

Knowledge, Attitudes and Practices (KAP) of Type 2 Diabetes and Chronic Kidney Disease Management among Patients Visiting General Physicians in Islamabad: A Cross-Sectional Study

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Abstract

Aim: Diabetes is one of the major causes of Chronic Kidney Disease (CKD). Epidemiological studies revealed a low knowledge of the general population about the disease. This study is aimed to identify the Knowledge, Attitude, and Practices (KAP) of patients with Type 2 Diabetes (T2D) and Chronic Kidney Disease (CKD) of patients in Islamabad (Capital city of Pakistan) who visited their family physicians from Dec 01, 2020, to Feb 28, 2021.

Methods: A quantitative, cross-sectional study using a validated questionnaire involving residents of Islamabad, earlier diagnosed with T2D and CKD, equal to or above 25 years of age, who visited their family physicians during the study period. Eligible participants were identified using purposive sampling. Questions about knowledge, attitude, and practices of disease management were asked.

Results: A high level of Knowledge, Attitude, and Practice (KAP) was observed in the majority of study participants. A few areas of low knowledge identified were the understanding of the relationship between high blood pressure and CKD and the treatment of renal disease with dialysis. Attitudes regarding disease prevention, outcome, and burden were high but the impact and management of renal disease were low. High practices of prevention, consultation, behavior, modification were seen but practices of disease self-management, usage of traditional herbal medicinal substitutes, and frequent clinical visits were low.

Conclusions: While most of the areas indicated a high level of knowledge, attitude, and practices some low-level areas were noticed. These should be the target of future interventions and public health programs for T2D and CKD for further improvement of KAP scores. Similar studies should be conducted among other population subgroups in other parts of the country. Targeted interventions/public health programs catering to the needs of all communities should be implemented and evaluated for their effectiveness to improve the overall level of healthcare in the country.

Keywords: Knowledge; Attitude; Practice; Type 2 Diabetes (T2D); Chronic Kidney Disease (CKD); Islamabad, KAP questionnaire; Awareness

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Introduction

Type 2 Diabetes (T2D) is a metabolic disorder that impairs the body's ability to consume insulin, giving rise to a state of high blood sugar, if sustained for longer periods [1]. Chronic kidney disease is one of the most feared complications of T2D and is the 9th leading cause of death worldwide resulting in a huge economic burden on health systems [1]. T2D is, therefore, considered to be one of the significant health problems and cardinal causes of death globally [2]. According to a WHO estimation of 2014, 422 million people globally were affected by diabetes mellitus [1]. It is

expected to become the 7th leading cause of death by 2030. This number is expected to rise by 592 million by 2035 [3].

If untreated, the complications arising from the disease can affect multiple organs. T2D doubles a person's risk of cardiovascular events such as stroke or heart attack [4], can impair vision (Retinopathy) and nerves (Neuropathy), and is the major cause of CKD [5]. However, an early diagnosis and proper treatment can reduce associated complications [6]. Early detection and proper intervention of this highly prevalent disease can be accomplished by proper awareness and knowledge of the disease. Behavioral

modifications including a healthy diet, regular exercise, weight loss, and adherence to prescribed drug therapy can help to achieve optimal glycemic control [6].

In developing countries, a crucial challenge of CKD patients is the late presentation with most patients in an advanced stage. It is due to a poor level of knowledge and awareness of the disease [7,8]. The prevalence of T2D in Pakistan is 17% [9], giving the country a rank of number 4 on the list of top 10 countries having 19.4 million adults (20-79 years), Diabetes Mellitus (DM) in 2019, and this number will rise to 26.2 million in 2030 and will further jump to 37.1 million by 2045 bringing the rank one level up to number 3 by 2045 [10]. The prevalence is likely to rise further and it is projected that DM and hypertension will continue to increase in the emerging economies [11].

