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RESEARCH ARTICLE

KNOWLEDGE RELATED TO COVID 19 AMONG DOCTORS AND UNDERGRADUATE MEDICAL STUDENTS OF BIHAR

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Abstract

The SARS-CoV-2 pandemic known as COVID 19 has placed an overwhelming burden on health systems and authorities to respond with effective and appropriate interventions, policies and message. , it is important for doctors working with the population to have adequate knowledge related to SARS-CoV-2 pandemic which should be of great help in dealing with the emerging situation. This survey was aimed to find out the level of knowledge related to SARS-Cov-2 among doctors, interns and medical undergraduate students with particular emphasis on Bihar.

Objectives : to assess the basic knowledge among doctors, interns and undergraduate students that is needed for the prevention and treatment of the COVID19 disease and to find out any differences in their knowledge with associated factors.

Methodology: A cross-sectional survey among doctors and undergraduate medical students was conducted during the first COVID-19 wave using a validated self-administered questionnaire of 14 items, sent to doctors via online platforms. The data was analyzed using SPSS v.20.

Results : Good score was secured more by males and elder doctors as compared to females and younger ones. Doctors who thought they have good knowledge ,actually scored good.

Conclusion: The knowledge related to COVID-19 in doctors of Bihar was found to be at par with other states of India. In general they appear to be motivated to upgrade their knowledge. However, the average knowledge among undergraduate medical students cautions for careful induction of them in COVID 19 workforce if needed.

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Introduction:-

The SARS-CoV-2 pandemic known as COVID 19 has placed an overwhelming burden on health systems and authorities to respond with effective and appropriate interventions, policies and message. A poorly timed and managed pandemic response or transition phase can threaten the gains collectively achieved.

As per the census 2011 of India, Bihar is the most densely populated state in India (1). This places extraordinary burden on frontline workers especially doctors and other healthcare personnel in cases of pandemic situation arising due to COVID19. In recent years, the state of Bihar has made significant progress in terms of recruiting and employing doctors at various levels. This has been reflected by the statement in the state assembly by Hon'ble minister of Health that Bihar 'almost' fulfills World Health Organization (WHO) prescribed norms of doctor patient population ratio of one doctor per thousand population (2). However, it is important for doctors working with the population to have adequate knowledge related to SARS-CoV-2 pandemic which should be of great help in dealing with the emerging situation.

COVID 19 is an emerging disease and the second wave has hit India more intensely than ever. In India, health is a state subject in the Constitution of India (3). Every state government plans the policies as per the available resources and their need. The current pandemic led the various state governments to organize online training programs related to COVID 19 for all the stakeholders including doctors. However, undergraduate medical students got left out of this as the pandemic forced their classes to get suspended and they were not considered as workforce to be trained in dealing with the situation. Thus, they were left with their own means to acquire the knowledge related to COVID-19.The enormity of situation arising due to2nd wave of COVID19 pandemicled the Government of India to take the decision on 3rd May 2021 to allow deployment of final-year MBBS students for teleconsultations and other functions (4).

Knowledge related to COVID 19 is one of the most important components in responding to the current pandemic situation. One would expect it to vary according to their working role and regions, but that variation should not be such as to jeopardize the fight. A good knowledge not only helps in taking care of the cases but to oneself as well, thus helpful in preventing the worst outcomes.

One of the worst outcomes of the COVID-19 pandemic in India is the death of doctors. According to Indian Medical Association (IMA), as of 12th June 2021, a total of 719 doctors died due to Covid during the second wave. Bihar recorded the highest 111 deaths of doctors, followed by Delhi 109 (5). As such, it is difficult to ascertain with certainty about the factors related to this. However, it would be interesting to know if the knowledge related to COVID-19 could be one of the potential factors for this.

This survey was aimed to find out the level of knowledge related to SARS-Cov-2 among doctors, interns and medical undergraduate students with particular emphasis on Bihar. In this process, an attempt was made to ascertain it's association with various demographic and other factors.

