

Original Article

Knowledge about COVID-19 Infection and Stress Levels among Ambulance Drivers during COVID-19 Pandemic — A Cross Sectional Study

Arun Kumar K¹, Vijay Kumar S², Sneha Ahooja³, Alankriti Chauhan³, Shivani Dhondge³, Vishal Marwaha⁴, Anjana S Nair⁵, Sandeep Surendran⁶, Swagata Roy⁷, Aditi Arora³

Introduction : The medical personnel especially have to deal with both the Biological and Psychological consequences originating from the influence of virus. Emergency Care Units equipped with ambulance service always should be at the fore front to face all emerging untoward incidents. Ambulance Drivers often disregard their physical health and mental stress in order to fulfil the duties entrusted on them.

Methodology : Cross-sectional questionnaire based on-line survey was conducted. Ambulance drivers were North and South India were taken as study subjects. Knowledge based questions and mental stress were assessed using Perceived Stress level Scale (PSS). The questionnaires were translated to Tamil, Kannada, Telugu, Malayalam and Hindi languages. Chi-square test was done to find the association between variables.

Results : Among the 101 respondents, 84.2% were having good knowledge about the pandemic. Statistically significant association between number of patients transported per day and the knowledge levels of Ambulance drivers was found ($p = 0.048$)(Chi-square value=15.65). Drivers in Government sector were having more knowledge compared to private sector ($p = 0.038$)(Chi square value=6.53). The perceived mental stress was found to increase with a greater number of patients being transported per day, which was statistically significant ($p = 0.001$)(Chi-square value= 30.42).

Conclusion : Knowledge regarding COVID-19 virus was adequate among the Ambulance Drivers. Knowledge was found to be more among drivers who work in Government medical establishments. Mental stress was more among drivers who transported more than 5 patients per day.

[J Indian Med Assoc 2023; 121(1): 37-41]

Key words : COVID-19, Awareness, Stress, Psychological, Ambulance Drivers.

Ever since the outbreak of Corona Virus has made its footprint on the headlines, which has its origin from Wuhan City in China, the world has not been the same. Quarantine and isolation has become the norm across continents. The symptoms of infected with Corona virus mimics that of viral Pneumonia¹. The contagious nature of Corona Virus has made nations to enforce lockdown and has made humans to stay

¹MD, DNB, Assistant Professor, Department of Emergency Medicine, Amrita School of Medicine, Amrita Vishwa Vidyapeetham, Kochi, Kerala 682 041

²MDS, Additional Professor, Department of Public Health Dentistry, Amrita School of Dentistry, Amrita Vishwa Vidyapeetham, Kochi, Kerala 682 041 and Corresponding Author

³MBBS Student, Amrita School of Medicine, Amrita Vishwa Vidyapeetham, Kochi, Kerala 682 041

⁴MD, DNB, MNAMS, Principal and Professor, Department of Rheumatology, Amrita School of Medicine, Amrita Vishwa Vidyapeetham, Kochi, Kerala 682 041

⁵MSc, Assistant Professor(Biostatistics), Department of Community Medicine, Ramaiah Medical College, Bangalore

⁶MD, Assistant Professor, Department of Rheumatology, Amrita School of Medicine, Amrita Vishwa Vidyapeetham, Kochi, Kerala 682 041

⁷BDS student, Amrita School of Dentistry, Amrita Vishwa Vidyapeetham, Kochi, Kerala 682 041

Received on : 20/08/2021

Accepted on : 08/09/2022

Editor's Comment :

- People seeking medical care is considered as vulnerable to acquire infections through diverse modes.
- Awareness about COVID-19 among ambulance drivers is of utmost importance as they come into close interaction with highly vulnerable patients.
- Lapse in adhering to infection control protocols is often linked to lack of awareness about the mode of spread and preventive measures.
- Creating health care awareness to ambulance drivers who attend to highly compromised patients can bring down the mortality and morbidity rates among people seeking health care.

indoors all over the World to minimise exposure². The COVID-19 pandemic has threatened the entire population of the planet raising serious concerns about health with its alarming rate of spread. It has led to Public Health crisis worldwide which was seen never before³. The nations around the world, rely heavily on its medical and support staff to contain the ill-effects of COVID-19 to some extent. The medical personnel especially have to deal with both the Biological and Psychological consequences originating from the influence of virus. Like any other humans there are no guaranteed immunity to medical personnel which adds to their woes⁴. Emergency Care Units equipped with

Ambulance service always should be at the fore front to face all emerging untoward incidents. Ambulance Drivers often disregard their physical health and mental stress in order to fulfil the duties entrusted on them. They often have to circumvent the lack of adequate supply of personal protective equipment, fatigue and psychological stress⁴.