Diabetes, Knowledge, Attitude, and Practice (KAP) are vital in diabetes management. Several studies have used a KAP-based questionnaire to assess the knowledge, attitudes, and practices of individuals toward the DM disease [12], and supported the need for improved awareness of control of risk factors to prevent diabetes [13]. There is evidence that suggests that educated diabetic patients with good knowledge and health literacy achieve better disease control and management [14,15].

A low level of awareness, knowledge, and risk factors of CKD is found in previous epidemiological studies from developed countries. In the United States, only 24.3% of people with Glomerulus Filtration Rate (GFR) 15-60 ml/min were aware of CKD [16]. In Australia, hypertension and diabetes were cited as risk factors by only 2.8% and 8.6% of the population studied [17]. Among African Americans, few people (23.7%) had an idea of at least one laboratory test for kidney disease and few consider CKD a significant health condition [18]. A randomized controlled trial found a significant association between diabetes risk factors and motivation to make lifestyle changes with diet modifications and exercise habits. Also, it found a strong association between lifestyle modifications and reduction in waist circumference, body mass index, and Blood Glucose Level (BGL) [19,20].

People having an advanced CKD were aware of the disease though, but at this level, the kidney function had been already severely impaired [21]. The associated morbidity, mortality, economic and public health burden can be significantly reduced by early identification and treatment of CKD [22]. Owing to the health and economic benefits of preventive measures, it is critical to shift towards the implementation of preventive interventions from hospital-based interventions [23].

In Pakistan, disease management is generally decided by the Healthcare Provider (HCP) while patients act as the passive care recipient. Disease management strategies should be planned and guided in partnership with the HCP's. It can be made possible by identifying the KAP of patients to help understand the factors hindering patient's disease control. Knowing patient's perspectives is an essential step towards employing innovative ideas to promote their health thus empowering them.

Aims

This study was aimed towards determining the level of KAP towards the causes, prevention, diagnosis, treatment, and management of T2D patients with CKD visiting General Patients (GPs) in Islamabad city of Pakistan from Dec 1st, 2020 to Feb 28th, 2021.

Methods

A cross-sectional, quantitative study is designed to identify the frequency of KAP in T2D patients with CKD at five private clinics of Islamabad based on convenience and willingness to participate in the study. Purposive sampling is done to identify the eligible participants.

Islamabad city has a population of 116, 400,0. With a T2D prevalence rate of 17% [9], 98% confidence level, and 5% margin of error, the estimated sample size was 307, which became 338 with an addition of 10% subjects. However, during the three-month period (Dec 1st, 2020 to Feb 28th, 2021), 422 patients visited the five participating clinics who met the inclusion criteria, 375 agreed to participate in the study, and this sample size was considered appropriate for the study.

Patients were recruited from five General Physician (GP) clinics in Islamabad from December 1st, 2020 through Feb 28th, 2021, with the permission from GP. The study was conducted at GP clinics because of the convenience of researcher access and the availability of population of interest for the study.

All patients who visited the clinics during the study period and satisfied the inclusion criteria were asked to participate in the study. After obtaining their informed consent, patients were included in the study if they satisfy the inclusion criteria and were regarded as eligible for the study. A total of 375 patients, finally participated in the study.

Informed consent was obtained from the participants and they were guaranteed confidentiality and anonymity of their identity. Participants were given the right to refuse participation as the study was voluntary.

Data collection tool

The self-reported questionnaire was originally developed by an extensive literature review of already published literature using CKD screening index questionnaires [24] and the KAP questionnaire [25]. A validated questionnaire used previously [26] is employed for the study. The questionnaire was translated into Urdu and was pilot tested among 30 patients for reliability. On average, the questionnaire took ~10-15 min to complete. The questionnaire was divided into four sections; first section included demographic information, while the later sections include questions related to KAP of T2D patients with CKD.

