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ORIGINAL ARTICLE

Knowledge, Attitudes and Practices Towards COVID-19: A Cross-Sectional Survey

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Abstract

Aim To assess the knowledge, attitudes and practices (KAP) regarding the corona virus disease 2019 (COVID-19) pandemic among patients and their attendants visiting the gynaecologic oncology outpatient department (OPD) and to assess the factors associated with a KAP score.

Methodology A KAP cross-sectional survey was conducted over three months exploring KAP relevant to COVID-19. Mann–Whitney *U* test and Kruskal–Wallis test were used to compare the differences in knowledge, attitude and practice by demographic characteristics. Correlation between knowledge, attitude and practice was done using Spearman's rank correlation test. Binary logistic regression analyses were applied to identify possible determinants of good knowledge, attitude and practice.

Results A total of 521 completed questionnaires were included. The study revealed an overall good knowledge (16.09/20), attitude (8.34/10) and practice (12.73/14) scores. Education status, standard of living (rural/urban) and economic status determined an adequate overall knowledge, attitude and practice score, while an adequate practice score varied significantly by standard of living and education status. Significant positive linear correlations were found between knowledge–attitude ($r = 0.513$), knowledge–practice ($r = 0.407$) and attitude–practice ($r = 0.407$).

Conclusion The study demonstrated good overall knowledge, attitude and practices towards COVID-19 pandemic among gynaecological oncology OPD patients and their attendants.

Keywords COVID-19 · KAP · Pandemic · Face masks · Hygiene · Crowding

Introduction

The novel corona virus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which was initially detected in Wuhan, China, in December 2019, has already taken on pandemic proportions, affecting the whole world in a short span of time [1]. There has been a relentless progression in the numbers of cases detected since day one after the first detection, despite extensive efforts at combating the pandemic situation. Despite no curative treatment, plenty of research and development activities are underway at national and international levels to explore a curative treatment [2, 3]. Successful vaccination drives are ongoing in India since January 2021 [4]. In addition to vaccination and efficient management of the disease, enhanced awareness and infection control measures, along with other mitigation strategies, such as social distancing and face masks, are very important tools in terms of COVID-19 pandemic management [5].

India being a country of vast socio-economic diversity, there is disparity in terms of availability of health resources to the population. Enforcement of an immediate lockdown, which was praised by the WHO (World Health Organization) as "tough and timely", and cluster containment to

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break the chain transmission are effective approaches [6]. However, public awareness and conforming with recommendations play a much more important role in managing and overcoming such a global crisis. Several international studies have pointed out ways of preventing, managing and reducing the spread of COVID-19 globally [3, 7]. Current guidelines continue to emphasise the importance of washing/disinfecting hands, observing social distancing of at least 1–2 m, avoiding crowds, avoiding touching one's mouth/nose and using appropriate masks [8]. People suffering from cough and other medical complaints are advised to seek medical attention.

Understanding the current level of knowledge, attitude and practices of a population would help provide a better insight to address gaps in preventive strategies and health promotion programs [9]. In this survey, the knowledge, attitudes and practices (KAP) regarding COVID-19 outbreak among patients and relatives attending a hospital and its associated risks will be investigated. The survey will also give us a general picture of prevention practices and may play an important role in our future efforts focusing on societal readiness to comply with pandemic control measures.

Primary Objective

To assess the knowledge, attitudes and practices (KAP) regarding the COVID-19 pandemic among patients and their attendants visiting the gynaecologic oncology outpatient department.

Secondary Objective

To assess the factors associated with the level of KAP regarding the COVID-19 outbreak.

Material and Methodology

The KAP survey instrument is based on the information published in the literature including those available on WHO and Centre for Disease Control and Prevention (CDC) [10–12]. The developed questionnaire was first assessed in a pilot study on fifty participants to understand the barriers faced, acceptance and the chronology of the questionnaire. The questionnaire was refined based on inputs from the pilot study, and the final KAP questionnaire was created. The ethics approval was taken from institutional ethics committee (IEC) before starting the study.

A cross-sectional survey was conducted at the outpatient department of gynaecological oncological OPD at our institute. All patients and their relatives (maximum of two relatives per patient) aged 18 years and above who were willing to give consent to participate in this survey were included in the survey. The survey was conducted over a period of three months from 15 February 2021 to 14 May 2021. They were handed over a pre-validated KAP questionnaire in their preferred vernacular language (Hindi/English/Marathi) and forms were self-filled (supplementary appendix). Assistance was provided whenever needed, by the OPD personnel while maintaining social distancing norms. Only survey forms that were completely filled were included in the final analysis. Incomplete forms and inadequately filled forms were excluded.