Objectives:-

The objective of the present survey was to assess the basic knowledge among doctors, interns and undergraduate students that is needed for the prevention and treatment of the COVID19 disease and to find out any differences in their knowledge with associated factors.

Methodology:-

A cross-sectional survey among doctors and undergraduate medical students was conducted during the first COVID-19 wave from 19th May 2020 to 8th June 2020. As it was not feasible to do a community-based national sampling survey during this special period, we collected the data online, thereby keeping in line with the social distancing and lockdown protocols. The study protocol was approved by the ethics committee of Vardhman Institute of Medical Sciences (VIMS), Pawapuri on 18/5/2020 letter no.685.

The knowledge part of this survey consisted of a self-administered questionnaire of 14 items which was developed and duly validated by experts. The questions were sourced and derived from various standard National and International guidelines existing at the time of the study such as, World Health Organization (WHO), Centers for Disease Control and Prevention,Ministry of Health and Family Welfare, Government of India and the research papers already published at that time(6)(7)(8)(9).The focus was to obtain information regarding common questions

which is useful in day-to-day clinic work with COVID 19 cases. Prior to sending the survey, we did a pilot testing among the local medical fraternity to see if there is any difficulty in understanding the questions.The responses were analyzed, and changes were made based on the feedback received from the participants. The questionnaire was in the form of google forms. It was sent through various on-line channels such as e-mail, WhatsApp groups, and Facebook. We requested participants to forward it to other eligible participants so that we get the maximum number of responses, hence doing a snow ball sampling. The target study population was Medical Teachers (those working in govt. or private medical college as faculties/consultants),Interns, undergraduate students and other doctors (private practitioners, doctors working in other government hospitals).

Informed consent was taken from the participants as part of the online questionnaire. The survey result was analyzed using software SPSS version 20 provided by Public Health Foundation of India (PHFI).

Results:-

A total of 434 responses were recorded during the study period. 14 responses were duplicate responses; thus they were omitted from the analysis. Thus, responses from 420 participants were analyzed. The mean age of the participants was 32.97 years with median age being 28 years. The youngest was of 18 years and the eldest was of 74 years.

Various socio-demographic characteristics of the respondents are shown in Table 1.

Table- 1:- Various characteristics of the respondents.

Characteristics of the respondents		**Frequency**	**Percentage**	**C.I.**
Gender (N=433)	Female	107	24.7	20.88-29.88
	Male	326	75.3	71.02-33.30
Residence (N=433)	Bihar	308	71.1	66.69-75.20
	Outside Bihar	125	28.9	24.80-33.31
Posts/Designation (N=433)	Asst. Professor/ Assoc. Prof/Professor	71	16.4	13.21-20.18
	Intern	60	13.9	10.92-17.43
	Other doctors	170	39.3	34.78-43.94
	Undergraduate medical student	132	30.5	26.34-34.98
History of Chronic Illness (N=433)	Don't know	4	0.9	0.36-2.35
	No	380	87.8	84.34-90.52
	Yes	49	11.3	8.67-14.65
Do you have children living at home with you? (N=433)	No	238	55.0	50.26-59.59
	Yes	195	45.0	40.41-49.74
Do you have elderly living at home with you? (N=433)	No	235	54.3	49.56-58.91
	Yes	198	45.7	41.09-50.44

The respondents were from every district of Bihar.
The association of self-assessment and score obtained is shown in Table 2.

Table- 2:- Association of self assessment and score obtained (N=420).