The knowledge component: The responses to knowledge related questions were: "yes", "no", or "don't know". Here, a correct response was given a score of "2", "1" for "don't know" and "0" for an incorrect answer. The total scoring range of this section of 9 questions was 0-18 for each participant. A "low level of

knowledge" was given 0-6 score, a "medium level of knowledge" 7-12 and a "high level of knowledge" will score equal or above 13.

The attitude component: The responses to attitude related questions were: "agree", "disagree" or "neutral". For this component, a score of "2" is given for a positive attitude, "1" for neutral, and "0" for a negative attitude. The total scoring range for this section of 10 questions was 0-20 with 0-7 considered being "low level of attitude", 8-14 as "medium level of attitude", and those scoring equal to or above 15 were considered having a "high level of attitude".

The practice component: The responses to practice related question were: "yes" or "no". Each item in the practice component was given a score of "1" for a positive practice and "0" for negative practice. Thus, the total scoring range for this section of 7 questions was 0-7 for each participant. Those with a score of less than 3 were considered to have a "low level of practice" and those scoring 4 or over a "high level of practice".

Training of interviewers and data quality assurance: Two interviewers were trained by the Principal Investigator (PI) to collect the data and were described the purpose of the study and how to conduct face-to-face and telephonic interviews. Later, interviewer's pilot tested the questionnaire and observed for their interviewing skills.

Data collection and analysis

Before administration, the questionnaire is pilot tested and modified based on the responses obtained. Participants were then asked to fill in the questionnaire (Urdu and English version). Verbal or written assistance is provided to those participants who were not able to fill and understand it. The information obtained is entered in Microsoft excel for cleaning and coding. After designing a data dictionary, data analysis was carried out on SPSS, version 25.

Sociodemographic characteristics are demonstrated using descriptive statistics from section A of the questionnaire. The frequency of responses to the KAP questions was expressed in total and percentages.

Results

Complete data of all participants is demonstrated in tables. The sample size comprised 375 people aged 27-95 years (55.4 ± 9.99). The majority of participants were aged 46-55 years (36.36%) followed by 66-75 years (25.06%) with almost an equal number of male (48%) and female (52%) participants. 45.9% were employed, while 54.1% were unemployed. The majority of the participants were married (77%), 11% single, 12% divorced, and widowed (Tables 1-5).

Variables	Categories	n	Percentages (%)
Age (years)	25-35	15	4
	36-45	23	6.13
	46-55	136	36.36
	56-65	85	22.6
	66-75	94	25.06
	>76	22	5.86

Gender	Male	180	48
	Female	195	52
Employment status	Employed	172	45.86
	Unemployed	203	54.13
Marital status	Single	41	10.93
	Married	289	77.06
	Divorced	14	3.73
	Widowed	31	8.26

Table 1: Demographic characteristics of study participants (n=375).

Question	Response	n	%
Do an unhealthy diet and lack of physical activity increase the risk of diabetes?	Yes	322	85.86
	No	23	6.13
	Don't know	30	8
Can diabetes lead to kidney disease?	Yes	302	80.53
	No	21	5.6
	Don't know	52	13.86
Does high blood pressure worsen kidney disease in people with diabetes?	Yes	290	77.33
	No	22	5.86
	Don't know	60	16
Is kidney disease in people with diabetes diagnosed at the hospital by doing blood tests?	Yes	328	87.46
	No	19	5.06
	Don't know	28	7.46
Does a person with kidney problems have certain symptoms that can alert him/her to seek medical attention?	Yes	334	89.06
	No	13	3.46
	Don't know	28	7.46
Does the kidney remove the waste from the human body?	Yes	304	81.33
	No	12	3.2
	Don't know	59	15.73
Is the kidney involved in maintaining normal blood pressure and other functions like blood formation?	Yes	298	79.46
	No	18	4.8
	Don't know	57	15.2
Does dialysis completely treat kidney disease in people with diabetes?	Yes	96	25.6
	No	92	24.53
	Don't know	187	49.86
Do people with chronic kidney disease in the final stage need kidney transplant/ surgery overseas?	Yes	311	82.9
	No	33	8.8
	Don't know	31	8.2

Table 2: Frequency of response on knowledge related questions n=375.

