

Knowledge Attitude and Practices(KAP) towards Covid-19 among Chronic Kidney Disease(CKD) patients on Maintenance Hemodialysis at a Tertiary Healthcare Centre.

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Abstract:

Background: The Covid-19 pandemic has greatly impacted the life of general population and people with chronic illness in particular. Our study aims to assess the Knowledge, Attitude and Practice (KAP) towards COVID-19 among patients with Chronic Kidney Disease (CKD) on Maintenance Hemodialysis (MHD).

Material and Methods: A questionnaire based face to face interview was conducted after informed consent. The questionnaire tested knowledge regarding transmission, symptoms, risk factors and treatment of Covid-19 infection. The attitude towards following preventive measures and compliance to safe practices was recorded. The KAP results were correlated with various demographic characteristics like age, gender, education status, employment and dialysis vintage. **Results:** Of the 109 patients interviewed, mean age was 50 years, 73% were males, 58% had only basic education and 60% were unemployed. Sufficient knowledge was found in 93% patients. Insufficient knowledge correlated with low education levels. Negative attitude correlated with female gender, low education levels and unemployment. Nearly all of the patients were compliant with safe practices.

Conclusions: Risk perception of Covid-19 infection to self and family members was high among our patients. The KAP score significantly varied with education status.

Key words: Covid-19, Knowledge, Attitude, Practice, Chronic Kidney Disease, Maintenance Hemodialysis.

Date of Submission: 28-08-2021

Date of Acceptance: 12-09-2021

I. Introduction

Covid-19 is a respiratory infection that was first discovered in December 2019, in Wuhan city, Hubei Province, China. The infection was considered as a public health emergency and declared as a 'global pandemic' in March 2020¹. The infection is characterized by rapid transmission from close contact with an infected person². The disease can manifest as mild asymptomatic illness to severe respiratory distress leading to death. The predominant symptoms of Covid-19 are fever, dry cough, fatigue, myalgia and shortness of breath³. The overall mortality rate varies from 0.7%-10.8%⁴. However, the infection tends to be severe with high mortality in older adults and people with underlying chronic illness^{5,6,7}. A systematic review on Covid-19 patients with hypertension, diabetes, cardiovascular and respiratory diseases confirmed the same.⁸ According to Centre for Disease Control (CDC), 63.1% of adults older than 60 years have hypertension, 38% of people older than 65 years have Chronic Kidney Disease (CKD) and 26.8% of adults older than age 65 have diabetes^{9,10,11}.

Unprecedented measures for controlling the transmission, lead to various challenges for health care professionals and the general public. However, the burden on patients with chronic illness requiring frequent outpatient and/or inpatient hospital visits seems to be unmatched. The Knowledge Attitudes and Practices (KAP) towards any pandemic play an important role in determining peoples readiness to accept various preventive strategies^{12,13,14}. Most studies have assessed KAP towards Covid-19 among general public and health care workers. Our study aims to investigate the KAP towards Covid-19 among CKD patients on Maintenance

Haemodialysis (MHD), who are susceptible to the infection due to their age, pre existing co-morbidities, compromised immune system and frequent unavoidable hospital visits for scheduled haemodialysis. Findings from this study are expected to provide an insight into the existing knowledge and assess patients readiness to comply with pandemic control measures which could further guide policy making and implementation of public health interventions.

II. Material And Methods

The cross sectional study included CKD patients above 18years of age attending twice/thrice weekly MHD at St John's Medical College Hospital (SJMCH), Bangalore between August 2020 - September 2020. The study was approved by the Institutional Ethics Committee.

Study Design: Cross sectional observational study

Study Location: This was a tertiary care teaching hospital based study done in Department of Nephrology, at St Johns Medical CollegeHospital,Bangalore.

Study Duration: August 2020- September 2020 .

Sample size: 109 patients.

Subjects & selection method: After informed consent, 109 consecutive patients were interviewed face to face by the attending dialysis staff during their hospital visit for scheduled dialysis and were asked to complete a structured questionnaire.

Inclusion criteria:

1. Chronic Kidney Disease patients on maintenance hemodialysis.
2. Either sex
3. Aged \geq 18 years,

Exclusion criteria:

1. Patients who were not willing to answer the questionnaire.

Procedure methodology

The first part of the questionnaire comprised of demographic details such as age, gender, dialysis vintage, education status, and occupation. Having no formal education and primary/secondary schooling was considered as low education levels. The second part comprised of nine questions pertaining to modes of transmission, symptoms, risk groups, treatment and prevention of Covid-19 infection. The knowledge score varied between 0-9, each correct answer was given one mark and wrong answer zero. A cut off of $>80\%$ was taken as sufficient knowledge and $< 80\%$ as insufficient knowledge. The third section comprised of five questions assessing patients attitude towards Covid-19. For each of to the five questions, they were asked to respond as 'agree', 'disagree' or 'not sure'. For attitude questions 1&2 'agree' was considered negative attitude while for question 3,4,5 'disagree' and 'not sure' were taken as negative attitude. The fourth part of the questionnaire assessed the safe practices. It consisted of 2 questions pertaining to use of face mask and hand sanitizer while leaving their homes which were answered as 'Yes' or 'No'.

