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Knowledge and apprehension score correlation among healthcare workers in COVID-19 block of tertiary care hospital

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ABSTRACT

COVID-19 was first detected in Wuhan (China), in December 2019. Mode of transmission was by respiratory droplets or by surface transmission. Changing symptoms, treatment guidelines, and increased transmissibility of the virus were a concern among the healthcare workers. During the pandemic, the anxiety and stress levels were high among HCWs as they were disturbed by the increased caseload with colleagues testing positive. The present study aimed to find a correlation between knowledge and fear among health care workers working in COVID-19 areas of a tertiary care government hospital.

Materials and Methods: This was a hospital-based study conducted at a tertiary care hospital, Rishikesh, Uttarakhand. It was an observational study with a cross-sectional study design. The study was conducted in OPD and IPD of COVID-19 for a period of three months. Study participants were consultants, residents, nurses, hospital attendants, and paramedical staff. Pre-structured questionnaires for knowledge and fear assessment were utilized.

Results: A total of 358 study participants were enrolled. The mean age of study participants was 29 ± 6.17 . The mean knowledge and fear score of all study participants was 9.85 ± 1 and 19.86 ± 5.2 respectively. A negative correlation ($r = -0.04$) was found between the knowledge and fear scores. There was a significant difference in knowledge among different groups of HCWs, but the level of fear was not significantly different.

Conclusion: It was established that the negative correlation between the knowledge and fear score among health care workers working in COVID-19 situation in tertiary health care hospital. Regular training and dissemination of the new updates regarding the pandemic can help in allaying the fear. Making appropriate personal protective equipment available at the healthcare center will boost the confidence of the health workers.

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1. Introduction

COVID-19 was first detected in Wuhan (China), in December 2019. The outbreak of novel coronavirus disease 2019 (COVID-19) was declared as a Public Health Emergency of International Concern (PHEIC) on 30 January 2020.¹ Mode of transmission was by respiratory

droplets,² or by surface transmission.² Fever, dry cough, fatigue, sore throat, myalgia were a few of the main clinical symptoms, but many were asymptomatic.³ WHO (World Health Organisation) reported that more than 80% of COVID-19 patients showed mild symptoms and recovered without any medical intervention, approximately 20% of infected cases had a severe illness such as shortness of breath, septic shock, and multi-organ failure, and it has been reported that an estimated 2% of cases can be fatal.⁴

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Improper knowledge about incubation period, geographical spread, mortality rate, and lack of treatment measures led to fear in people.⁵ Unavailability of adequate preventive measures and exposure of health care workers to COVID-19 patients increased the rate of COVID-19 positive health care workers (HCWs). This situation had also affected the mental health of HCWs as many of them lost their lives. The isolation period and unknown facts about the virus produced fear, stress and this led to anxiety and depression in HCWs.⁶ Existing literature supports that pandemics, apart from causing mortality and physical morbidities, also lead to tremendous mental health problems (insomnia, anxiety, depression, stress-related disorders including post-traumatic stress disorders) in the sufferers as well as in the non-infected public.^{7–10} On 11th March 2020, WHO announced COVID-19 viral infection as a “pandemic”. Steps were taken by the government of many countries to seal the country completely and impose lockdown on the whole country.¹¹ The emergence of the COVID-19 and its consequences has led to fears, worries, and anxiety among individuals. However, current treatment on COVID-19 has mainly focused on infection control, effective vaccine, treatment cure rate, the psychosocial aspect considering fear component is yet to be thoroughly considered.¹² To educate the people about the pandemic: social media, news channels, newspapers, etc. were used but there was a doubt that if every news will reach people, then this may either lead to stress or worsen the situation, rather than help people to win against this war. Knowledge about any disease affects the practice and attitude of HCWs, but if there is spread incorrect knowledge then this can lead to more risk of infection of disease.¹³ Earlier studies have shown a positive correlation between knowledge and the attitude of HCWs, but very few studies have shown the impact on mental health. Despite the high level of anxiety, people are supposed to follow all guidelines and leave no room for error.⁵ Few iterations have shown, that to understand the level of knowledge, attitude, and perception among HCWs more educational interferences are required.^{7,8} Inordinate fear may lead to severe psychological disorders and hamper functioning of an individual. In the COVID-19 pandemic situation, fear increased the anxiety and stress levels in healthy individuals.⁵ Many studies focused especially on the correlation of knowledge, attitude, and practice in COVID-19 among HCWs^{14,15} but no study focused on the correlation between knowledge and fear. The present study aimed to find a correlation between knowledge and fear among health care workers working in COVID-19 areas of a tertiary care government hospital.