Question	Response	n	%
Do you believe that kidney disease in people with diabetes is a big problem in Pakistan?	Agree	334	89.06
	Disagree	6	1.6
	Neutral	35	9.33
Are you interested in knowing whether your kidney status is normal or not?	Agree	342	91.2
	Disagree	8	2.13
	Neutral	25	6.66
Will knowledge about your kidney condition make you worry about yourself?	Agree	297	79.2
	Disagree	44	11.73
	Neutral	36	9.6
I will be able to bear the financial costs linked to kidney disease?	Agree	53	14.13
	Disagree	289	77.06
	Neutral	33	8.8
I think my family deserves to know about my kidney status/function?	Agree	346	92.26
	Disagree	14	3.73
	Neutral	15	4

I have considered a plan if my kidney disease progress to the final stage?	Agree	145	38.66
	Disagree	124	33.06
	Neutral	106	28.26
I think kidney disease is a potential threat to my current life in terms of daily activities such as working, socializing, and community status?	Agree	330	88
	Disagree	16	4.26
	Neutral	29	7.73
Kidney disease will not affect my health and lifestyle in anyway.	Agree	57	15.2
	Disagree	245	65.33
	Neutral	73	19.46
I believe people with diabetes and kidney disease should follow all the medical advice given to them to prevent worsening of their disease.	Agree	341	90.93
	Disagree	26	6.93
	Neutral	8	2.13
I think my family members need to be checked for diabetes and kidney damage if they are more than 40 years old	Agree	339	90.4
	Disagree	12	3.2
	Neutral	24	6.4

Table 3: Frequency of response on attitude related questions n=375.

Question	Response	n	%
Have you attended most or all of your booked clinics?	Yes	247	65.86
	No	128	34.13
Did you undergo routine blood tests to check your kidney function every year?	Yes	221	58.93
	No	154	41.06
Did you attempt to check your sugar level on non-clinic days at your own expense?	Yes	203	54.13
	No	172	45.86
Did you make any efforts to reduce your risk factors, if you have any as advised by your doctor?	Yes	308	82.13
	No	67	17.86
If you find out that you have kidney disease, would you take traditional healing/ medicine?	Yes	174	46.4
	No	201	53.6
Did you change your diet after knowing about your kidney disease?	Yes	212	56.53
	No	163	43.46
If you find out you have kidney disease, would you consult a doctor?	Yes	375	100
	No	0	0

Table 4: Frequency of response on practice related questions n=375.

Variables	N	%
Knowledge		
Low level of knowledge (0-6)	3	0.8
Medium level of knowledge (7-12)	104	27.7
High level of knowledge (13-18)	268	71.5
Attitude		
Low level of attitude (0-7)	6	1.6
Medium level of attitude (8-14)	96	25.6
High level of attitude (15-20)	273	72.8
Practice		
Low level of practice (0-3)	41	11
High level of practice (4-7) c	334	89

Table 5: Distribution of responses by level of KAP.

Distribution of responses by level of KAP

71.5% of the participants had a high level of knowledge regarding the function of the kidney and the causes, prevention, diagnosis, and treatment of T2D/CKD (Score of 13-18). Similarly, 73% had a high level of attitude regarding prevention, burden, impact, effect, awareness, and future implications of T2D/CKD (Score of 15-20). 89% had a high level of practice towards prevention, self-management, behavior modification, medical consultation and

health-seeking behavior (Score over 4).

Discussion

Despite having enough evidence to suggest that the risk of diabetes can be reduced by lifestyle changes [27], a dilemma of developing countries is the lack of awareness of the chronic complications of the disease and its early management. Also, it has been found that 30% of the population does not take up community services [28].

