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# Awareness Regarding COVID-19 Among Health Care Workers in a Tribal District of Chhattisgarh, India

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## ABSTRACT

**Background:** Covid-19 pandemic has over 79 million cases and 1.7 million deaths globally till the last week of December 2020. Its high burden is a great concern for the entire world. The pandemic has placed extraordinary levels of physical risk & psychological stress on health care (HCW) workers. Addressing HCW knowledge, attitude & practice is very crucial in managing the covid-19 outbreak.

**Objective:** Explore knowledge, attitude & practice about Covid-19 among HCW of a tribal district in central India.

**Methods:** This is hospital-based cross-sectional study. 125 participants were included following convenient sampling and a self-developed questionnaire was used to collect data regarding knowledge, attitude & practice of newly appointed HCW in a tertiary care hospital in Raigarh which is a tribal district of Chhattisgarh. Knowledge, Attitude and practice score calculated and tested with socio-demographic variables.

**Results:** Proportion of adequate knowledge, positive attitude and good practice among participants were 41%,75% & 84% respectively. We found higher knowledge score for age (9+3.49 & 8+3.06 ), family type (8.63±3.47 & 7.82±2.57), work sector (8.55±3.41 & 7.68±2.24), education (9.09+3.61 & 6.33+2.06 ), profession (9.04+3.32 & 7.35+ 3.38 ) and specific work (9.33+3.28 & 7.86+2.93) in covid-19. 71% Doctors & nurses have positive attitude comparing to 29% among nurses which is significant (p=0.04).

**Conclusion:** HCW must be motivated by authorities to acquire adequate knowledge, a positive attitude and good practices. Knowledge attitude and practice of the health care workers is crucial in fighting the Covid-19 outbreak and authorities can empower health care workers with updated knowledge which in turn will improve their attitude and practice.

**Key Words:** Attitude, Health care workers, Knowledge, Ministry of Health & Family Welfare, Practice, Quarantine, World Health Organization

## INTRODUCTION

Covid-19 is currently the most challenging pandemic that has over 79 million reported cases and over 1.7 million deaths globally till the last week of December 2020.<sup>1</sup> After the experience of the H1N1 Swine flu pandemic in 2009 that had affected more than 214 countries including over 18398 deaths.<sup>2</sup> It has once again shifted the focus of the entire world towards the importance of communicable disease and Public health. The causative agent of Covid-19 is an enveloped, positive-sense, single-stranded Ribonucleic Acid virus that belongs to the B lineage of the beta coronavirus.<sup>3</sup> This novel strain called SARS-Cov2 has less pathogenicity but higher

transmission competence leading to the rapid increase of cases globally.<sup>4</sup> During December 2019 almost a year back world health organization (WHO) first learned of this new virus following a series of case reports from Wuhan city, China.<sup>5</sup> With a continuous explosive rise of cases WHO declared this outbreak as Public health emergency of international concern (PHEIC) on 30<sup>th</sup> January 2020 and a global pandemic on March 11, 2020.<sup>6,7</sup> Its high burden is a great concern for the entire world. As of 9<sup>th</sup> January, 2021 total cumulative cases was 100, 566, 51 in India and 27,5042 in Chhattisgarh state.<sup>8</sup>

WHO in its press release on 17<sup>th</sup> September 2020 empha-

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sized the persistent threat to the health and safety of health workers in the fight against Covid -19 disease. Infection among Health workers is 14%-35% of total covid-19 infection reported to WHO from various countries. In addition to physical risks, the pandemic has placed extraordinary levels of psychological stress on health workers. This makes addressing health workers knowledge, attitude & practice very crucial in managing the covid-19 outbreak.<sup>9</sup>

## MATERIALS AND METHODS

### Study Design

A cross-sectional study was carried out among health care workers, working in a recently inaugurated tertiary care hospital dedicated to catering to the health care needs of the Tribal population of the area.

### Study subject

Our study population comprises newly joined Nurses, Doctors & Faculties of this institute. We collected a staff list from the establishment section of our institute.

### Sampling technique

Following convenient sampling, we contacted 150 persons.