Often, the Ambulance Drivers and personals associated have to deal with vulnerable population and this increases their chance of them being contracted with the Scary Virus. A minor mistake from their part can draw the attention of the authorities and put their reputation at stake. This expectation that the community have for them puts them at high mental stress. The virus had its influence on their financial and affected their psyche⁵. This puts the Ambulance Drivers and other emergency Health Care Staff at more risk compared to general population to be victims of server mental stress. The fear of getting infected with the virus and the social stigma they might have to encounter can lead to severe stress. This condition is exaggerated by lack of adequate medical supplies, other essentials and fear of being discriminated against^{6,7}.

Witnessing loss of lives due to Corona and related morbidities can disturb their mental condition leading to severe stress, which coupled with prolonged duty hours can have an adverse impact on their mental and physical health⁸. Assessment of awareness regarding the COVID-19 among a targeted Community can be of great use in knowing their perspective towards the Virus infection. Accurate information about the Virus, its mode of transmission and preventive strategies is very much essential among these front line Health Care Workers⁹.

Knowing the status of their knowledge and the resulting psychological stress caused due to the virus spread can help take adequate measures to quell the anxiety among these personnel and can help them maintain the necessary mental well-being.

Objective : To assess the knowledge, attitude and practice among Ambulance Drivers about COVID-19 infection and their stress levels.

MATERIALS AND METHODS

A cross sectional pilot study was conducted among the Ambulance Drivers on duty during COVID-19 pandemic across India using a pre-validated questionnaire consisting of Socio-demographic questions (Age, location, education, Govt/private hospital, daily patient transfer). The study was conducted using a self-administered questionnaire having 20 questions divided into two sections- first section had 10 question based on health awareness, knowledge and practice of Ambulance Drivers during

ongoing COVID-19 across India and the 2nd section includes 10 questions to assess the mental stress level based on Perceived Stress level Scale (PSS) using score ranging from 0 to 4 per question. The response options for the stress levels were :0-never, 1-almost never, 2-sometimes, 3- fairly often, 4-very often. Individual total scores on the PSS can range from 0-40 with higher scores indicating higher perceived stress. Scores ranging from 0-13 were considered low stress, from 14-26 were considered moderate stress and from 27-40 were considered high perceived stress. For health awareness questionnaire, each appropriate response was given score 1. If the score is more than 7 – it was considered very good knowledge, 5-7-good knowledge and less than 5-poor knowledge. An online form containing the questionnaire were made and send via social-media platforms. Data will be tabulated and statistical analysis.

The questionnaire was subjected to content validation by four experts and reliability was checked using Kappa statistics which was found to be 0.81. The questionnaire was also translated to Tamil, Kannada, Telugu, Malayalam and Hindi language. The questions were forward translated, back translated and pre-tested before being administered to the subjects. They were administered to the subjects through online forms. An on-line informed consent form was also attached prior to the questionnaire section. Since no prior evidence of knowledge among Ambulance Drivers in India could be found, this study was conducted as a pilot survey.

RESULTS

A total of 101 responses from all over India were obtained based on convenient sampling. The age group of the study population ranged from 25 to 59 years of age. There were 72 Ambulance Drivers from North India and 29 from south India. Among the subjects, 82.2 % had received formal training on COVID-19 infection control and 53.5% of them were working in private institutions. More than one third of the subjects (34.7%) transported 5 to 10 patients per day. Regarding educational level, 12th standard pass were 59.4% and 40.6% were 10th standard pass. The knowledge regarding need for sanitizing the Ambulance vehicle after transporting each patient was 81.2%, most of them knew about use of appropriate hand sanitizer (84.2%), 75.2% knew that N95 mask contains the spread of virus and 76.3% knew about source of Corona Virus. The least knowledge among the subjects were about social distancing norms, which was found to be only 25.7% (Table 1).

One of the significant findings of the present study

was that with increasing number of patients transported per day, the knowledge levels was found to be increasing among the Ambulance Drivers. Knowledge about COVID Virus was good among the drivers who transported between 5-10 patients per day and those between 11-20 patients per day. The association between these categories and other categories of less than 5 patients per day and more than 30 patients per day was found to be statistically significant (Tables 2&3).

