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Knowledge, Attitude And Practices Among Cardiac Surgical Patients Towards Coronavirus Disease At A Tertiary Care Centre In Western Rajasthan, India

Danishwar Meena MCh[1], Pramod Chandolia MCh[1], Surendra Patel MCh[1], Prem Prakash Sharma MA[3], Anupam Das MCh[1], Sunita Suman MCh [4], Madhusudan Katti MCh[1], Anirudh Mathur MCh[1], Devendra Gavade BSc[2], Alok Kumar Sharma MCh[1]

Department of Cardiothoracic and Vascular Surgery, AIIMS, Jodhpur
Clinical Perfusionist, AIIMS, Jodhpur
Department of Community Medicine and Family Medicine, AIIMS, Jodhpur
Department of Surgical Gastroenterology, AIIMS, Jodhpur

Abstract
Aims: *This study was conducted to assess the Knowledge, Attitude, and Practice (KAP) of cardiac surgical patients towards the ongoing COVID-19 pandemic, as they are among the high-risk group for morbidity and mortality associated with COVID-19.*
Methods and Material: *This cross-sectional survey was conducted from September 2021 to November 2021 at a tertiary care hospital in western Rajasthan. A total of 88 patients were enrolled, and a questionnaire was created with 20 questions to assess KAP towards COVID-19. The KAP of enrolled patients was compared according to age, gender, place of residence, and education status.*
Results: *A total of 88 participants completed the survey questionnaire. The mean knowledge score was 21.49±7.42, the mean attitude score was 4.08±1.84, and the mean practice score was 4.60±0.74. In the subgroup analysis, the difference in the knowledge score was statistically significant ($p<0.05$) in different age groups, however, the attitude and practice scores were comparable for all the age groups. KAP scores were significantly higher for the participants residing in urban areas than those from rural places. The KAP scores also showed a statistically significant relationship with the education status of the population ($p<0.001$).*
Conclusions: *This KAP study findings suggest that high-risk cardiac patients have decent knowledge scores and an overall optimistic outlook on surviving the pandemic. However, novel and far-reaching awareness programs are required for patients who are less educated and reside in rural areas as they are found to have lower KAP scores*
Key-words: KAP, COVID 19, Cardiac surgery, Knowledge, Attitude, Practice.

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I. Introduction:

The COVID-19 outbreak was officially linked to the coronavirus in February 2020 by World Health Organisation. India being the largest democracy in the world, is suffering a lot from the current pandemic situation. Despite the enforcement of a lockdown, multiple waves of COVID-19 caused an enormous blow to the economy and health infrastructure [1]. As per "Knowledge Attitude Practice (KAP) theory," modification in human behavior involves three successive steps: knowledge acquisition and attitude generation, followed by the adoption of new practice. Various studies have proven that the KAP levels among individuals are paramount in preventing and effectively managing diseases [2,3]. Hence, this study assessed the knowledge, attitude, and practices about COVID-19 in cardiac surgical patients during the current pandemic era.

II. Material and Methods:

The study was a cross-sectional survey done in the Department of Cardio-Thoracic and Vascular Surgery at the tertiary care hospital in western Rajasthan, India, from September 2021 to November 2021. The institute's ethical committee approved the study protocol, consent form, questionnaire, and information sheet, which followed the Declaration of Helsinki guidelines. All postoperative cardiac surgical patients with valvular

heart disease, coronary artery disease, and congenital heart disease of age 18 years and above, surgically treated at the institute, were included after informed consent. The KAP questionnaire was designed based on the extensive literature review published on COVID-19 and guidelines issued by health ministry, Government of India. A questionnaire was created with 20 questions on the Knowledge, Attitude & Practices of cardiac surgical patients during this pandemic in Hindi and was validated by 2 Biostatisticians and two cardiac surgeons. The questionnaire comprised three parts: Demographic details, knowledge-attitude-practice (KAP), and access to medical facilities. The demographic and clinical details included age, gender, place of residence (rural vs. urban), educational status, surgical status, and current New York Heart Association (NYHA) grade. All the participants were evaluated during their follow-up visit by a single interviewer with the aid of a validated questionnaire at the outpatient clinic.

The KAP questionnaire consisted of a total of 20 questions. Fourteen questions were dedicated to assessing knowledge about the novel coronavirus disease, four questions pertaining to attitude towards pandemic, and finally, two questions related to practices towards COVID-19 (Table 1 – Questionnaire). These questions were based on public health information and Covid-19 guidelines from the Government of India. The questions assessed knowledge of clinical symptoms, spread, treatment, and prevention of COVID-19. Each correct response was awarded a score of 1 while do not know, and an incorrect response was given a zero score. Maximum scores were 43 for knowledge, 9 for attitude, and 8 for practice questions. The higher the total score, the more knowledgeable the participant was considered. The design, setting, analyses, and reporting of this study adhered to the STROBE guidelines for cross-sectional survey in epidemiology.

