **Aim of the study:** To assessment the association between knowledge, awareness, and attitudes of elderly patients with type 2 diabetes with socio-economic status, adherence to medication and disease complications in Makah Al-Mokarramah 2023 . **Method:** cross sectional descriptive study conducted at among ¹Patients with diabetes mellitus in the Diabetic Center 2023. The Sample size of diabetic patients attending in the Diabetic Center . Our total participants were (400) . **Results:** shows there were 400 participants, and the majority age was(63.0%) in (60-70)years, while the age(70-80)were(22.9%), the majority of them were males (71.2%) while female(29.0%),also regarding the social stats most of participants married were(92.0%)while single were(8.0%), regarding occupation the majority of participant are working were(58.0%) while not work were(42.0%). Regarding the economic level the majority of participant low economic level were(47.0%),*

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Conclusion: *Diabetes complication in the elderly patients need to create awareness about the importance of maintaining good health influencing overall general health in diabetic patients. screening and referral by health professionals in the diabetic patients by is the may benefit improving access to prevent or reduce complications complication.*

Keywords: *Assessment, association, elderly, knowledge, attitudes, diabetes, complication .*

Introduction

Diabetes mellitus (DM) is a chronic and non-communicable metabolic disorder characterized by hyperglycemia. It is considered a global health emergency in the 21st century [1]. Uncontrolled long-term hyperglycemia leads to numerous complications such as cardiovascular disease, diabetic nephropathy and diabetic retinopathy [2]. The global prevalence of adults (aged 20–79 years) with DM (9.3% in 2019) will increase to 10.2% in 2030 and to 10.9% in 2045 [3]. In 2017, there were approximately 5 million deaths in the age group of 20–99 years globally due to DM [4]. The estimated worldwide direct healthcare expenditure on DM was 760 billion U.S. dollars in 2019 [5]. Consequently, it has become an important global public health concern with a significant social, financial and healthcare system burden [6]. Diabetes is a self-managed condition; knowledge, attitudes, and practices about the condition can influence the overall treatment outcomes and complications of the disease. Type 2 DM (T2DM) is the most prevalent type of diabetes among adults and constitutes around 90% of all cases . Remarkably, 70% of these individuals live in developing countries [7]. Recent studies show that compliance with complex regimens and self-care behaviors of diabetic patients worsen over the long-term with lifestyle changes. Adherence to medical instructions and glycemic control are affected by several factors such as knowledge about diabetes [4], self-efficacy , and medical beliefs [6]. Hence, Identification of knowledge, attitudes, and practices towards glycemic control would provide better insight for the development of preventive and treatment strategies for the patients [7]. Patients who are knowledgeable about the DM self-care, have better long-term glycemic control [8]. the insufficiency of the insulin activities in sort 2 diabetes adds to the macro vascular and micro vascular confusion, which mitigates the health-related personal satisfaction (HRQoL) The underlying cause of diabetes, varies by type. [9]

Diabetes is a chronic metabolic disorder causing hyperglycemia which leads to long-term damage of different organs including the heart, eyes, kidneys, nerves, and vascular system including periodontium. Its chronic nature imposes significant increase in morbidity and mortality rates. It has been considered as the sixth complication of diabetes due to its signs and symptoms.[10]

No matter what type of diabetes, it can lead to excess sugar in your blood. Too much sugar in your blood can lead to serious health problems. Chronic diabetes conditions include type 1 diabetes and type 2 diabetes. Potentially reversible diabetes conditions include prediabetes and gestational diabetes. Prediabetes occurs when your blood sugar levels are higher than normal, but not high enough to be classified as diabetes. And prediabetes is often the precursor of diabetes unless appropriate measures are taken to prevent progression[11]

According to World Health Organization (WHO) in 2018, an estimated 1.5 million deaths were a direct outcome to diabetes and another 2.2 million deaths were attributively related to high blood glucose in a global population. As a consequence, researches confirmed that diabetics have a shorter life expectancy than non-diabetic individuals and this extravagant mortality is predominantly due to diabetic complications.[12]

The most common emergency case in a patient diagnosed with diabetes mellitus is Diabetic ketoacidosis (DKA). Surprisingly, it is more often we see these patients suffering from DKA type 1 diabetes. However, type 2 diabetes patients are never spared from the susceptibility of suffering from this unfortunate emergency. Otherwise, it was noticeable that type 2 DM patients with DKA were under the effect of certain situations such as post-operative, trauma, accident, or infectious diseases [13,14,15]