			Knowledge score			**Total**	**P-value**
			Good	**Average**	**Poor**		
Self-rating of knowledge	**Good**	Frequency	121	104	6	231	***0.0018***
		Percentage	52.4%	45.0%	2.6%	100.0%	
	Average	Frequency	66	101	1	168	***0.0198***
		Percentage	39.3%	60.1%	0.6%	100.0%	
	Poor	Frequency	6	15	0	21	0.1870
		Percentage	28.6%	71.4%	0.0%	100.0%	

Total	Frequency	193	220	7	420	
	Percentage	46.0%	52.4%	1.7%	100.0%	

For the purpose of data analysis, we decided to use good knowledge as having >70 % correct response while poor knowledge as <30 % correct response. This was arbitrarily chosen by us. A total of 52% of the respondents who thought that they have good knowledge on novel coronavirus, actually scored good. Similarly, 60.1% of the respondents who thought their knowledge is average, scored average.Both of these associations were found to be significant.

The association of designation with the score obtained is given in Table 3.

Table-3:- Association of post/designation and score obtained (N=420).

			Knowledge score			Total	P-value
			Good	Average	Poor		
Designation	Assistant Professor/ Associate Prof/Professor	Frequency	38	30	0	68	
		Percentage	55.9%	44.1%	0.0%	100.0%	0.1256
	Intern	Frequency	29	27	0	56	
		Percentage	51.8%	48.2%	0.0%	100.0%	0.4127
	Other doctors	Frequency	83	79	2	164	
		Percentage	50.6%	48.2%	1.2%	100.0%	0.2865
	Undergraduate medical student	Frequency	43	84	5	132	
		Percentage	32.6%	63.6%	3.8%	100.0%	*0.0002*
Total		Frequency	193	220	7	420	
		Percentage	46.0%	52.4%	1.7%	100.0%	

Most (63.6%) of the undergraduate students scored average score and the association was also significant (p value= 0.0002).Meanwhile there is not much difference in the knowledge level of faculties (Assistant Professor/ Associate Prof/Professor),Interns and other doctors. P value is also not significant.
The association of age-groups with the score obtained is shown in Table 4.

Table-4:- Association of Age groups and score obtained.

			Knowledge score			Total	P-value
			Good	Average	Poor		
Age in years	<20	Frequency	7	19	0	26	
		Percentage	26.9%	73.1%	0.0%	100.0%	0.0859
	21-40	Frequency	124	135	7	266	
		Percentage	46.6%	50.8%	2.6%	100.0%	0.1059
	>40	Frequency	53	63	0	116	
		Percentage	45.7%	54.3%	0.0%	100.0%	0.2478
	>60	Frequency	9	3	0	12	0.120
		Percentage	75.0%	25.0%	0.0%	100.0%	
Total		Frequency	193	220	7	420	
		Percentage	46.0%	52.4%	1.7%	100.0%	

Approximately one fourth among the younger age group (less than 20 years of age) i.e. secured good score,while approximately the rest i.e three fourth (73%) secured average score.Three fourth (75%)of the elderly doctors (aged more than 60 years) secured a good score. However, this difference was not significant.There was no statistically significant difference in knowledge across various age groups.

Males scored a little better when compared to the female respondents (48.6% good score by males and 37.9% by females). This association was significant (p=0.035).

Around 46 % of the respondents from Bihar scored good while 45.9% of respondents from outside Bihar scored good (Figure 1).The association wasn't significant (p=0.6805).

Although respondents answered most of the questions correctly, the most incorrect responsewas obtained for the question regarding the main mode of transmission of virus . It was almost >70% for all categories of doctors. The next most incorrect response was for the question about the rational use of Personal Protective equipment (PPE) in OPD setting (50-60% wrong) in all categories viz. faculties, interns, undergraduates and other doctors. The details of the question asked in given in the annexure.