1. Knowledge:

K1: Do you know about the disease which is spreading all over the world nowadays?
A) yes
B) no

K2: If yes, what is the name of the epidemic?
A) Corona
B) Covid-19

K3: What are the symptoms of pandemic (Covid)?
A) Fever
B) cough
C) Difficulty in breathing
D) muscle pain
E) Weakness
F) Fatigue
G) cold
H) Sore Throat
I) diarrhea
J) Any Other

K4: Can you tell, how does this infection spread?
A) going to the crowd
B) coming close to an infected person
C) By not following social distance
D) touching an infected object
E) By not using the mask in the crowd or outside
F) By coming in contact with the particles released when an infected person cough
G) Any Other

K5: When and at what time does the patient need to visit the doctor?
A) Fever
B) cough
C) shortness of breath
D. ALL OF THE ABOVE
E) don't know

K6: Is this disease spread through air?
A) yes
B) no
C) don't know

K7: How can this epidemic be stopped from spreading?
A) staying at home
B) keeping social distance
C) adherence to personal hygiene (by keeping cleanliness)
D) By quarantining the infected patient
E) Through lock-down
F) Any Other

K8: In which group of people does this infection prove to be fatal?
A) Elderly people
B) Patients with heart disease
C) Sugar patients
D) Co- Morbidities
E) Respiratory Patients (Asthma/COPD)
F) don't know
G) Any Other

K9: Have you heard the word quarantine?
A) yes
B) no
C) don't know

K10: If yes, then what is home quarantine?
A) stay at home
B) stay in one room of the house
C) Any Other

K11: What is the use of lock-down?
A) the rate of spread of infection slows down
B) the infection stops
C) don't know

K12: Who should wear a mask?
A) those who have an infection
B) one who coughs
C) to all
D) don't know
E) Health workers
F) Any Other

K13: Should the mask cover the corners of the face?
A) Mouth
B) nose
C) Mouth and nose
D) don't know

K14: Is there any definite cure for this infection yet?
A) yes
B) no
C) don't know

2. <u>Attitude:</u>

A1: What will you do if you have symptoms of this infection?

A) Will stay at home (Isolation)
B) go to health facility
C) don't know

A2: Do you think this epidemic can be stopped?
A) yes
B) no
C) don't know

A3: If yes then how?
A) by finding a cure
B) By consuming healthy food
C) By adopting social distance
D) by taking care of personal hygiene
E) Any Other

A4: Is the long lock-down causing you mental stress?
A) yes
B) no
C) don't know

3. Practice:

P1: What measures are you taking to avoid infection?
A) Paying attention to cleanliness
B) maintain social distance
C) following the lock-down
D) eat healthy food
E) exercise
F) use a mask
G) Any Other

P2: Are you more careful because of heart disease?
A) yes
B) no

4. **Medical Facilities:**

M1: Do you have easy access to medicine during a pandemic?
A) yes
B) no

M2: If not, what trouble are you facing?
A) Medical store is closed
B) Medicine is not available
C) Difficult to go out due to lock-down

M3: Have you stopped medicine because of these difficulties?
A) yes
B) no

Table 1 – Questionnaire

III. Statistical Analysis:

The statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) 17.0 software program (SPSS Inc., Chicago, IL, USA). Descriptive data were depicted as numbers and percentages, while normally distributed data were presented as mean ± standard deviation (SD). Comparisons between total knowledge score and categorical demographic variables (gender, educational status, residence) were made using the one-way analysis of variance (ANOVA) or Independent Student's t-test. A Pearson correlation coefficient analysis / Spearman's rho correlation was used to examine the association of two related variables. A chi-squared test was used to compare two attributes, and a *P*-value < 0.05 was considered statistically significant.

IV. Results:

Ninety-eight postoperative cardiac surgical patients were informed in detail and offered to enroll in the study. 88 patients agreed to participate after giving consent. Out of 88 participants who completed the study questionnaire, 41 were male, and 47 were female. The mean age of the study subjects was 41.5 years, and most participants were from the Western region of India (96%). The demographic profile of the participants has been summarized in (Table 2).

Gender	Male = 41(46.6%)		Female = 47(53.4%)		
Residence	Rural = 52(59%)		Urban = 36(41%)		
NYHA Grade	Grade I = 86(97.7%)		Grade II = 2(2.2%)		
Education	1- Illiterate = 29 (33%)	2- Primary = 26 (29.5%)	3- High school = 17 (19.3%)	4- Graduation & above = 16 (18%)	
Age Groups (Years)	18-29 = 26 (29.5%)	30-39 = 15 (17%)	40-49 = 17 (19.3%)	50-59 = 13 (14.7%)	>60 = 17 (19.3%)

Table 2 (N= 88) – Demography

The mean knowledge score of the study population was 21.49±7.42, the mean attitude score was 4.08±1.84, and the mean practice score was 4.60±0.74. In the subgroup analysis, the difference in the knowledge score was statistically significant ($p<0.05$) in different age groups, with the mean knowledge score being higher in the age groups of 18-29 years (23.65±6.85), 30-39 years (24.27±8.22) and 40-49 years (22.47±7.50) (Table 3). However, the attitude and practice scores were comparable for all the age groups. There was no difference in KAP scores concerning the gender of the participants (Table 4).