Literature Review

The pervasiveness of diabetes mellitus complication in Saudi Arabia is presently viewed as one of the most elevated in the world coming to as high as 23.7%. [16] diabetes mellitus is one of the five driving reasons for death around the world [17]. Information, practices and attitude about complications among type 2 diabetes mellitus among patients visiting the Diabetic Center and its related elements. Hypoglycemia being the rate restricting intricacy in the accomplishment of exacting glycemic controls in diabetes the executives. Significant scenes of hypoglycemia and its orderly counter-administrative hormonal reaction lead to poor glycemic control. The previous may likewise be related with cardiovascular and cerebrovascular morbidities. [18]

In our setting, overtreatment of DM2 has been described as common among elderly patients [19]. Studies in the United States of America confirm that the majority of elderly adults in average or poor health condition are subject to strict glycemic control and potentially over treated [20].

According to International Diabetes Federation (IDF), Saudi Arabia had 4 million cases of diabetes in 2015 (Prevalence of diabetes in adults aged 20-79 years is 17.6%). In 2015, Saudi Arabia had 23,420 deaths in adults due to diabetes. [21]

Stangl et al (2019) carried out a study In Saudi Arabia public medical services trouble due to diabetes is probably going to surpass \$0.87 billion, it omits the indirect costs expenses related with diabetes, for example, truancy, loss of efficiency from illness related inconveniences, joblessness because of incapacity and early mortality by sickness. The social cost, for example, pain and suffering and care provided by caregivers as well as just as medical services framework authoritative costs, cost of meds, clinician preparing projects, and exploration and foundation and research and infrastructure development [22]

Fatani et al (2018) carried out a study in Al-Qassim region, it is not known how much the public actually know about diabetes and its associated secondary complications. The authorities will be able to decide about the need to increase the level of awareness among the non-diabetic individuals. As prevention is better than cure, awareness is always helpful to reduce the incidence of earlier onset of diabetes mellitus and its associated complications. This should be very helpful to reduce the additional burden of the disease to the nation, as in KSA; DM is one the major public health issue. [23]

Gillani et al (2018) carried out the study in KSA focusing in especially on the occurrence, pervasiveness and socio-segment properties of diabetes mellitus are woefully insufficient. when contrasted the KSA and the developed countries, focusing in especially on The health trouble because of diabetes mellitus in Saudi Arabia is anticipated to ascend to disastrous levels, except if a wide-going epidemic control program is fused, with extraordinary accentuation laid on supporting a sound eating routine, including activity and dynamic ways of life, and weight control. To appropriately deal with the diabetes mellitus in Saudi Arabia, a multidisciplinary approach is required. [24]

In southern Ghana . The potential seriousness of expanding pervasiveness pace of diabetes on the African continent might be converted into extreme monetary weight, high dismalness and death rates that will outperform the ravages. [25] In the Pakistan. The World Bank groups Pakistan as a lower center pay nation. Pakistanis currently positioned sixth regarding DM cases universally, with a Diabetes mellitus commonness of 6.9%. [26] In 2020, Pakistan is extended to turn into the fourth driving nation in the quantity of patients with Diabetes mellitus . This expansion might be ascribed to modified ways of life and the unobtrusive idea of the illness. A huge extent of Pakistan's populace stays undiscovered until indication of co-morbidities (i.e., eye illness, renal confusion) with a revealed 7.9 million individuals having weakened glucose resistance [27]. In Ireland mindfulness paces of ischemic coronary illness and stroke among diabetic populace was 89.2 and 82.8%, separately. As indicated by the IDF report most Ghanaians had absence of mindfulness about diabetic inconveniences. Numerous victims become mindful that they have diabetes, just when they create one of its perilous complexities. Medical care experts just as open

approach creators are very much aware of the general wellbeing effect of diabetes. Much exertion has been given to teach people in general about diabetes through different types of media.[28]

Rationale:

The pervasiveness of diabetes mellitus in Saudi Arabia is presently viewed as one of the most elevated in the world coming to as high as 23.7. Diabetes mellitus (DM) appears to be a global epidemic and an increasingly although it is non-communicable but disease major disease threatening both affluent and non-affluent society, life-long disorder which can be treated by a complex regimen of insulin injections, diet and exercise, the diabetics patients type 2 may find it difficult to find medical and social support at the life, and from the family around them and friends, due to the lack of understanding of those around the patient with the disease. Consequently, this study will add awareness to the limited knowledge, practice's and attitudes. Awareness about complications is very important to reduce related morbidity and mortality. Prevention and health promotion is one of the cornerstones in our practice, thus investing in Knowledge of complications of diabetes mellitus among patients visiting the Diabetic center well fulfill the researcher aim.