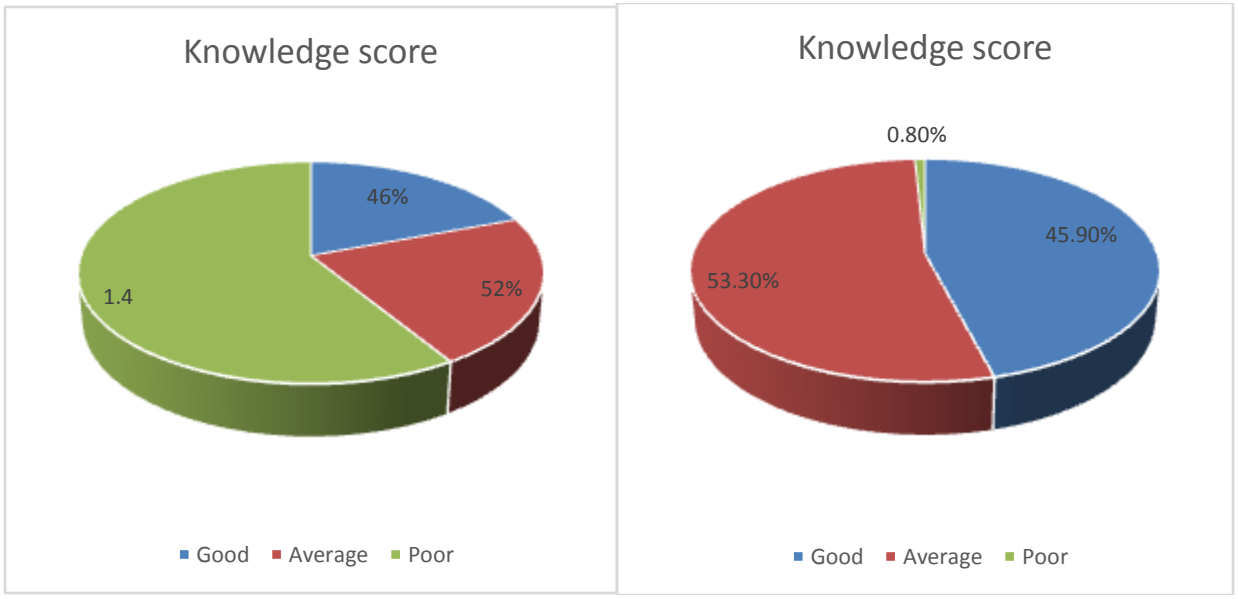

Fig 1:- Scores of Doctors from Bihar Scores of Doctors from outside Bihar

Discussion:-

The study was done to assess knowledge related to SARS-Cov-2 among doctors, interns and medical students. The survey was primarily meant for doctors and undergraduate medical students of Bihar. However, the snow balling technique of sample collection ensured that 28.9 percent of the participants were from outside of Bihar (Table 1). The mean age of the participants was 32.97 years with median age being 28 years. Most of the survey participants were in the age group 21-40 years which comprised of 63.3% of the respondents. A similar kind of demographic participation has been noted in studies done in Mumbai Metropolitan area and Western Uttar Pradesh(9)(10).Although there is no clear reason why this may be the case, one would assume that younger people are more technology savvy and motivated to participate in online surveys of this nature. The study sample consisted of predominantly male (75.3%) population. This finding is similar to study done in Western Uttar Pradesh by Upadhayaya et al (10). Perhaps this is a reflection of gender participation among doctors in this region of India. Lesser female participation could be one of the underlying reasons for statistically significant difference in knowledge related to COVID-19. While 48.6 percent of male participants secured good score, only 37.9 percent female participant secured a good score.Approximately one third of the survey respondents were undergraduate medical students. This survey finding is almost similar to the one done by Modi et al in Mumbai Metropolitan area(9). This could be explained by the online method of data collection and undergraduates having more time available to participate in the survey as they were not involved in caring for COVID 19 cases.

The survey found statistically significant association between self-assessment of knowledge related to COVID-19 and actual knowledge. Approximately half of the respondent who thought that they have good knowledge on how to prevent the novel corona virus spread, actually scored good. Similarly,60.1% of the respondents who thought their knowledge is average, scored average.Self-assessment is the **ability to examine yourself to find out how much progress you have made**. A metanalysis conducted by Sitzmannet. al found it to be strongly correlated with motivation and satisfaction(11). This reflects reasonably good motivation and satisfaction among the participants. One would anticipate that this would translate into regular upgradation of knowledge of the participants in due course as the disease keeps on evolving.