### Patient selection

All staffs who gave consent to participate. Patients those not using a smartphone with internet connectivity were excluded. Out of 150 twenty-five persons were excluded based on criteria and the final sample size was 125. We have used a self-designed questionnaire to estimate study objectives.

### Study tool

The questionnaire was prepared by reviewing previous articles on a similar topic and visiting websites of the Ministry of Health and Family Welfare, GOI and Indian Council of Medical Research.<sup>10-13</sup> The questionnaire is divided into four sections: thirteen questions in section one on socio-demographic variables, ten questions in the second section for knowledge, eight questions in the third section for attitude and nine questions in the last section addressing the practice of participants. Each correct response was given a score of 1 for attitude as well as practice and in the knowledge section, each correct response assigned a score of 2. All incorrect responses were assigned zero scores each. Total possible scores are 20, 9 and 5 for knowledge, practice & attitude respectively. Cut off score was kept to categorize each domain as 10 for  $\geq 10$  for adequate knowledge,  $\geq 3$  for the positive attitude and  $\geq 5$  as good practice. We prepared this questionnaire as a survey form using Google docs and sent it to all participants directly in online modes like Email and WhatsApp.<sup>14</sup> Sufficient care was taken to maintain confidentiality

for participants, one participant could submit responses once only. After receipt of all 125 forms, we changed the Google docs setting to “stop receiving responses” and planned data analysis. Data was downloaded from Google docs, entered in Excel format, coding is done for variables to maintain anonymity.

### Data Analysis

Descriptive statistics used to describe study variables as proportion, frequency, mean and standard deviation. Appropriate statistical tests like the Chi-square test for categorical value in 2x2 tables, student t-test for comparing means of two groups, one way ANOVA for comparing means of more than two groups, Pearson correlation test for continuous quantitative data are used for data analysis.

## RESULTS

### Socio-demographic characteristics of participants

More than half of the participants were younger than 30 years age in the current study. The proportion of female participants is more, the male-female ratio being 1:1.19 in our study. Participants staying in the urban locality and unmarried at the time of study makes around two-thirds of all. Again it was noted that most of them resides in the nuclear family and working in government facilities. Nearly half of the participants have completed MBBS & around one-fourth comprised of recently graduated BSc nurses. About 50% of participants were frontline worker which is defined as health care workers involved directly in inpatient treatment, handling of patient's sample or dealing with biomedical wastes of the patient.<sup>15</sup> Around 60% were involved in special tasks of Covid-19 management that include the screening of Covid-19 suspected, working in RTPCR or treat laboratory, treatment of admitted Covid patients at Covid care centre or Dedicated Covid hospital of our institute. Almost 70% at present didn't have a risk factor for corona infection such as diabetes mellitus, hypertension, smoking, under-nutrition, obesity, immune-compromised state.<sup>16</sup> A high level i.e. 83% use of the private vehicle for transportation by participants could be due to the effect of lockdown and awareness about social distancing. Around one-third of participants reported covid-19 incidence in their locality in the past fourteen days as can be seen in Table 1. We asked for the local outbreak in the previous fourteen days because it is recommended duration of quarantine as recommended by Centres for disease control & prevention, Atlanta, USA.<sup>17</sup> The proportion of adequate knowledge, positive attitude and good practices found in this study was 41%, 75% & 84% respectively.

### Knowledge & associated variables

Knowledge was associated with other variables. We found a higher knowledge score of  $9\pm 3.49$  among older participants compared to younger participants with a score of  $8\pm 3.06$ . Knowledge level of participants was not found to vary much in regards to factors like gender, marital status, frontline worker, rural or urban residence, mode of daily transport and participants awareness about local outbreak. On the other hand variables like nuclear family, working in government facilities, higher education, doctor profession and specific area of work in covid-19 resulted in higher mean knowledge score as can be seen in Table 2. However, these differences are not significant statistically when appropriate statistical tests like student t-test and one-way ANOVA was applied.