Another significant finding of the present study was that the knowledge among Ambulance Drivers who worked in Government Institutions were high and it was found to be statistically significant (Tables 4&5)

Stress levels of Ambulance Drivers was found to increase with the number of patients transported per day per driver. Moderate level of stress was experienced by drivers who transported five to ten patients per day (54.3%) and among 11 to 20 patients per day (70%). The association between stress levels experienced by various categories of Ambulance Drivers according to number of patients transported by day was found to be statistically significant, with 70% of drivers transporting between 11 to 20 patients and 57.2% of drivers in five to ten category experiencing at least moderate level of psychological stress.

Psychological stress levels among Ambulance Drivers.

DISCUSSION

As observed in the study conducted at Saudi, in the present study too age and gender were not significantly associated with awareness about COVID Virus. The awareness of the General Community was satisfactory in the study. However, the sample population in the Saudi study had more than half of the respondents holding a bachelor or higher degree of education¹⁰. However, the results from the general population with a sample size of 8591 showed that education is significantly positively associated with knowledge about COVID-19 virus. In the present study, such an association were not found probably due to reason that the subjects did not vary much among their level of education status¹¹. Similar results were

Table 1 — Correct and incorrect responses to knowledge questions*

Questions	Correct (%)	Incorrect (%)
Proper protective equipment to wear	27.8	72.2
Correct way of removal of PPE	58.4	41.6
Appropriate hand sanitizer	84.2	15.8
Sanitization after transporting each patient	81.2	18.8
Knowledge regarding spread of COVID-19	41.6	58.4
Proper precautions taken before entering home after work	37.6	62.4
Symptoms of Corona Virus	35.6	65.4
Type of mask to be worn	75.2	24.8
Appropriate gap for achieving Social distance	25.7	74.3
Source of Corona Virus	76.3	26.7

*Knowledge among Ambulance Drivers

found in Nigeria, where good knowledge about COVID virus and its mode of transmission was found among the higher Social class of population. Education level was found to be a major factor in determining the overall awareness about COVID. These studies show that in general population, Education level plays a major part in the overall awareness of the population about the COVID virus and therefore higher chances of curtailing the spread of virus in the country¹². This could also be the reason why Government employed drivers were having more knowledge than private employees as Government recruited drivers usually have a minimum standard of education in-order to get employed.

Adequate knowledge and a positive attitude towards preventing the spread of COVID virus was found in a study conducted among Health Care Workers in Nepal. The survey also revealed that with proper awareness programmes, the awareness among the Health Care workers could be further enhanced¹³. This was very much similar to that of present study, where moderate to high knowledge about COVID virus was obtained for various queries regarding COVID virus.

Table 2 — Knowledge about COVID-19 based on patients transported per day by subjects

		Patients transported per day					
		< 5	5-10	11-20	21-30	More than 30	Total
Health Knowledge	Poor	7(17.5%)	3(8.6%)	5(25.0%)	1(20.0%)	0	16(15.8%)
	Good	30(75%)	18(51.4%)	10(50%)	4(80%)	1(100%)	63(62.4%)
	Very Good	3(7.5%)	14(40%)	5(25%)	0	0	22(21.8%)
Total		40(100%)	35(100%)	20(100%)	5(100%)	1(100%)	101(100%)

Table 3 — Association between knowledge about COVID-19 and number of patients transported by the subjects

		Patients transported per day					Pearson Chi-square value	P-value
		< 5	5-10	11-20	21-30	More than 30		
Health Knowledge	Poor	7(17.5%)	3(8.6%)	5(25.0%)	1(20.0%)	0	15.65	0.048
	Good	30(75%)	18(51.4%)	10(50%)	4(80%)	1(100%)		
	Very Good	3(7.5%)	14(40%)	5(25%)	0	0		
Total		40(100%)	35(100%)	20(100%)	5(100%)	1(100%)		

Table 4 — Place of work and Knowledge about COVID-19 infection

	Place of work		
	Government	Private	Total
Health Knowledge :			
Poor	3 (6.4%)	13 (24.1%)	16 (15.8%)
Good	31 (66.0%)	32 (59.3%)	63 (62.4%)
Very Good	13(27.7%)	9 (16.7%)	22 (21.8%)
Total	47 (100%)	54 (100%)	101 (100%)

Table 5 — Association between place of work and Knowledge about infection

	Government	Private	Pearson chi-square value	p-value
Health Knowledge :				
Poor	3 (6.4%)	13 (24.1%)	6.53	0.038
Good	31 (66.0%)	32 (59.3%)		
Very Good	13(27.7%)	9 (16.7%)		
Total	47 (100%)	54 (100%)		

Ambulance drivers are one of the first to come into contact with a suspected or confirmed case of Covid virus infected patients. The fact that they often have to deal with the patient combined with fear of getting infected can severely affect their mental state. Lack of adequate support, lack of appropriate Personal Protective Equipment (PPE) and long working hours with increasing number of patients or the distance travelled and the expectation that is bestowed upon them by the community at large can all lead to increased mental stress among frontline health care workers like ambulance drivers¹⁴⁻¹⁷. Even though mortality rate is low due to Covid virus, high rate of transmission and increasing number of mortalities can cause more mental stress among health care workers¹⁸.