Aim of the study:

To assessment the association between knowledge, awareness, and attitudes of elderly patients with type 2 diabetes with socio-economic status , adherence to medication and disease complications in Makah Al-Mokarramah 2023

Objectives:

To assessment the association between knowledge, awareness, and attitudes of elderly patients with type 2 diabetes with socio-economic status , adherence to medication and disease complications in Makah Al-Mokarramah 2023

Methodology:

Study design:

This study is a cross sectional descriptive study

Study Area

The study has been carried out in the city of Makah Al-Mokarramah Makah is the holiest spot on Earth. It is the birthplace of the Prophet Mohammad and the principal place of the pilgrims to perform Umrah and Hajj. The most important cities in Saudi Arabia. It is the holy city for all Muslims, and is located in the western region. It is located in the western area in Kingdom of Saudi Arabia .Contains a population around 3.578 million .The research has been carried at the diabetes center. There has 2 sectors in Makah to diabetes center in Makah

Study Population

The study has been conducted among elderly patients with diabetes mellitus in the Diabetic Center in the Makah, from April to June, 2023

Selection criteria:

Inclusion criteria

- All type 2 diabetic elderly patients who were on medication for more than 1 year and and age from 60-70years old were included .

Exclusion criteria :

- No specific exclusion criteria.

Sample size

The sample size has been calculated by applying Raosoft sample size calculator based on (The margin of error: 5%, Confidence level: 95%, and the response distribution was considered to be 20%) accordingly the Sample size is 400 of diabetic patients attending and adding 10 more to decrease margin of error. After adding 5% oversampling, the minimum calculated sample has been 400. Computer generated simple random sampling technique was used to select the study participants.

Sampling technique :

Systematic random sampling technique is adopted. By using systematic sampling random as dividing the total population by the required sample size; (400)

Data collection tool

- Pretested structured interviewer-administered questionnaire, has been used to collect the data. To serve the purpose of this study. A questionnaire of similar studies has been review . An interview Questionnaire has been uses for data collection.
- The Questionnaire has been designed in the Arabic language with a cover letter to clarify the objectives of the study and the assurance of confidentiality.
- First section: demographic data.
- Second section: questions to assess the Knowledge and attitudes regarding complications of diabetes mellitus

The researcher has been examining the reliability of the questionnaire by testing and retesting.

The questionnaire was translated to local language and then, retranslated back to English by another person to check its consistency and wording.

Data collection technique:

Researcher has been visits the selected Diabetic Center after getting the approval from the ministry of health.

After the arrival of the participants to the Diabetic Center , they should go to the reception first to register and ensure the presence of the center's card. Then, the receptionist gives to the participant's number. During that period of waiting the researcher has been a select participant conveniently until the target number achieves and gives the questionnaire for answering. She has been explained the purpose of the study to all participants attending the clinic. The data has been collect through the April to June, 2023.

Data entry and analysis:

The Statistical Package for Social Sciences (SPSS) software version 24.0 has been used for data entry and analysis. Descriptive statistics (e.g., number, percentage) and analytic statistics using test for the association and the difference between two categorical variables were applied. A p-value ≤ 0.05 has been considered statistically significant.

Pilot study:

A pilot study has been conducted to test the methodology of the study, the questionnaire has been clear .

Ethical considerations:

Permission has been obtained, and has been Verbal consents from all participants in the questionnaire were obtained.

All information was kept confidential, and a result has been submitted to the department as feedback.