Statistical Analysis Descriptive statistics were reported as mean \pm SD, frequencies and percentages. Total knowledge score was compared between demographic characteristics using independent t-test for two group comparison, ANOVA for more than 2 groups comparison. Chi-square test was used to test the association between adequacy of knowledge and attitude variables with demographic characteristics. p value less than 0.05 was considered statistically significant. All the analyses were carried out using SPSS version 25.0.

III. Result

The mean age was 51 \pm 14 years with males constituting 73% of the cohort. Among those undergoing MHD, 30% of the patients had higher education qualification and only 15% were employed in government or private sector jobs with stable monthly income. 5% of the patients had no formal education and 66% were unemployed of which 15% were retired officials. The demographic details are shown in Table 1.

Table no 1 : Demographic details of Chronic Kidney Disease patients on Maintenance Haemodialysis

Demographics	n=109	Percent (%)
Age		
<40 years	25	22.9
>40 years	84	77.1
Gender		
Male	80	73.4
Female	29	26.6
Education Status		
No Formal Education	6	5.5
Primary/Secondary school	58	53.2
Diploma	31	28.4

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Masters	14	12.8
Occupation		
Unemployed	72	66.1
Student	3	2.8
Unskilled/Skilled Labour	19	17.4
Professional	15	13.8
Dialysis Vintage (years)		
<1	33	30.3
1-5	45	41.3
>5	31	28.4

93% of the cohort had sufficient knowledge on Covid-19 infection. Among the 7% with insufficient knowledge, incorrect responses were noted for questions on transmission of infection by food, CKD population being a high risk group and prevention of infection by use of face mask/hand hygiene. The responses to the Knowledge questionnaire on Covid-19 are summarised in Table 2.

Table no 2: Knowledge levels of Chronic Kidney Disease patients on Maintenance Haemodialysis towards Covid 19 infection(n=109)

Sl.no	Knowledge Questionnaire	Correct Answer n, (%)	Incorrect Answer n, (%)
1	Covid-19 is a viral infection	103 (94.5)	6 (5.5)
2	Covid-19 is transmitted by droplet during coughing and sneezing	106 (97.2)	3 (2.8)
3	Covid-19 infection symptoms include fever/sore throat/cough/breathlessness	108 (99.1)	1 (0.9)
4	Covid-19 infection can lead to serious complications and even death	108 (99.1)	1 (0.9)
5	Social distancing and avoiding crowded places helps prevent spread of Covid-19 infection	108 (99.1)	1 (0.9)
6	Patients with Chronic Kidney Disease are at higher risk of Covid-19 infection	94 (86.2)	15 (13.8)
7	Currently there is no effective cure for Covid-19 infection	108 (99.1)	1 (0.9)
8	Eating non vegetarian food/egg causes Covid-19 infection	88 (80.7)	21 (19.3)
9	Use of face mask and frequent hand washing helps in preventing spread of Covid-19 infection	100 (91.7)	9 (8.3)
Overall level of knowledge			
Sufficient knowledge		101 (92.7)	
Insufficient knowledge		8 (7.3)	

30%-40% of the patients agreed to the fear of acquiring and spreading the infection to their family members. 96% - 98% of them were willing to accept swab testing and isolation in suspected Covid-19 infection and agreed to vaccination once available. Regarding control of the pandemic, 70% agreed while 10%-20% either disagreed or were not sure. On questions pertaining to safe practices to contain Covid-19 infection, 98% responded 'Yes' and only 2% said 'No' to the use of face mask and hand sanitizer while leaving their homes. The responses to the Attitude and Practice questionnaire on Covid-19 are summarised in Table 3.