The study found that most (63.6%) of the undergraduate students scored average score, while there was not much difference in the knowledge level of other groups. Only 27% among the younger age group i.e<20 years secured good score and opposite to that the elderly doctors (75%) secured a good score, but this difference was not significant.This study finding is in contrast to the finding from the study done in Metropolitan Mumbai area which found highest number of correct responses from undergraduate medical students(9).Both of these findings taken together, suggests that undergraduates from this region of India would require more training regarding various aspect of COVID-19 should the need arise for them to induct in medical workforce.A similar observation has been made by Agarwal et. al. which suggests that undergraduate medical students in India are underprepared to be the young task force against COVID 19 (12). In this context, it is important to note the decision taken by Government of India on 3rd May 2021 to allow deployment of final-year MBBS students for teleconsultations and other functions in the wake of 2nd wave of COVID19 pandemic(4).

A total of 719 doctors have died due to COVID 19 in the ongoing second wave in India, according to the Indian Medical Association (IMA) with Bihar seeing the maximum number of deaths (5). This makes one wonder whether knowledge related to COVID 19 could be one of the contributory factors related to this. The finding from this study appears to refute this as there was no significant difference between knowledge level of respondents from Bihar and those from outside of the state.

While most of the survey respondents responded correctly to the questions asked. There were two questions where most of the answers were incorrect (Annexure 1). The most common incorrect answer came for the question regarding the 'main mode of transmission' of virus from person to person. It was almost >70% for all categories of doctors. The question asked was 'The main mode of transmission from person to person is via- a) Respiratory droplets b) Spread from contact with contaminated surfaces or objectsc) Kissing d) All the above. It appears that respondent got confused by the choices given and answered the correct one as (d). In contrast to this, the study done in the Mumbai Metropolitan area asked the similar question but they gave only choice (a) and (b) making it easy to answer(9). This is not a worrying finding as far as knowledge related to COVID 19 is concerned.The next most incorrect answer came for the question about the rational use of Personal Protective equipment (PPE) in OPD setting as per the guidelines of Ministry of Health &Family Welfare, Government of India(8). More than half of the respondents answered it incorrectly in all the categories. It appears that most of the respondent choose to answer this question over cautiously. Moreover, it is not of much concern as the guidelines got updated in due course given the evolving nature of our knowledge related to COVID 19.

Conclusion:-

The study found knowledge related to COVID-19 in doctors of Bihar to be at par with other states of India. Their good self-assessment suggests that in general they appear to be motivated to upgrade their knowledge. However, the average knowledge among undergraduate medical students cautions for careful induction of them in COVID 19 workforce should the need arise in future.

Recommendation:-

Although assessing knowledge among doctors and undergraduate medical students is important in understanding their response to the pandemic, it is important to study attitude, preventive behavior, source of acquiring knowledge and their emotional state in helping us better understand the response of this important chain of the frontline warriors fighting the pandemic. A regular follow up study related to knowledge with successive emergence of pandemic wave would help us better understand their preparedness to fight the situation.

Strength

As per our knowledge, there are no studies till now which have tried to look into knowledge related to COVID 19 among doctors and undergraduate medical students in Bihar. Moreover, no studies have looked into comparing the knowledge among various strata of medical professionals. A regional comparison of knowledge was another strength of this study as it could potentially help in policy making decisions. Our survey has respondents from all the districts of Bihar.

Limitations

Our survey has a small sample size. A bigger sample size would have been more helpful in drawing more meaningful observations. Online nature of this survey was another limitation as this could have led to sample bias

towards younger and more technology savvy participants. Snow balling nature didn't allow us to estimate the proportion of potential participants who didn't respond. A survey of this nature would be more meaningful if a follow up of the responses were recorded with the progression of the pandemic.

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