Budget:

Self-funded

Results**Table 1** Distribution of demographic data(age, gender, social, Occupation, job years, economic level, Duration of diabetes mellitus, Sources of information) in our study(n=400)

	N	%
Age		
60-70	252	63
70-80	88	22
>80	60	15
gender		
Male	284	71
Female	116	29
social		
Married	368	92
Single	32	8
Occupation		
No	168	42
Yes	232	58
Economic level		
Low	188	47
Medium	96	24
High	116	29
Duration of diabetes mellitus		
<5	148	37
5-10.	88	22
>10	164	41
Sources of information		
Booklets and brochures	136	34
Mass media	228	57
Own personal experience	180	45
Educational films	40	10

Table 1 shows there were 400 participants, and the majority age was(63.0%) in (60-70)years, while the age(70-80)were(22.9%), the majority of them were males (71.2%) while female(29.0%),also regarding the social stats most of participants married were(92.0%)while single were(8.0%), regarding occupation the majority of participant are working were(58.0%) while not work were(42.0%). Regarding the economic level the majority of participant low economic level were(47.0%), regarding the duration of diabetes mellitus the majority of participant >10 years were(41.0%). While sources of information most of participants from Mass media were (57.0%) while Own personal experience were (45.0%)

Table(2) Distribution of the awareness' of the elderly patients knowledge among diabetes complication

		Knowledge	
		N	%
Weak		100	25
Average		148	37
High		152	38
Total		400	100
Chi-square	X²	12.560	
	P-value	0.002*	

Table 2 and figure(1) Regarding knowledge of the participant toward diabetes mellitus study results show the majority of participant had high information were(38.0%) while average knowledge were(37.0%). X² 12.560 a significant relation were the P-value=0.002

Figure (1) Distribution of the awareness' of the elderly patients knowledge among Diabetes complication