Table no 3: Attitude and Practices of Chronic Kidney Disease patients on Maintenance Haemodialysis subjects towards Covid-19 infection (n=109) Abbreviation : A.Q:Attitude Question, P.Q:Practice Question

Sl No.	Attitude Questionnaire	Agree n, (%)	Disagree n, (%)	Not Sure n, (%)
A.Q1	You are likely to get the infection	38 (34.9)	69 (63.3)	2 (1.8)
A.Q2	You are worried about your family members getting the infection due to the frequent hospital visits	47 (43.1)	62 (56.9)	0 (0)
A.Q3	If you develop symptoms, you will be willing to undergo swab testing and isolation	105 (96.3)	2 (1.8)	2 (1.8)
A.Q4	You will accept vaccination once it is available	107 (98.2)	0 (0)	2 (1.8)
A.Q5	The Covid-19 infection pandemic will be controlled	80 (73.4)	20 (18.3)	9 (8.3)
	Practice Questionnaire	Yes n,(%)	No n,(%)	
P.Q1	Do you wear mask outside of your home?	108(99.1)	1(0.9)	
P.Q2	Do you use hand sanitizer before and after entering HD unit?	107(98.2)	2(1.8)	

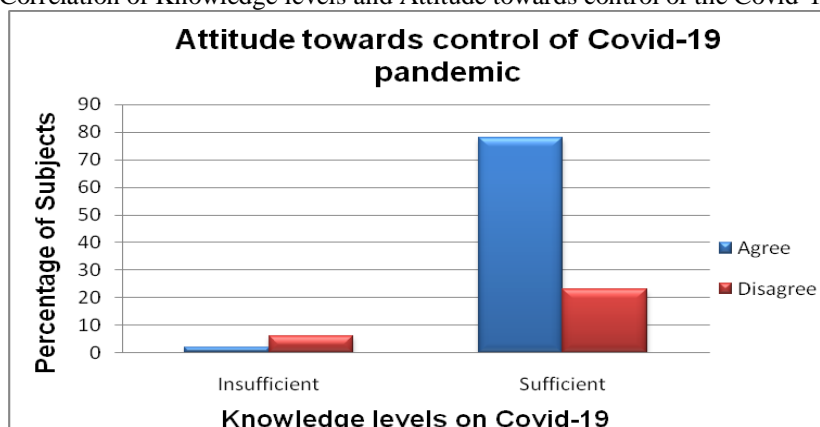
Correlation of insufficient knowledge and negative attitude towards Covid-19 with demographic characteristics is depicted in Table 4. The mean knowledge score was 8.4 ± 0.9 . A lower knowledge score of 7.0 ± 2.8 was seen in those who had no formal education, which was significantly associated with insufficient knowledge on Covid-19 ($p=0.01$). However, no association was found between knowledge score and age groups, gender, occupation or dialysis vintage. Negative attitude towards Covid-19 were found to be significantly associated with gender, education status and occupation. Among those who expressed fear of acquiring Covid-19 infection, 52% were unemployed ($p=0.04$). Among those who disagreed to swab testing and isolation, 75% were females ($p=0.05$). Of those who disagreed to vaccination, 50% had no formal education and 50% had only basic education ($p=0.04$). Insufficient knowledge on Covid 19 was found to be significantly associated with negative attitude towards control of the pandemic ($p=0.001$) as shown in Figure 1.

Table no 4: Correlation of Insufficient Knowledge level and Negative attitude with Demographic variables (n=109)

Abbreviation : A.Q:Attitude Question, p: p value

Demographics	Knowledge score (Mean±SD)	Insufficient Knowledge n, (%)	p	A.Q1 n (%)	p	A.Q2 n (%)	P	A.Q3 n (%)	p	A.Q4 n (%)	p	A.Q5 n (%)	p
Age			0.5		0.3		0.5		0.3		0.5		0.2
<40yr	8.6±1.07	2(8)		10 (26.3)		11 (23.4)		0 (0)		0 (0)		5 (17.2)	
>40 yr	8.3±0.91	6(7.1)		28 (73.7)		36 (76.6)		4 (100)		2 (100)		24 (82.8)	
Gender			0.1		0.5		0.4		0.05		0.4		0.4
Male	8.5±0.99	4(5)		28 (73.7)		34 (72.3)		1 (25)		1 (50)		22 (75.9)	
Female	8.3±0.81	4(13.8)		10 (26.3)		13 (27.7)		3 (75)		1 (50)		7 (24.1)	
Education status			0.01		0.2		0.2		0.1		0.04		0.6
No formal education	7.0±2.89	2(33.3)		0 (0)		1 (2.1)		1 (25)		1 (50)		2 (6.9)	
Primary/secondary education	8.4±0.72	6(10.3)		21 (55.3)		22 (46.8)		3 (75)		1 (50)		18 (62.1)	
Diploma	8.7±0.44	0(0)		13 (34.2)		16 (34)		0 (0)		0 (0)		6 (20.7)	
Masters	8.8±0.42	0(0)		4 (10.5)		8 (17)		0 (0)		0 (0)		3 (10.3)	
Occupation			0.6		0.04		0.07		0.8		0.7		0.6
Unemployed	8.4±1.01	6(8.3)		20 (52.6)		29 (67.1)		3 (75)		2 (100)		21 (72.4)	
Student	8.8±0.57	0(0)		1 (2.6)		1 (2.1)		0 (0)		0 (0)		0 (0)	
Unskilled labour	8.5±1.02	2(10.5)		7 (18.4)		6 (12.8)		1 (25)		0 (0)		4 (13.8)	
Professional	8.7±0.45	0(0)		10 (26.3)		11 (23.4)		0 (0)		0 (0)		4 (13.8)	
Dialysis vintage(Years)			0.1		0.8		0.3		0.9		0.6		0.1
<1	8.6±0.50	0(0)		11 (28.9)		11 (23.4)		1 (25)		0 (0)		10 (34.5)	
1-5	8.5±0.8	4(8.9)		15 (39.5)		20 (42.6)		2 (50)		1 (50)		8 (27.6)	
>5	8.4±1.41	4(12.9)		12 (31.6)		16 (34)		1 (25)		1 (50)		11 (37.9)	