2. Materials and Methods

This was a hospital-based study conducted at a tertiary care hospital, Rishikesh, Uttarakhand. It was an observational study with a cross-sectional study design. The study was

conducted in OPD and IPD of COVID-19 for a period of three months. Study participants were consultants, residents, nurses, hospital attendants, and paramedical staff. Study participants were those who gave consent and worked in COVID-19 OPD and IPD areas. Participants not willing to participate in the study were excluded from the study. Data regarding socio-demographic parameters and questionnaires were filled by the study participants through an online survey using google forms. Pre-structured questionnaires for knowledge⁴ and fear¹⁰ assessment were utilized. To calculate sample size there is no data available on correlation between knowledge score and fear score thus, we assumed the correlation coefficient of 0.15 with 95% confidence level and 80% power. The sample size came out to be 348, considering for 20% of non-response rate the approach will be among minimum 450 of health care workers using Purposive sampling technique. Data were entered in Microsoft excel and were analyzed using SPSS 22.0 version.

3. Results

Study participants were enrolled irrespective of gender, those who were willing to give consent and working in COVID-19 OPD and IPD areas. Among 358 study participants, 206 were male and 152 were females. The mean age of study participants (consultants, residents, nurses, hospital attendants, and paramedical staff) was 29 ± 6.17 . The mean knowledge and fear score of all study participants was 9.85 ± 1 and 19.86 ± 5.2 respectively.

A negative correlation ($r = -0.04$) as found between the knowledge and fear scores, reflecting more the level of knowledge in hospital workers, less was the fear. Though this correlation was not statistically significant.

Table 1 is depicting the number of study participants in each category and their mean scores. There were 102 residents, 55 consultants, 93 nursing officers, 16 technical assistants, and 92 hospital attendants. The mean knowledge score (mean + SD) for residents was 10.16 ± 1 and the fear score (mean + SD) was 20.11 ± 5.6 . Consultants' knowledge and the fear score were 10.43 ± 0.87 and 20.2 ± 4.7 respectively. Knowledge and fear score for nursing officers was 9.6 ± 1 and 18.68 ± 6.5 . The knowledge and fear score of technical assistants was 9.81 ± 0.83 and 18.31 ± 3 respectively. The knowledge and fear score of hospital attendants was 9.34 ± 0.96 and 20.85 ± 3.7 respectively. After applying ANOVA, the p-value for knowledge score was 0.001 and for fear score was $P = 0.04$, depicting there was a significant difference in knowledge among groups, but the level of fear was not significantly different.

Study participants were enrolled irrespective of gender, those who were willing to give consent and working in COVID-19 OPD and IPD areas. Among 358 study participants, 206 were male and 152 were females. The mean age of study participants (consultants, residents,

Table 1: Mean knowledge and fear scores of different groups

Scores	Resident Doctors (n=102)	Consultants (n=55)	Nursing officers (n=93)	Technical assistants (n=16)	Hospital Attendants (n=92)	Test statistics (ANOVA)
Knowledge Score (mean \pm SD)	10.16 \pm 1	10.43 \pm 0.87	9.6 \pm 1	9.81 \pm 0.83	9.34 \pm 0.96	P= 0.001
Fear score (mean \pm SD)	20.11 \pm 5.6	20.2 \pm 4.7	18.68 \pm 6.5	18.31 \pm 3	20.85 \pm 3.7	P= 0.04

SD= standard deviation

Table 2: Mean knowledge and fear scores

Scores (n = 358)	Mean \pm SD
Knowledge score	9.85 \pm 1
Fear score	19.86 \pm 5.2

SD = standard deviation

nurses, hospital attendants and paramedical staff) was 29 \pm 6.17. The mean knowledge and fear score of all study participants was 9.85 \pm 1 and 19.86 \pm 5.2 respectively (Table 1).

Table 3 is showing the correlation of the knowledge and fear score by Pearson's correlation. Negative correlation between the knowledge and fear scores was observed, reflecting more the level of knowledge in hospital workers, less was the fear. Though this correlation was not statistically significant.

4. Discussion

The COVID-19 Fear Scale (FCV-19S) used in the present study was developed by Ahorsu et al¹⁰ to complete the clinical efforts in preventing the spread and treatment of COVID-19 cases. It was concluded that the Fear of COVID-19 Scale, is reliable and valid to evaluate fear in the general population and useful to compliment the COVID-19 fears among individuals. The COVID-19 knowledge scale used in the present study was used by Zhong LB et al⁴ to assess knowledge, attitudes, and practices in Chinese residents and he concluded that the COVID-19 knowledge score was significantly related to negative attitudes and preventive practices.⁴ Cawcutt KA, et al. assessed fear in the COVID-19 pandemic in healthcare workers and observed that HCW's who was working in the frontline to treat COVID-19 had less fear.¹⁶ Few studies assessed the psychological problems in pandemic and observed that mortality rate due to psychiatric problems were more as compared to suspected and confirmed cases of COVID-19. Few studies concluded that to treat COVID-19 victims there should be adequate information provided to all individuals, psychological counselling and multidisciplinary health care team should be involved necessarily.⁵ In our study it was observed that the correlation between knowledge and fear is negative ($r = - 0.04$), reflecting more the knowledge level in hospital workers, less was the fear. Fear score 20.85 \pm 3.7

was high in hospital attendants who were working in tertiary care hospital during COVID-19. But as the level of knowledge increased among consultants and nurses, fear was less. So, to reduce the fear level about COVID-19, there should be more knowledge dissemination among healthcare workers.