The questionnaire consisted of four main domains: (1) demographics, (2) knowledge about COVID-19, (3) attitudes towards COVID-19 and (4) practices relevant to COVID-19. To measure knowledge about COVID-19, 20 items were included. These items included the participant's knowledge about clinical presentations (items 1–5), transmission routes (items 6–10) and prevention, treatment and control (items 11–20) of COVID-19 infection. Participants were given "yes", "no" or "don't know" and "no opinion" response options to these items. To measure attitudes towards COVID-19, surveyed participants were examined with questions assessing their viewpoints on social distancing, hygiene, severity of infection and the guidelines given by the government and health authorities to prevent transmission of COVID-19 and treatment guidelines (agree, disagree, or don't know or no opinion). To measure practices, participants were asked questions regarding implementation of hand hygiene, social distancing, crowding and travel restrictions. The responses were rated on a 5-point Likert-type scale ranging from 1 to 5 (1 = not at all and 5 = extremely). Each correct answer was given a score of 1 and incorrect answer a score of 0. The minimum and maximum scores for knowledge, attitude and practices were 0 and 20; 0 and 10; and 0 and 14, respectively.

The data were collected and analysed using the Statistical Package for the Social Sciences (SPSS), version 25.0 Mean with standard deviation was calculated for descriptive analysis. Mann–Whitney U test and Kruskal–Wallis test were used to compare the differences in knowledge, attitude and practice by demographic characteristics. Spearman's rank correlation test was used to identify any correlation between knowledge, attitude and practice. Binary logistic regression analysis was applied to identify possible determinants of good knowledge and practice. The statistical significance level was set at $p < 0.05$.

Results

A total of 614 survey forms were circulated out of which 521 forms (84.85%) were included in the final analysis. The sociodemographic profile is detailed in Table 1. The

Table 1 Demographic profile of participants

	Number	Percentage
Gender		
Female	321	61.6
Male	200	38.4
Age group		
18–30	109	20.9
30–50	159	30.5
> 50	253	48.6
Relation to patient		
Patient	246	47.2
Relative	275	52.8
Standard of living		
Rural	110	21.1
Urban	411	78.9
Education status		
Primary level of education	126	24.2
Secondary level of education	192	36.9
More than secondary education	203	39.1
Economic status		
Low-income group	125	24.0
Middle-income group	215	41.3
High-income group	181	34.7

mean age of participants was 43.03 years (range 18–79). 61.6% were female participants and majority belonged to urban background (78.9%). Nearly 40% were educated beyond secondary level of education (39.1%).

Knowledge Score Related to COVID-19

As to knowledge score, the mean score was 16.09 ± 3.669 (range 0–20) suggesting a relatively high rate of knowledge. The correct answer rates of the 20 questions on the COVID-19 knowledge questionnaire ranged from poor (with only 44% answering correctly that body pain is a symptom of COVID-19) to near-universal knowledge (with 94% answering correctly that they should avoid contact with individuals suspected to be infected with COVID-19). Knowledge score varied significantly by education status, standard of living (rural/urban) and economic status (Table 2). Participants who belonged to higher-income group had better knowledge of clinical presentation and transmission of COVID-19. Those who had completed only primary education had less knowledge about treatment of COVID-19 (Table 3).

Attitude Scores Related to COVID-19

As to attitude scores, the mean score was 8.34 ± 2.281 (range 0–10), suggesting that participants agreed regarding the severity of COVID-19 infection and believed in the guidelines given by the government and health authorities to prevent transmission of COVID-19 (Table 4). More than 90% participants agreed that regular hand wash and maintaining social distancing prevented COVID-19, and they will go to hospital if they developed signs of COVID-19. Overall attitude score varied significantly by standard of living, education and economic status. Participants belonging to rural background had less agreement about hygiene practices to prevent spread of COVID-19 and those who had only primary level of education or those belonging to lower-income group had less agreement about social distancing.

Practice Score Related to COVID-19

As to practice score, the mean score was 12.73 ± 2.957 (range 0–14), suggesting that participants complied very well in regard to appropriate infection prevention and control practices most of the times (Table 4). Around 94% participants washed their hands regularly, covered their nose and mouth while sneezing and avoided visiting a crowded place except during emergency. Overall practice score varied significantly by standard of living and level of education. Participants living in rural area and belonging to lower-income group had less hygiene practice as compared to others.

Relationship Between Knowledge, Attitudes and Practices

The correlation revealed significant positive linear correlations between knowledge–attitude ($r = 0.513$, $p = 0.000$), knowledge–practice ($r = 0.407$, $p = 0.000$) and attitude–practice ($r = 0.407$, $p = 0.000$) (Table 5).