Age Group (years)	**N**	**Knowledge Score (mean±SD)**	**Attitude Score (mean±SD)**	**Practice Score (mean±SD)**
18-29	26	23.65±6.85	4.35±2.02	4.81±0.90
30-39	15	24.27±8.22	4.20±2.18	4.60±0.83
40-49	17	22.47±7.50	4.24±1.92	4.59±0.62
50-59	13	17.92±6.90	3.31±1.55	4.54±0.66
≥60	17	17.47±5.60	4.00±1.32	4.35±0.49
TOTAL	88	21.49±7.42	4.08±1.84	4.60±0.74
P- Value		***0.011***	0.558	0.401

Table 3 – Mean KAP Scores (Age Group)

Gender	**N**	**Knowledge Score (mean±SD)**	**Attitude Score (mean±SD)**	**Practice Score (mean±SD)**
Male	41	20.83±7.41	4.15±1.68	4.61±0.70
Female	47	22.06±7.46	4.02±1.98	4.60±0.77
Total	88	21.49±7.42	4.08±1.84	4.60±0.74
P- Value		0.44	0.752	0.930

Table 4 – Mean KAP Scores (Gender)

When compared to the place of residence, KAP scores were significantly higher for the participants residing in urban areas than those from rural areas. The mean knowledge score, attitude score, and practice score for the urban residents were 26.86±6.9, 5.11±1.95, and 4.94±0.86, respectively, and those for the rural areas were 17.77±5.18 ($p<0.001$), 3.37±1.37 ($p<0.001$) and 4.37±0.53 ($p<0.001$) (Table 5).

Residence	**N**	**Knowledge Score (mean±SD)**	**Attitude Score (mean±SD)**	**Practice Score (mean±SD)**
Rural	52	17.77±5.18	3.37±1.37	4.37±0.53
Urban	36	26.86±6.90	5.11±1.95	4.94±0.86
Total	88	21.49±7.42	4.08±1.84	4.60±0.74
P- Value		***<0.001***	***<0.001***	***<0.001***

Table 5 – Mean KAP Scores (Residence)

The KAP scores also showed a statistically significant relationship with the education status of the population ($p<0.001$). The knowledge score of the participants with graduation and above was 32.50±2.31, whereas the illiterate subgroup scored 13.72±3.15. Similar results were seen concerning the attitude and practice scores, with the mean values showing a gradual rise with the education status of the population from illiterate to graduation and above (Table 6).

Education	**N**	**Knowledge Score (mean±SD)**	**Attitude Score (mean±SD)**	**Practice Score (mean±SD)**
1 (Illiterate)	29	13.72±3.15	2.97±1.21	4.17±0.38
2 (Primary School)	26	20.77±3.31	3.50±1.45	4.46±0.58
3 (High School)	17	25.47±3.43	4.59±1.77	4.71±0.69
4 (Graduate and above)	16	32.50±2.31	6.50±0.73	5.50±0.73
TOTAL	88	21.49±7.42	4.08±1.84	4.60±0.74
P- Value		***<0.001***	***<0.001***	***<0.001***

Table 6 – Mean KAP Score (Education)

All these results were found to be statistically significant. The percentage score was computed in each subgroup of the education status category (knowledge, attitude, and practice). It also showed similar results, with all scores being higher in the participants who have at least graduated (Table 7).

Education	**Knowledge Percentage Score**	**Attitude Percentage Score**	**Practice Percentage Score**
1 (Illiterate)	28.6%	29.7%	52.1%
2 (Primary School)	43.3%	35.0%	55.7%
3 (High School)	53.0%	45.9%	58.8%
4 (Graduate and above)	67.6%	66.4%	68.8%

Table 7 – Percentage KAP Score (Education)

V. Discussion:

The KAP plays a crucial role in dealing with major global health challenges like pandemics. India has suffered considerable losses in terms of human fatalities and economic growth due to the COVID-19 pandemic. As the scientific community attempts to find a cure to the disease, the population's knowledge, attitudes, and practices are of foremost importance when it comes to combatting the virus. Our study shows the trend of these variables in the general population attending a tertiary care hospital for various cardiac surgeries, which is considered a high-risk subgroup for coronavirus infection.