Figure 1. Correlation of Knowledge levels and Attitude towards control of the Covid-19 pandemic.



Non-compliance to safe practices correlated with education status. 2% of the subject who did not use face mask or hand sanitizer were found to have low education levels ($p=0.001$) and ($p=0.04$) respectively, as shown in Figure 2 and Figure 3.

Figure 2. Correlation of Education status with Non-compliance to use of face mask

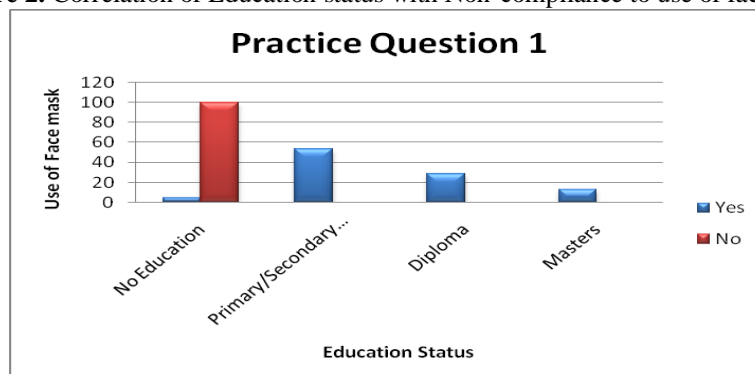
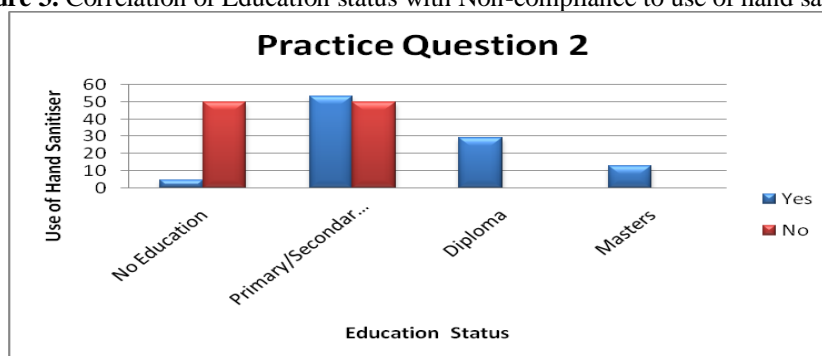


Figure 3. Correlation of Education status with Non-compliance to use of hand sanitizer



IV. Discussion

The ‘KAP theory’ states that change in human behaviour is divided into three successive processes, namely, acquisition of right knowledge, generation of attitudes and adoption of behaviour or practice¹⁵. In the current Covid-19 pandemic, adequate knowledge, positive attitude and following safe practices form the basis for effective control of the infection.

Our cohort consisted of 109 sociodemographically diverse adults. We had individuals in extremes of age, male predominance and nearly two third patients with lower education levels and unemployment. Our study found 93% of the patients to have sufficient knowledge on Covid-19. Most of them were aware of the modes of transmission, symptoms and absence of definitive treatment for the infection. Surprisingly, close to a third of the patients were unaware that having chronic kidney disease posed them at a higher risk of Covid-19 infection. Misconceptions on transmission of infection by consumption of non-vegetarian food was seen among a few. In studies on the general population of Saudi Arabia, Iran and China^{16,17,18} sufficient knowledge on Covid-19 was seen in 82%, 87% and 97% respectively. To date, only two studies have assessed KAP towards Covid-19 among people with chronic illness such as hypertension, diabetes and heart failure^{18,19}. Both the studies reported sufficient knowledge in 70 % of their population. Since our study was conducted towards the later part of the pandemic and due to the frequent hospital visits for scheduled hemodialysis, a higher percent of our patients were well informed on Covid-19.