Discussion

The COVID-19 pandemic has caused loss of innumerable lives and has affected health and economics of the entire world. This survey was conducted during the second wave of COVID-19 pandemic when there was a rapid rise of cases. The study demonstrates that the participants have good overall knowledge about COVID-19, including the transmission of the virus through respiratory droplets of infected people and clinical symptoms of the disease. The high overall knowledge score may be attributed to the

Table 2 Distribution of adequate knowledge, positive attitude, and appropriate practices based on the demographics and characteristics of the participants

	Adequate knowledge score *n* (%)		Adequate attitude score		Adequate practice score	
Overall	356 (68.3)		401(76.96)		412(79.07)	
Gender		.684		.561		.580
Male	135 (67.5)		152(76)		159(79.5)	
Female	221(68.84)		249(77.57)		253(78.81)	
Standard of living		**0.013**		**0.007**		**0.003**
Rural	66(60)		83(75.45)		78(70.9)	
Urban	290(70.55)		318(77.37)		334(81.2)	
Education status		**.000**		**.000**		**.020**
Primary level of education	69(54.76)		80(63.49)		87(69.04)	
Secondary level of education	127(66.14)		142(73.95)		156(81.25)	
More than secondary education	160(78.81)		179(88.17)		169(83.25)	
Economic status		**.000**		**.000**		.104
Low-income group	68(54.4)		76(60.8)		91 (72.8)	
Middle-income group	144(66.97)		164(76.27)		166 (77.21)	
High-income group	144(79.55)		161(88.95)		155(85.63)	

Table 3 Sociodemographic determinants of knowledge score

	Knowledge on clinical presentation			Knowledge on transmission of COVID-19			Knowledge on treatment of COVID-19		
	p value	OR	95% CI	*p* value	OR	95% CI	*p* value	OR	95% CI
Gender	.073	.486	.220–1.071	.442	.796	.445–1.424	.123	.590	.302–1.153
Rural/urban living	.539	.852	.511–1.421	.130	.709	.454–1.107	.774	.932	.576–1.508
Education status									
Primary level of education	.188	.608	.289–1.276	.715	.888	.471–1.675	**.041**	**.492**	.249–.971
Secondary level of education	.291	.711	.378–1.339	.701	.904	.539–1.514	.702	.893	.500–1.594
Economic status									
Low-income group	**.014**	**.375**	.172–.817	**.003**	**.369**	.192–.708	.505	.788	.392–1.586
Middle-income group	**.022**	**.464**	.240–.895	**.008**	**.498**	.297–.834	.536	.836	.473–1.477

OR odds ratio, *CI* confidence interval

massive media coverage, social networks and regular health communication measures taken by the various government and non-government organisations and also from experiences from the first wave of the COVID-19 pandemic [13].

Despite a good knowledge score, they were poor in their knowledge regarding body pain being the symptom of COVID 19 or the severity of this infection in pregnant women or that face masks can protect them contracting the virus. This leaves an important gap in the knowledge, which might result in disregarding the healthcare guidelines or reporting to health facility late if symptoms develop. It is hence recommended that public health practitioners and policymakers promote knowledge and understanding while addressing contextual factors that may hinder the public's learning processes concerning health information. The knowledge score varied significantly with the demographic profile that is the level of education or economic status or the standard of living. Similar association was noted by a study conducted in China and in India. This highlights the importance of availability of adequate resources with higher education levels leading to appropriate comprehension of information and thereby better knowledge on COVID-19 [10, 14]. No association was found between gender and knowledge scores or overall score of KAP similar to several other published studies

Table 4 Sociodemographic determinants of attitude and practice score

	Attitude score on hygiene			Attitude score on distancing			Attitude score on severity of infection			Practice score on hygiene practices			Practice score on distancing		
	p value	OR	95% CI	*p* value	OR	95% CI	*p* value	OR	95% CI	*p* value	OR	95% CI	*p* value	OR	95% CI
Gender	.125	.601	.313–1.152	.584	.823	.411–1.650	.852	1.056	.595–1.873	.302	.602	.229 -1.579	.522	1.306	.577
Rural/urban living	**.008**	**.533**	.334–.851	.798	1.072	.631–1.822	.423	.830	.526–1.310	**.049**	**.553**	.306–.998	.113	.613	.335
Education status															
Primary level of education	.143	.595	.297–1.191	**.033**	**.439**	.205–.938	.114	.590	.306–1.136	.259	.591	.237 -1.474	.122	.490	.199 1.209
Secondary level of education	.627	.865	.483–1.551	.204	.653	.338–1.260	.179	.692	.405–1.184	.935	.966	.421 -2.217	.848	.924	.414 -2.062
Economic status															
Low-income group	.105	.553	.270—1.132	**.030**	**.425**	.196–.919	.604	.839	.432–1.630	**.049**	**.379**	.145–.994	.825	.898	.347–2.327
Middle-income group	.114	.625	.349–1.119	.239	.672	.346–1.302	.590	.864	.509–1.468	.193	.570	.244–1.329	.391	.710	.325–1.551

OR odds ratio, *CI* confidence interval

[14, 15]. Majority of participants in the study were from urban background (78.9%) probably because of several travel restrictions during the pandemic.