The results of this study are promising as a high level of Knowledge, Attitude and Practices (KAP) (71.5%, 72.8%, and 89% respectively) are observed. Awareness of the CKD was generally high apart from few areas in which low scores were attained, such as the relationship between diabetes and blood pressure and the need for transplant surgery in end-stage kidney disease.

Attitudes regarding disease prevention, outcome, and burden were high but the impact and management of renal disease were low. High practices of prevention, consultation, behavior, modification were seen but practices of disease self-management, usage of traditional herbal medicinal substitutes, and frequent clinical visits were low.

In previous studies on Pakistan's general population, a low level of knowledge of diabetes risk factors, management, and care was found [29] in a study, while another found a lack of knowledge of diabetes especially in females and illiterates in another suburban town of a Pakistani city [30]. Various other studies such as BQ town and Gaddap study of Karachi towns [31] revealed poor knowledge, few positive attitudes, and bad practices of patients regarding disease management of the disease.

A possible explanation of the conflicting findings of our study to those of previous studies from Pakistan could be a high literacy rate (87%) of Islamabad residents [32] as compared to 59% literacy rate of the whole country [33], and a low sample size of past studies.

Various other global studies on T2D/CKD revealed a poor level of various aspects of knowledge such as definition, risk factors, diagnosis causes, symptoms, and treatment [18,34,35]. Thus, low-rate parameters of knowledge need to be evaluated and targeted in future interventions for diabetic awareness programs. Similarly, a range of attitudes from a high (97%) level of attitude regarding health concerns, economic and social impacts of kidney disease in Tanzania [36], to a poor (60%) attitude in Iranian participants [37] was identified.

The overall attitude was high in our study. Since behavior is influenced by attitude, our study predicts positive behavioural outcomes. Certain areas of low attitudes must be improved. Good practices towards disease are imperative to reduce associated morbidities and mortalities. In a Tanzanian study, patients were subjected to a high mortality rate due to the usage of traditional healing medicines as they lacked the knowledge of the disease and its effective management [36].

This study has shown that diabetics do visit physicians. It is the responsibility of the physician to educate the patient regarding

the control of diabetes and its chronic complications. There is increasing evidence that diabetes can be managed in a community by increasing awareness and there is a dire need to start nationwide diabetic education programs to prevent this prevalent disease that is associated with multiple comorbidities and mortalities. Such programs proved to be a cost-effective preventive strategy in many countries [38-40].

Furthermore, diabetes-related KAP of family physicians also need to be improved while treating and educating patients. A study from Pakistan found that more than 90% of family physicians treated diabetics and found deficiencies in the KAP of GPs towards diabetes in rural and urban areas [41], so GP practices should be improved for treating and educating diabetics.

Diabetes management can be improved in South Asia by initiating diabetic programs that focus on improving communication with the healthcare provider, address misconceptions, and employ culture-specific strategies [42,43].

Conclusion

While most of the areas of our study indicated a high level of knowledge, attitude, and practices but for some in which low levels are obtained. These low-level areas should be the target of future interventions and public health programs for T2D and CKD. It will eventually lead to further improvement in the overall KAP scores. Moreover, there is a dire need to conduct similar studies for other population subgroups targeting those of low socioeconomic status, literacy levels, and ethnicities in other parts of the country. It will help to design tailored interventions for those populations and improve public health as a whole by preventing further marginalization of vulnerable communities.

Additionally, education material on the causes, prevention, and management of the disease catering to the needs and cognitive skills of the targeted populations should be made available. Behavioral change communication material for the targeted populations will be helpful to create awareness and provide education about the disease.

The effectiveness of the programs should be identified by large-scale studies and intervention studies to improve overall population health.

Strengths and Limitations

One of the main strengths of this study is probably that it is likely to be the first study of KAP of T2D and CKD among Islamabad residents visiting private clinics. However, it has some limitations which include small scope, sample size, and short time frame. The sample size is not representative of an entire population, of low socioeconomic status, literacy levels, and of those visiting public hospitals. There should be more research on those population groups.

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