### Attitude and associated variables

The proportion of positive attitude and good practice was 78% & 88% among those above 30 years age whereas this proportion was only 73% & 80% among participants aged less than 30 years. Around 71% of Doctors & nurses have a positive attitude in comparison to only 29% proportion of positive attitude among nursing student and teaching faculties. It was found statistically significant at  $p=0.04$  in the chi-square test. The difference in attitude and practice was also seen due to variables like the specific task, government institutes, doctor designation, but these differences are not found significant statistically. Appropriate questions were asked to assess Knowledge on prevention, discharge policy and clinical management as shown in figure 1. Maximum number of participants correctly answered the question on filtration size of N-95 filter where a poor correct rate was seen for the question on RTPCR testing of moderate Covid-19 patient before discharge.<sup>18,19</sup> Pearson correlation test was applied on participants knowledge, attitude and practice and a weak positive correlation were found as seen in Table 3.

## DISCUSSION

The study was conducted from July to October 2020 among health care providers who had then recently joined a tertiary care hospital in Chhattisgarh. In our study, correct knowledge regarding Covid-19 was 41% which was lower than other studies where 70% -80% proportion of participants reported correct knowledge.<sup>20-22</sup> The reason for the present study finding was the inclusion of junior doctors and nursing trainees in our current study. Furthermore, more focus was laid on clinical components of Covid care in the questionnaire, which may have resulted in a lower result. Another study among HCW using a 23 item self-designed questionnaire reported correct knowledge among sixty-one per cent of study subjects.<sup>23</sup>

A study was done at a cardiology hospital in Nepal also reported correct knowledge of 57% among physician and 54%

among nurses.<sup>24</sup> Another study among Chinese residents using Wenjuanxil electronic platform for data collection reported a 61% score in this domain which was higher than our study.<sup>25</sup>

So far as the attitude domain is concerned we found 76% proportion of participants having a positive attitude about the Covid-19 pandemic. Our finding was higher than a study on tertiary care hospital staffs of Nepal that reported only 53% positive attitude.<sup>26</sup> A comparable result of 68% was reported from an online survey conducted in Vietnam.<sup>27</sup> However another study on Chinese residents reported a 90% positive attitude which was more than our findings. Such difference is attributed to the inclusion of generalized questions like successful control of Covid-19, confidence of winning the Covid-19 battle in their questionnaire.<sup>28</sup> Another study among adolescent of Bangladesh also reported 62% which was lower than the current study.<sup>29</sup>

The findings of 84% good practice in the current study are comparable to a study among residents of China (89%) where they used a self-administered questionnaire to estimate knowledge, attitude and practice among participants.<sup>10</sup> Another study from Pakistan conducted during July 2020, reported a similar result of 88% about the correct use of the medical mask.<sup>11</sup> Among medical students of Uganda only 57% of good practice was reported in a previous study.<sup>30,31</sup> Regarding the source of information for Covid-19 nearly 84% of participants have used authentic sources like the ministry of Health and Family Welfare guidelines and didn't rely only on social media messages. The lower findings in the knowledge component are unfortunate among HCW and higher health authorities need to encourage HCW by providing useful and concise guidelines and limiting the practice of using multiple guidelines from multiple sources.

A lower knowledge level was also seen in a study by Hadil & co done in Riyadh, Saudi Arabia.<sup>31</sup> During Middle East Respiratory Syncytial (MERS) outbreak similar results were seen in a study from Riyadh, UAE, Vietnam and Uganda.<sup>32-35</sup> The present study found that persons with higher education scored more in the knowledge domain comparing others. Similar findings can also be seen in previous studies.<sup>28,36-39</sup> Certain questions in our survey could be answered correctly by few participants only. For example, only 29% correctly answered about mask use & isolation criteria for Covid-19 suspects. A study from India reported 40% knowledge among health staffs regarding the use of the medical mask.<sup>40</sup> Updated guidelines on medical masks can be seen in the WHO guideline which was updated on 1<sup>st</sup> December 2020.<sup>41</sup> Another study done in Mumbai, India also reported 79% correct habit for mask use and disposal.<sup>42</sup>