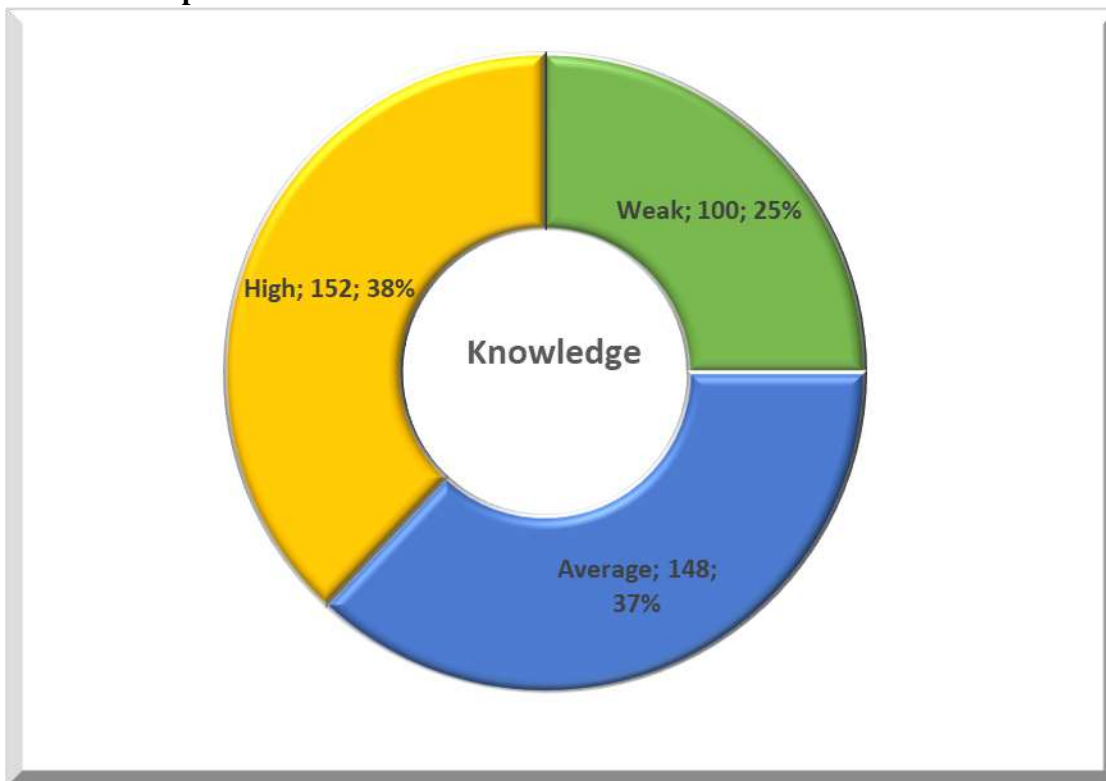


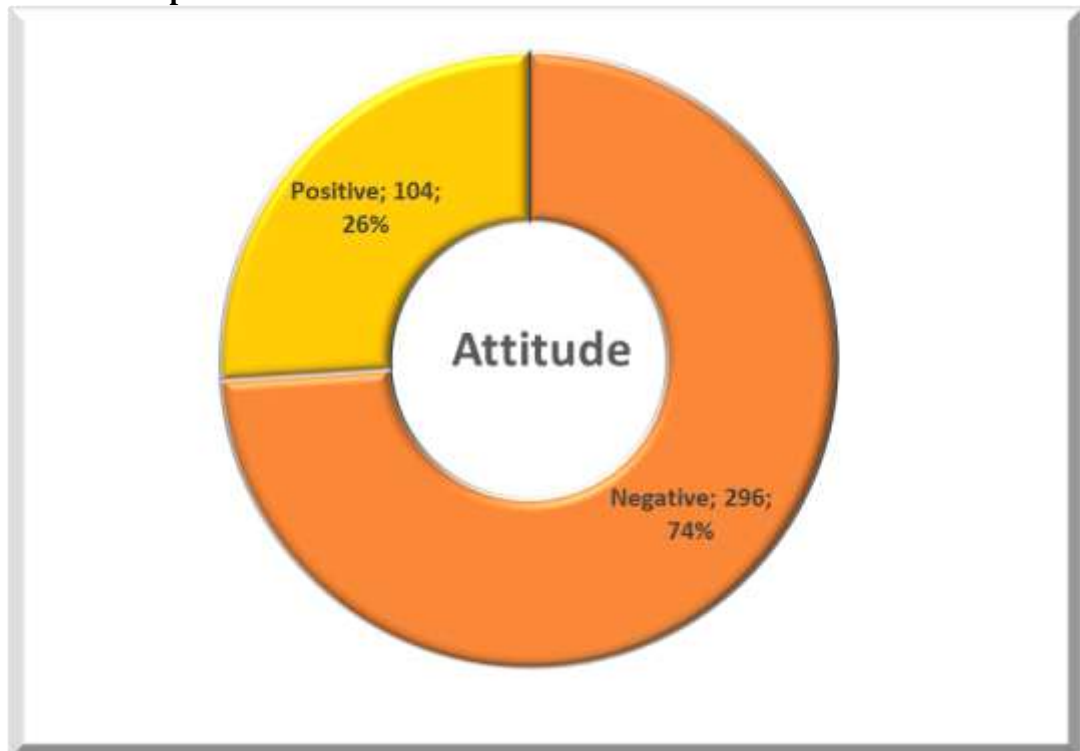
Table 3 Distribution of the awareness' of the elderly patients attitudes among diabetes complication

	Attitude
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		N	%
Negative		296	74
Positive		104	26
Total		400	100
Chi-square	X²	91.203	
	P-value	<0.001*	

Regarding attitude of the participant toward diabetes mellitus the majority of participant in negative attitude were(74.2%) while positive were(26.0%) X² 91.203 a significant relation were the P-value=0.001

Figure (2) Distribution of the awareness' of the elderly patient's attitudes among diabetes complication



Table(4) and figure(3) Distribution of the awareness' of the elderly patient's knowledge about the complication diabetes mellitus and the demographic data(age, gender, marital status, Occupation, economic level, Duration of diabetes mellitus)

		Knowledge						Chi-square	
		Weak (100)		Average (148)		High (152)			
		N	%	N	%	N	%	X ²	P-value
Age	60-70	21	21.00	110	74.32	121	79.61	140.855	0.000
	70-80	31	31.00	28	18.92	29	19.08		
	>80	48	48.00	10	6.76	2	1.32		
Gender	Male	45	45.00	96	64.86	143	94.08	74.858	0.000
	Female	55	55.00	52	35.14	9	5.92		
Marital status	Married	85	25.00	132	89.19	151	99.34	19.379	0.000
	Single	15	75.00	16	10.81	1	0.66		
Occupation	No	82	82.00	82	55.41	4	2.63	173.307	0.000
	Yes	18	18.00	66	44.59	148	97.37		
Economic level	Low	22	22.00	62	41.89	104	68.42	58.431	0.000
	Medium	35	35.00	33	22.30	28	18.42		
	High	43	43.00	53	35.81	20	13.16		
Duration of diabetes mellitus	<5	67	67.00	36	24.32	45	29.61	92.398	0.000
	5-10.	21	21.00	16	10.81	51	33.55		
	>10	12	12.00	96	64.86	56	36.84		