The fear and anxiety of getting infected with the new infectious virus which the general population considers as fatal and the sudden reversal of role from a health care worker to a patient who needs care can

cause anxiety, fear of being stigmatized and cause mental trauma to the Health Care Workers¹⁹. The Ambulance Drivers being at the fore front of any emergency medical situation too are very much prone to such mental stress.

Similar observations were made among Health Care Workers in Nepal where it was found that 38% of the health care workers who were in duty for COVID patient care were suffering from Psychological distress in the form of anxiety or depression. The authors of the particular study were of the opinion that inadequate supply of PPE and probability of getting infected with COVID were the main reasons for the mental stress²⁰.

Similar findings were reported where relationship between Physiological anxiety can lead to depression or even agonistic behaviours could be developed. The perceived stress caused by fear of being infected by an agent whose cure is yet to be found can cause severe stress among frontline Paramedics. Psychological stress resulting from depression, anxiety and emotional distress can lead to agonistic behaviour in individuals. In addition to this, the lack of effective PPEs and its availability can further aggravate mental stress among frontline Health Care Workers²¹⁻²⁴. It is expected that as the number of patients transported increases, the stress levels too tend to increase as revealed from the results of this study.

Uncertainty at the work site, lack of autonomy at the work, organizational politics are the other factors that lead to increased mental stress to Health Care Workers. Ambulance Drivers especially has to go to unfamiliar territory or are redeployed to face any emergency situations. Pre-existing mental illness, comorbidities can worsen their morale. Timely interventions from the organisation or counselling can go a long way in reducing or mitigating stress among such employees²⁵.

Instances of mental stress among Health Care Workers have known to occur during the outbreak of other epidemics previously too like in the case of SARS outbreak in 2003. Online counselling, dedicated

team of mental health care personnel and group activities to reduce the mental stress among Health Care Workers are some of the suggestions put

Table 6 — Stress levels of subjects based on number of patients transported per day

		Patients transported per day					
		< 5	5 – 10	11-20	21-30	More than 30	
Stress	Low	17(42.9%)	15(42.5%)	6(30%)	1(30%)	0	39(38.6%)
	Moderate	22(55.0%)	19(54.3%)	14(70%)	3(60%)	0	58(57.4%)
	High	1(2.5%)	1(2.9%)	0	1(20%)	1(100%)	4(4%)
Total		40(100%)	35(100%)	20(100%)	5(100%)	1(100%)	101(100%)

Table 7 — Association between number of patients transported and stress levels of subjects

		Patients transported by day					Pearson's Chi square value	p-value
		< 5	5 -10	11-20	21-30	More than 30		
Stresss Level	Low	17(42.9%)	15(42.5%)	6(30%)	1(30%)	0	30.42	0.001
	Moderate	22(55.0%)	19(54.3%)	14(70%)	3(60%)	0		
	High	1(2.5%)	1(2.9%)	0	1(20%)	1(100%)		
Total		40(100%)	35(100%)	20(100%)	5(100%)	1(100%)		

forward to assist such workers including Ambulance Drivers to cope with mental stress during COVID-19 pandemic²⁵.

The drawback of this study is that since it was conducted as a pilot survey, the results cannot be generalised. More studies among frontline Health Care Workers such as Ambulance Drivers needs to be conducted.

The strength of the present study is that it involved Ambulance Drivers from several North Indian and South Indian states, in which the questions were translated to local languages and an overall first-hand information about the Ambulance Drivers from different states of India could be gathered.

Since the questionnaire was online based, there could be memory or recall bias though the authors have requested for authentic information from the study participants. This study had representative participants from North and South India only and participants from other zones could not be reached. This is another limitation of this study.

CONCLUSION

Knowledge regarding COVID-19 Virus was adequate among the Ambulance Drivers. Knowledge was found to be more among drivers who work in Government medical establishments. Mental stress was more among drivers who transported more than 5 patients per day. Periodic training programmes about prevention and control of COVID-19 infection and Psychological counselling are recommended for Ambulance Drivers to carry out their duties more efficiently and cope up with daily stress in a more positive mental frame.

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