About 90% of study participants shown adequate knowledge regarding the discharge policy of corona patient. This matches to successful completion of prior training by 90%

of our participants. More than 80% practised four times daily handwashing with soap and water. One study among adolescent of Poland has found a similar frequency of handwashing.<sup>43</sup> More than 90% of participants reported minimum five-time daily use of hand sanitiser is on par with findings from Saudi Arabia.<sup>43-45</sup> Prophylaxis from Covid-19 by using Hydroxychloroquine (HCQ) was found among 35% of participants. A previous study among physicians in Romania reported similar findings of 48%.<sup>45</sup> Only 50% usage of HCQ was seen in an Indian study. The lower proportion of HCQ prophylaxis may be due to its unproven efficacy and potential side effects.

## CONCLUSION

Health care workers irrespective of their designation should be provided with Covid 19 related information frequently by using the available mode of education like Online classes, what's app group etc. Authorities should plan to collect feedback from HCWs about Covid knowledge and those HCWs with deficient knowledge must be given focus for knowledge acquisition by different participatory approach. A high standard of attitude and practices has to be maintained by motivating workers using various approaches like financial incentive, compensatory leave, early diagnosis and treatment in case of any illness, health insurance, occupational safety and welfare etc.

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**AUTHOR CONTRIBUTION:**

**Nag S:** conceptualization, methodology, data collection, software use, data analysis, writing original draft, writing review and editing. **Noor S:** methodology, data collection, drafting, editing. **Tiwari A:** data collection, writing the original draft. **Gavel S:** Data collection, statistical analysis

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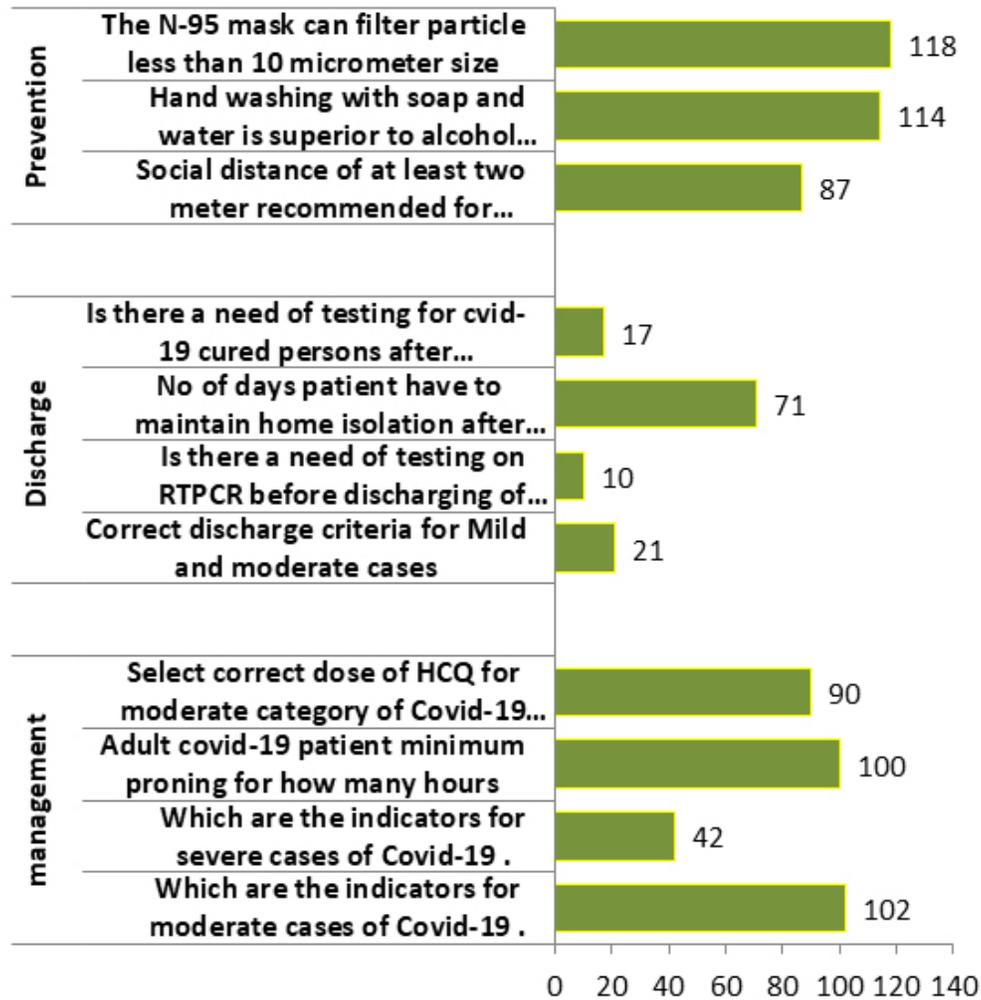
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**Table 1: Participants mean knowledge score by socio-demographic variables**