Table (4) and figure (3) show that is a significant relation between knowledge and demographic data regarding age (increase in 60-70 in the high)where (79.61%) and P-value=<0.000 X² 140.855 Regarding gender in our study the majority of our participants were noticed in male more than female with a significant relation between knowledge and gender (increase in male high were 94.08%)and X² 74.858 P-value=0.000. Regarding marital status show that is a significant relation between knowledge and marital status (increase in married)were (99.34%) and X² 19.379 P-value=0.000, regarding to the Occupation show that is a significant relation between knowledge and occupation (increase in participants Yes work)were (97.37%) and X² 173.307 P-value=0.000 by Also regarding the economic level show that is a significant relation between knowledge and economic level (increase in the weak income participants)were (43.0%) and P-value=0.00 by X² were 58.431.Regarding the duration of diabetes mellitus show that is a significant relation between knowledge and duration of diabetes mellitus (increase in participant <5)were 67.00 % in the weak and P-value=<0.000 X² 92.398

Figure (3) Distribution of the awareness' of the elderly patient's knowledge about the complication diabetes mellitus and the demographic data(age, gender, marital status, Occupation, economic level, Duration of diabetes mellitus)

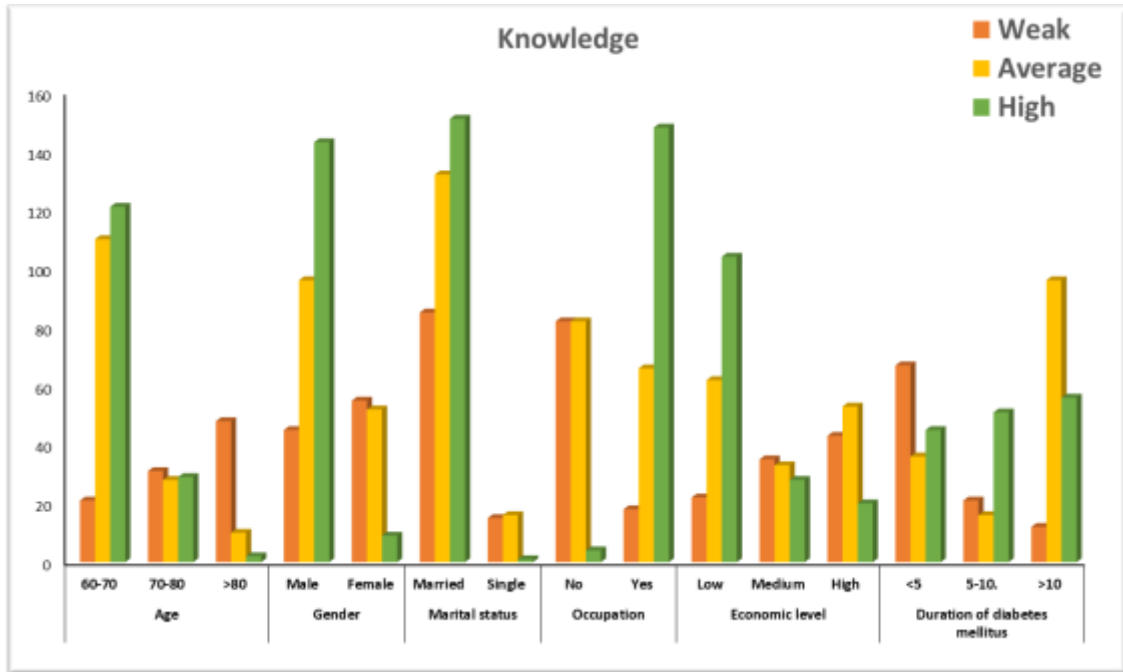


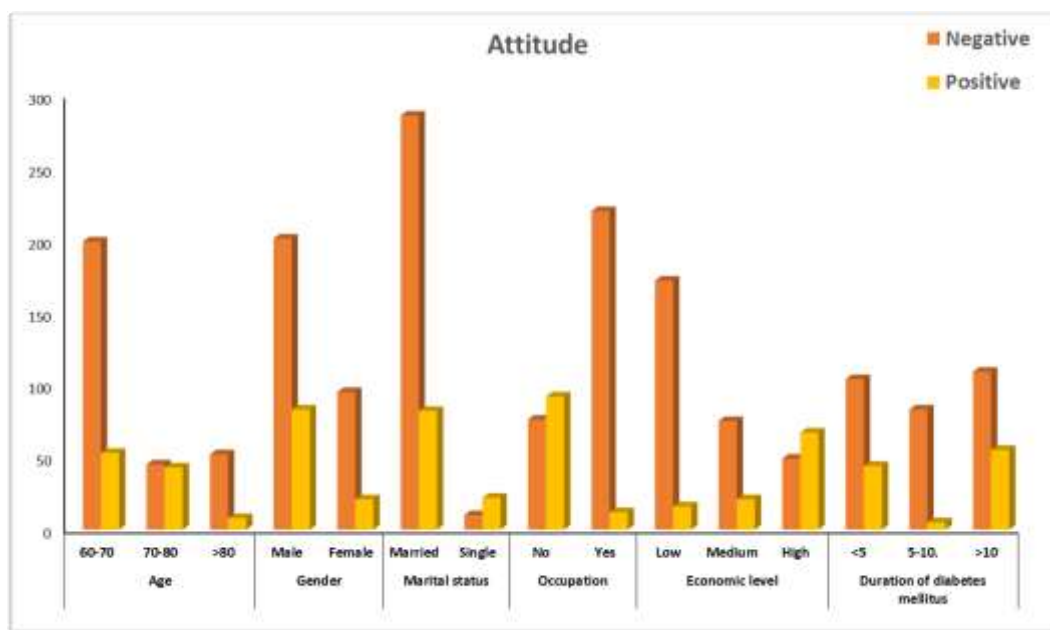
Table (5) Distribution of the awareness' of the elderly patient's Attitude about the complication diabetes mellitus and the demographic data(age, gender, marital status, Occupation, economic level, Duration of diabetes mellitus)

		Attitude						Chi-square	
		Negative		Positive		Total			
		N	%	N	%	N	%	X ²	P-value
Age	60-70	199	67.23	53	50.96	252	63.00	32.146	0.000