Television, social media and public awareness platforms have been major sources of information on Covid-19 during the pandemic. Apart from access to information, factors such as age, gender, education status and inquisitiveness are known to influence the knowledge levels. Education status had a bearing on the knowledge levels. We found patients with no formal education and only primary / secondary schooling to have significantly low knowledge scores. Our results are consistent with findings from other studies which showed higher education status to be associated sufficient knowledge on Covid-19 infection^{16,18}. We did not find age or gender to influence knowledge on Covid-19. However, some studies have attributed older age to lower knowledge levels due to age related decline in cognition and associated visual or hearing impairments^{19,20}. Also, our findings differ from few studies that have shown females to be more knowledgeable with optimistic

attitudes^{18,21}. Unemployment and longer dialysis vintage did not seem to correlate with knowledge levels in our study.

Along with knowledge, positive attitude is important for effective control of the infection. The attitude questionnaire tested risk perception towards Covid-19 and willingness to accept vaccination and follow preventive strategies. One third of our patients perceived risk of infection to self and fear of spreading the infection to their family members. Fear of infection was higher among those who were unemployed. In two studies on patients with chronic illnesses, 24% and 52% of their population expressed similar fear^{19,20}. However, in studies on the general public or students, the risk perception of infection was much lower²¹. The fear of Covid-19 infection in our cohort seems justified, since they are already burdened by co-existing health issues, social stigma and additional expenditure.

Generally, the attitude towards accepting swab testing, isolation and vaccination was positive. However, when correlated with demographics, we found females to be reluctant for swab testing and isolation. Patients who refused to accept vaccination, when available, were found to have low education levels. The response towards overcoming the pandemic was mixed, with one thirds disagreeing or being not sure. Those with negative attitude towards control of the pandemic were found to have insufficient knowledge on Covid-19. In two other studies, 95-97% of the cohort concurred that the pandemic will be controlled^{16,18}. Despite ongoing efforts to create awareness and enforce preventive measures, attitude towards control of the pandemic were less than optimal in our study.

Knowledge and positive attitude translates to safe practices. Nearly all of our patients agreed to wearing face mask and using hand sanitiser while leaving their homes. Only a small number of patients did not comply with safe practices, which was significantly associated with insufficient knowledge on Covid-19. Our results are consistent with other studies, where knowledge levels were associated with safe practices^{16,18,19}.

Strengths of the study- To the best of our knowledge, this study is the first of its kind to assess KAP towards Covid-19 among CKD patients on MHD. Our study targeted a subset of the population who are not only susceptible to the infection but are at a higher risk of severe infection. Despite constraints to conduct an online survey, face to face interview by the attending dialysis staff ensured authenticity of the responses to the questionnaire. The study created an opportunity to generate awareness, clear misconceptions, emphasize and reinforce safe practices through guidelines and protocols for preventive measures that were already in place.

Limitations of the study - The small sample size was a limitation of our study. We did not include economic status as a demographic variable which could have influenced KAP towards Covid-19. Another limitation of our study was related to the standardization of the questionnaire used to assess KAP. We could not validate the tool. We could not assess the cause-effect relationship due to the study design.

In summary, the overall knowledge on Covid-19 in our cohort was good. The attitude towards following and accepting preventive measure was optimistic. Our study showed that low education levels is associated with insufficient knowledge on Covid-19. Negative attitude towards accepting vaccination and overcoming the pandemic are related to insufficient knowledge. A considerable number of patients expressing fear of Covid-19 infection and lack of confidence in overcoming the pandemic remain unique to our study. Low education level associated with insufficient knowledge and negative attitude towards Covid-19, thus influenced non-compliance to safe practices.

V. Conclusion

True to the KAP theory, our study showed that education status correlates with knowledge levels which in turn influences attitude thus impacting safe practices. Coupled with psychosocial issues, limiting repeated exposure to carriers of infection and physical/social distancing are major challenges in managing CKD patients on MHD. Thus, KAP studies during a pandemic become imperative, more so among the vulnerable population, to formulate and adopt preventive strategies, assuring success in the battle against Covid-19.

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Krithika Muralidhara, et. al. "Knowledge Attitude and Practices(KAP) towards Covid-19 among Chronic Kidney Disease(CKD) patients on Maintenance Hemodialysis at a Tertiary Healthcare Centre." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 20(09), 2021, pp. 01-07.