Sl no	Variable	category	Number (%)	Knowledge score (mean,sd)	P value	Statistical test
1	Age group	Bellow 30 yrs	73(58%)	8 + 3.06	0.09	t test -1.7
		Above 30 yrs	52(42%)	9 + 3.49		
2	Sex	Male	57(45%)	8.67 + 3.61	0.43	t test 0.78
		female	68(55%)	8.21 + 2.96		
3	Marital status	Married	49(39%)	8.19 + 3.12	0.37	t test 0.88
		Unmarried	76(61%)	8.72 + 3.47		
4	Address	Urban	94(75%)	8.51 3.29	0.57	t-test 0.56
		Rural	31(25%)	8.13 3.22		
5	Family type	Nuclear	92(73%)	8.63 3.47	0.22	t-test 1.22
		Joint	33(27%)	7.82 2.57		
6	Working sector	Govt.	106(85%)	8.55 3.41	0.29	t-test 1.06
		Private	19 (15%)	7.68 2.24		
7	Education	MBBS	56(45%)	8.64 + 3.35	0.07	One way Anova 2.39
		MD/MS	33(26%)	9.09 + 3.61		
		BSc/Msc	24(19%)	8.00 + 2.70		
		12th	12(10%)	6.33 + 2.06		
8	Current post	Doctor	63(53%)	9.04 + 3.32	0.09	One-way Anova 2.14
		Nurse	16(12%)	7.60 + 1.88		
		Student	33(25%)	7.35 + 3.38		
		Faculty & Administrative	13(10%)	8.71 + 3.64		
9	Frontline worker	Yes	72(58%)	8.39 +3.05	0.45	t-test -.107
		No	53(42%)	8.45 +3.47		
10	Specific task	Screening	27(22%)	9.33 + 3.28	0.29	One way Anova 1.25
		Sampling & testing	14(11%)	8.85 + 4.05		
		Treatment	39(31%)	8.25 + 3.28		
		Not yet involved in specific Covid work	45(36%)	7.86 + 2.93		
11	Risk factor	Present	39(31%)	7.9 + 3.04	0.22	t-test -1.2
		Absent	86(69%)	8.66 + 3.36		
12	Mode of travel	Private	104(83%)	8.46 + 3.34	0.85	t-test 0.17
		public	21(17%)	8.32 + 3.07		
13	Corona cases nearby	Yes	42(33%)	8.67 + 2.75	0.27	t-test 0.60
		No	83(67%)	8.29 + 3.51		
14	Attitude	Positive(score >3)	94	8.48 + 3.21	0.72	Chi square 0.14
		Negative (score <3)	31	8.20 + 3.5		
15	Practice	Good (score>5)	105	8.44 + 3.3	0.93	Chi-square 0.006
		Poor (score<5)	20	8.3 + 3.13		

**Table 2: Correlation between Knowledge, attitude and practice score of study participants**

Variable		Knowledge	Attitude	Practice
Knowledge	Correlation coefficient(r)	1	0.083	0.042
	p value		0.357	0.657
Attitude	Correlation coefficient(r)	0.083	1	0.102
	p value	0.357		0.257
Practice	Correlation coefficient(r)	0.042	0.102	1
	p value	0.657	0.257	



**Figure 1:** Knowledge of participants about prevention, discharge and management of Covid-19 patient.