	70-80	45	15.20	43	41.35	88	22.00		
	>80	52	17.57	8	7.69	60	15.00		
Gender	Male	201	67.91	83	79.81	284	71.00	5.295	0.021
	Female	95	32.09	21	20.19	116	29.00		
Marital status	Married	286	96.62	82	78.85	368	92.00	33.039	0.000
	Single	10	3.38	22	21.15	32	8.00		
Occupation	No	76	25.68	92	88.46	168	42.00	124.541	0.000
	Yes	220	74.32	12	11.54	232	58.00		
Economic level	Low	172	58.11	16	15.38	188	47.00	91.547	0.000
	Medium	75	25.34	21	20.19	96	24.00		
	High	49	16.55	67	64.42	116	29.00		
Duration of diabetes mellitus	<5	104	35.14	44	42.31	148	37.00	24.794	0.000
	5-10.	83	28.04	5	4.81	88	22.00		
	>10	109	36.82	55	52.88	164	41.00		

Table (5) and figure (3) show that is a significant relation between Attitude and demographic data regarding age (increase in 60-70 in the Negative)where (67.23%) and P-value=<0.000 X² 32.146. Regarding gender in our study the majority of our participants were noticed in male with no significant relation between Attitude and gender (increase in male Positive were 79.81%) and X² 5.295P-value=0.000. Regarding marital status show that is a significant relation between Attitude and marital status (increase in married)were (96.62%) in the negative) and X² 33.039P-value=0.000, regarding to the Occupation show that is a significant relation between Attitude and occupation (increase in participants No

work) were (88.46%) and X^2 124.541 P-value=0.000. Also regarding the economic level show that is a significant relation between Attitude and economic level (increase in the high income participants) were (64.42%) in Positive and P-value=0.00 by X^2 were 91.547. Regarding the duration of diabetes mellitus show that is a significant relation between Attitude and duration of diabetes mellitus (increase in participant >10) were (67.00 %) in the weak in the Positive and P-value=<0.000 X^2 24.794