Nemati M et al. (2020) assessed knowledge and anxiety in Iranian Nurses during COVID-19. In the study self-administrated knowledge questionnaire was distributed to 85 participants and the level of awareness was measured. They concluded that Nurses had good knowledge about COVID-19 sources, transmission, mortality rate, sign, symptoms and treatment. 6.02 \pm 2.6 was mean anxiety score for themselves and 6.87 \pm 2.8 was score of anxiety about their family getting infection.² In our study the fear score in healthcare workers was assessed and it was found to be high 20.85 \pm 3.7 among all health care participants. Roy D, et al. (2020) assessed about the need of perceived mental healthcare, knowledge, attitude, and anxiety in COVID-19 pandemic. They observed that in more than 80% participants' mental healthcare need was present.⁹ As per the results of present study, it can be stated that by disseminating more knowledge, level of fear can be reduced. As there is negative correlation ($r = - 0.04$) between the knowledge and fear scores, reflecting more the knowledge level in hospital workers, fear will be less. In our study, there was 358 participants and consultants had good knowledge score 10.43 \pm 0.87, and hospital attendants had less knowledge score 9.34 \pm 0.96.

Shi Yudong, et al. (2020) assessed Chinese psychiatric medical staff for knowledge and attitude toward COVID-19. In their study 141 psychiatrists and 170 psychiatric nurses were taken. Among the medical staff in psychiatric hospital only 89.51% had knowledge about COVID-19 and 64.63% had received appropriate training.¹ Zhang M., et al. (2020) analyzed the knowledge, attitudes, and practice in health care workers in China. They found

Table 3: Correlation between knowledge and fear scores

Scores (n=358)	Pearson's correlation
Knowledge score	r= - 0.04
Fear score	

r= correlation coefficient

that in 89% of HCWs, the level of knowledge was sufficient, > 85% was afraid of self-infection and 89.7% were adopting accurate practice towards COVID-19. Work experience and job category influenced health care workers' attitudes and practice towards COVID-19.¹³ Huynh G, et al. (2020) assessed healthcare workers' knowledge and attitude concerning COVID-19 at Ho Chi Minh City. Healthcare workers show positive attitude concerning to COVID-19 and had good knowledge. The correlation between knowledge and attitude scores was negative ($r=-0.21$, $P<0.001$) but the level of knowledge and attitude was lower than that expected.⁷ Bhagavathula AS, et al. (2020) assessed Knowledge and Perceptions of Healthcare Workers towards Novel Coronavirus. From their study they concluded that profession and age directly influence the knowledge and perception of individual about COVID-19. We need to use more new interventions to change the perception of health care workers about COVID-19 transmission, symptoms, precautions, and intervention.⁸ Limbu DK, et al. (2020) assessed healthcare workers' knowledge, attitude, and practice during COVID-19 pandemic. They found that mean knowledge score was 10.59 ± 1.12 and there was no change in knowledge according to demographic features. For 53.4% participants' attitude was positive with mean of knowledge 10.35 ± 1.19 but attitude was negative for 46.6% participants with mean of knowledge 10.88 ± 0.98 . Practice was good for 81.5% participants and for 18.5% people it was poor. But participant's attitude positively enhanced by increasing age.¹⁴ Abdel Wahed WY, et al. (2020) assessed healthcare workers' perception, knowledge, and attitude in COVID-19 situation. They found that ($r = 0.215$, $p < 0.001$) correlation was positive between knowledge and attitude. Level of knowledge is best in physicians, followed by pharmacist, nurses, technician and house keepers. As compared to knowledge, attitude was positive among allied health care workers.¹⁵ In our study the mean knowledge and fear score was calculated, and it was observed that knowledge score was different for different category of workers. Mean Knowledge score among consultants was high 10.43 ± 0.87 , and it was less among hospital attendants. Knowledge score among residents, nursing officers and technical assistants was 10.16 ± 1 , 9.6 ± 1 and 9.81 ± 0.83 respectively. Our study was depicting that the job category had no influence on the fear score. Knowledge score 9.34 ± 0.96 was less among hospital attendants while fear score was 20.85 ± 3.7 shows fear was more. In contrast knowledge score among consultants was high 10.43 ± 0.87 , and the fear score 20.2 ± 4.7 was also high as compared

to other staff of hospital. There was good knowledge about COVID-19 among all healthcare workers but there was change in level of knowledge in different groups of healthcare workers.

5. Conclusion

It was established that there is negative correlation between the knowledge and fear score among health care workers working in COVID-19 situation in tertiary health care hospital. Regular trainings and dissemination of the new updates regarding the pandemic can help in allaying the fear. Making appropriate personal protective equipment available at the healthcare center will boost the confidence of the health workers.

6. Source of Funding

The authors declare no conflict of interest

7. Conflict of Interest

None.

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