Our study reported significantly lower knowledge scores among the older population (≥50 years) and illiterate individuals, similar to the study conducted by Christy et al. in South India [4]. The younger population probably has better social and print media access which may explain their better knowledge. The most common source of information about COVID-19 were televised programs, the world web, local press, and social media [5,6]. In recent times social media have emerged as the primary source of information, followed by web sources and scientific papers [7,8]. The above explains the higher scores of knowledge, attitudes, and practices in the educated subgroup.

Narayanaswamy et al. [9] studied the KAP scores among cardiac patients at a tertiary hospital in South India. They did not find any difference in the level of knowledge in the urban patients compared to the rural individuals. They also reported a lower level of practice in rural and urban participants, unlike in our study, where the level of knowledge, attitudes, and practice was significantly higher in urban patients. It may be explained by the inadequate reach of awareness in rural areas due to lesser access to newspapers, media, and healthcare.

Pal et al. [10] studied the KAP among another high-risk subgroup of Type 1 Diabetes mellitus. They also concluded that the level of knowledge was significantly higher in the educated and urban patients. Younger patients were found to have average knowledge, positive attitude, and healthier practices for preventing COVID-19. Less-educated individuals residing in rural areas generally tend to have wider gaps in KAP [11,12]. Differences in knowledge and behavior among urban and rural residents can result from socioeconomic incongruity between them [13].

In a study conducted among medical students, Maheshwari et al. [3] reported appropriate knowledge, positive attitude, and acceptable practice toward COVID-19. Even in this educated study population, the knowledge level was better in the younger age subgroup (21-23 years). Unlike our study, Ferdous et al. [14] found a better level of knowledge among the older participants in a study conducted in Bangladesh. However, when compared to the place of residence, the findings were similar to our study, wherein the urban individuals fared much better in terms of better knowledge, positive attitude, and healthier practices.

Our study shows that the rise in knowledge improves attitude and practices in the urban and educated subgroups of cardiac surgical patients. This is similar to the finding in the Korean study conducted by Lee et al. [15].

A study by BS Tomar et al. [16] stated a strong relationship between gender and knowledge score towards COVID-19. This could be explained by underlying confounding factors such as education level and occupation, providing better information access. Contradictory to the above study, the KAP survey in the Saudi community by Al Hanawi et al. [17] showed better knowledge, positive attitude, and good practice among females toward non-pharmacological preventive measures. This could be explained by the assumption that women were more apprehensive about the adverse effects of the vaccine than contracting COVID-19 [18]; however, in our study, we were unable to find any disparity in KAP scores in relation to the gender of the participants.

Individuals with higher knowledge about the disease and modes of transmission are associated with a more positive attitude and perception 19. Participants with better knowledge about disease tend to have a superior attitude reflected in their better perceptions of preventive actions, resulting in active engagement in positive practices. Several previous KAP surveys performed for various infectious diseases reported identical associations [19,20,21]. A Chinese study demonstrated that higher education corresponds to better knowledge scores, but a similarly designed population survey of the Iranian population had varied conclusions [22,23].

According to Ntontis E et al. [24], poor knowledge, improper information, and deceit can result in hysteria and may cause panic buying. Such hysterical buying may break health supply chains as a shortage of sanitizers, masks, and essential drugs [25]. However, patients in our study did not witness any shortage of cardiac medications at district-level pharmacies and were not involved in stockpiling.

Beliefs about COVID-19 are acquired from variable sources such as public discussions, knowledge about similar viral diseases, governmental outreach programs, social and print media, community experiences, and healthcare sources. The factuality of these beliefs and hence, knowledge determine the attitude and thus the practices for prevention of COVID-19 infection. It varies significantly in the population depending upon age, place of residence, and education, as shown by our study [4]. .

The awareness campaign must be designed to reach people of all age groups equally and effectively, irrespective of their education status and place of residence. For instance, visual depiction of guidelines and awareness through audio campaigns may help target people with varying literacy levels. Social fabric among the community produces everlasting interpersonal bonds, which nurtures empathy and a sense of caring for others [26].

The limitation of our study was a smaller sample size, which could be justified by the fact that the study group was exclusive, and the number of elective cardiac surgeries declined during the lockdown. Regression analysis was not done to establish whether the level of knowledge corroborated with the attitude and practices in each subgroup.

VI. Conclusion:

This single-center KAP study on COVID-19 among cardiac patients who are considered high risk was able to postulate a comprehensive evaluation. The findings suggest that high-risk patients have decent knowledge scores and an overall optimistic outlook on surviving the pandemic. However, novel and far-reaching awareness programs are required for patients who are less educated and reside in rural areas as they are found to have lower

KAP scores. Keeping in mind the probability of upcoming waves in the near future, consistent enforcement of preventive measures from healthcare agencies is crucial to surviving this worldwide pandemic.

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