The overall belief in the healthcare guidelines was relatively good, especially on preventive measures taken for both personal hygiene and social distancing. Most participants complied well with the recommended practices such as wearing facial masks, practicing hand hygiene and social distancing to prevent COVID-19 infections. The study revealed positive correlation between knowledge and attitude and practice. Similar results were noted in studies wherein knowledge score had a significant association with positive attitude and practice [14, 15]. It was also noted that attitude score had a significant and robust impact on practicing preventive behaviours, thereby implying that to promote optimal preventive behaviour among the public, both adequate knowledge of disease and prevention and belief in the preventive measures are required. For example, people need to believe that washing hands would keep them from being infected, beyond merely informed so, to perform and sustain the behaviour. While knowledge itself is at the root of learning, a discrepancy between information delivered and received is expected, given individual characteristics and acceptance. It is to be acknowledged that communication is an on growing dynamic process, which is dependent on individual cognitive and psychological factors.

The practice score was very high with a mean score of 12.73 out of 14. This demonstrates good adherence to safety practices most of the times. Similar high percentage of adequate practice score was found by Almohammad et al. who noted 80.2% adherence [16]. This can be primarily attributed to strict health care measures taken by the government and authorities in trying to prevent the spread of the pandemic as noted by another study by Tomar et al. [14]. Strict law enforcement measures along with the fear of being reprimanded for not obeying to government rules might have also improved the overall practice score. Sometimes practice overrides knowledge and beliefs because of the overall fear created by the enforcement authorities. This might have also been augmented by the awareness and acceptance of these measures by the common people.

Such findings on the KAP survey help provide valuable insights into how important public health initiatives are in improving overall population's health during public health emergencies, such as emerging infectious disease pandemics. First of all, knowledge plays a crucial role in enhancing the practice of public preventive behaviour, as shown in the study with a positive correlation between knowledge and practice. It is hereby implied that for achieving adequate control of pandemic, sufficient knowledge must be dissipated with adequate evidence in an

Table 5 Relationship between knowledge, attitudes and practices

	Knowledge score		Attitude score		Practice score	
	Correlation coefficient	*p* value	Correlation coefficient	*p* value	Correlation coefficient	*p* value
Knowledge total	1		.513	.000	.407	.000
Attitude total	.513	.000	1		.407	.000
Practice total	.407	.000	.407	.000	1	

understandable language through various broadcast methods. In addition to promoting knowledge of a disease to aid in supporting preventive practices, it is common for public health advocates to try to create positive attitudes about overcoming health challenges to promote action.

The group most in need of persuasion are the population belonging to lower socioeconomic status with poor access to healthcare facilities, communication and internet. Efforts need to be made to ensure that information and adequate resources for prevention of such contagious diseases are accessible to all and special efforts were taken to make it available to the less privileged. For a disease without curative treatment, prevention is the only solution. Until the majority of the population become vaccinated and the country attains an optimal level of herd immunity, preventive measures rely heavily upon the KAP of the population affected [15]. Practice can also be enforced by enforcing rules, restrictions and monitoring adherence.

There are a few limitations of the present study. It is cross-sectional in nature and hence has relevance for a particular point of time in a pandemic, which is still evolving. The study was conducted during the second wave of pandemic of COVID-19 wherein population already had learnt from their experiences with the first wave of COVID-19 pandemic. The relevance of KAP as it is done in the second wave of pandemic is not known. The participants included those visiting a cancer hospital, and the results cannot be extrapolated to general population.

The self-reporting nature of the questionnaire relies on the honesty of the participant and his/her understanding and interpretation of the questions. But it has an advantage of zero interference from the investigator and the participant can fill the form without any fear of being judged for the answers or his/her behaviour. Due to limited set of questions regarding KAP on COVID-19, an in-depth multidimensional understanding of the behaviour of general population cannot be made. We could not explore the various barriers or other factors that may have affected the poor KAP score in a limited set of individuals.

Conclusion

The study demonstrated good overall knowledge, attitude and practices towards COVID-19 pandemic. At times of such health emergencies, public awareness and adequate precautionary measures need to be taken in accordance with the guidelines issued by the health authorities. This study shows that adequate knowledge is the backbone of precautionary measures that will help predict a good attitude and behaviour of the common public. Health authorities must ensure that adequate resources are made available for the less privileged.

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1007/s40944-022-00624-1.

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