Figure (3) Distribution of the awareness' of the elderly patient's Attitude about the complication diabetes mellitus and the demographic data(age, gender, marital status, Occupation, economic level, Duration of diabetes mellitus)



Discussion

Will remain Healthcare practices have always been a matter of interest for various medical staff and community at all. In the present time, a greater number of people are suffering from diabetes from a very young age. Knowledge of complications of diabetes mellitus among patients visiting the Diabetic Center can help patients to overcome the problem through healthy diet and other important safety measures. This pinpoints the idea that to which extent Saudis are aware the elderly patients knowledge and attitudes among diabetes complication .The findings of this study illustrate that the majority of the patients were male were male(71.0%)suffering from diabetes. The results proposed by this study contradict those provided by Almassi, et al 2017. [29]. Accordingly, the majority of the females were affected by poor glycemic controls within the region of Saudi Arabia. It is likely that these results are due to the reason behind the problem was the high-level consumption of unhealthy diet, in our study most of the participants age group 60-70 years and males (63.0%), social stats most of participants married were(92.0%), occupation the participant are working were(58.0%) (See Table 1)

Previous studies reported that diabetes mellitus management and complications of diabetes mellitus related to adequate knowledge, and there is a correlation between diabetes mellitus knowledge and complications of diabetes mellitus [30]. The present study demonstrated unsatisfactory outcomes in terms of diabetes mellitus knowledge complications, with only 38.0% of respondents knowing all knowledge items and 37.0% having inadequate knowledge .

Our study also suggested there were positive practices (26.0%) while (74.0%) negative practice's regarding complications of diabetes mellitus and Attitude of the participant toward diabetes mellitus complications the majority of participant in negative attitude more than positive (See Table 2,3)

A previous study in Bangladesh (2012) found that 82% of people had a basic level of DM awareness [30], which was considerably higher than in our study. This disparity may be explained by the previous study using the Diabetes Knowledge Test, a tool validated by the University of Michigan, whereas our tool was researcher-constructed. Similarly, another study from Bangladesh found that 62% of the population had an adequate knowledge level [29], which was also higher than our result. Our study showed that knowledge regarding diabetes mellitus measuring parameters in Punjab was low; the study has reported an association of several demographic characteristics of patients with their knowledge about complications. a significant relation between knowledge and demographic data show that is a significant relation between knowledge and demographic data regarding age (increase in 60-70 in the high)79.61% and P-value= <0.000 χ^2 140.855 in gender the majority of our participants were noticed in male with a significant relation between knowledge and gender P-value=0.000. marital status show that is a significant relation between knowledge and marital status P-value=0.000, regarding to the Occupation show that is a significant relation between knowledge and occupation P-value=0.000 (see table 4)

Which was also supported by previous studies conducted in low- and middle-income countries [31]. Another study has asserted that patients' educational level was a substantial predictor towards their self-care practices [32]

A positive attitude toward complications diabetes mellitus was strongly associated that is a significant relation between and demographic data regarding age increase in 60 to70, gender in female more than male and with similar results reported in the study in Bangladesh [28]. In contrast, the study among patients with diabetes mellitus in the UAE did not report associations between attitudes and income/SES, which may be explained by the large difference between the gross domestic product (GDP) of Pakistan and the UAE. In 2015[33] also similar our results study regarding the economic level show that is no significant relation between attitude and economic level .(see Table5)

Conclusions

This study observed a high level of agreement on the evaluation and treatment of elderly patients with DM2 and/or comorbidities among participating specialists, It is important to conduct a comprehensive assessment of these patients in order to individualize treatment and reduce the risk of hypoglycemia. Room for improvement noted on aspects such as the evaluation of psychiatric symptoms and cognitive capacity, the intensification of ant diabetic treatment and flexibility of glycemic control targets, the dissemination of specific guidelines, and the evaluation of frailty and in the management of elderly or frail patients. Saudi Arabia, despite high-level economic growth and development, is prone to health-related risks such as Knowledge of complications of diabetes mellitus among patients diabetes that serves as the root cause for the development of further diseases. Currently, people are at major risk of death due to diabetes and its consequences that are now highly developing among diabetes patients.

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