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AN EPIDEMIOLOGICAL STUDY OF COVID INFECTION AMONG COVID POSITIVE HEALTH CARE WORKERS (HCWs) IN A TERTIARY CARE CENTER AND ENUMERATION OF THEIR KNOWLEDGE, ATTITUDE AND PRACTICES (KAP) TOWARDS COVID APPROPRIATE BEHAVIOUR.

Clinical Research

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ABSTRACT

Objective: To study the impact of covid 19 infection among covid positive health care workers and to know the KAP gap in using covid appropriate behavior

Methods: 300 covid positive HCWs between June and December 2020 were given questionnaires with demographic details and KAP questions. Google forms were used to collect responses and results summarized. Fisher's exact test was used to compare HCWs with and without comorbidities

Results And Conclusion: More female HCWs in the age group of 21 to 40 with positive blood group were infected. Most of them had no comorbidities and had less than one week hospital stay. 63.7% used mask as told in the protocol, 68% practiced proper hand washing, 63.3% were not much worried about the infection. 53.3% felt hospital stay was terrible. 82.4% felt masks should be accorded top most priority. 86% felt hand washing was very helpful and 58.8% felt masking and social distancing prevents a second infection. And in the comparison studies, HCW s of age more than 20 had a positive attitude towards using face mask, social distancing and hand washing and believed that CAB is more helpful in preventing an infection.

KEYWORDS

Health Care Workers (HCWs), Covid Appropriate Behaviour (CAB), COVID -19, Mask, Handwashing, Social Distancing, Knowledge-Attitude-Practice(KAP).

INTRODUCTION:

Coronavirus disease 2019 (COVID-19) caused by the SARS-CoV-2 novel human coronavirus was first reported in December 2019 in Wuhan, China [1,2]. The disease quickly spread to all continents and on 11 March 2020 was declared a global pandemic by the World Health Organization (WHO) [3].

Its high transmissibility, asymptomatic virus shedding, high numbers of patients with mild symptoms, and super-spreading events can be attributed for its rapid spread[5,6]. Globally, as of 4:57pm CET, 3 December 2021, there have been 263,563,622 confirmed cases of COVID-19, including 5,232,562 deaths, reported to WHO. As of 2 December 2021, a total of 7,864,123,038 vaccine doses have been administered(4). There is currently no effective drug approved for the treatment of COVID19 [6,7]. Therapy consists of supportive care while several drugs are being evaluated in clinical trials [8]. Preventive measures are the mainstay in containing this infection. It includes social distancing, practicing hand hygiene and respiratory etiquette, wearing a facemask in public settings, and monitoring and self-isolation for people suspected to have infection [9].

Healthcare workers (HCWs) are at the forefront in the containment of COVID-19 and hence are at increased risk of exposure to SARS-CoV-2. However, HCWs can also be the source of SARS-CoV-2 to their patients, family, and community members [10].

As part of the public health programmes, it is of paramount importance that HCWs adhere to the recommended COVID-19 prevention measures and it is influenced by their knowledge, attitude and practices [10,11]. So adequate knowledge of COVID 19 among HCWs and positive attitude and appropriate practices can help in decreasing the risk of infection [17]. Assessing KAP and KAP – GAPs towards COVID-19 among HCWs can aid pandemic control. Some studies have reported adequate COVID-19-related KAP among HCWs [12,13], others have found significant gaps [14,15].

In the current study, we assessed KAP towards COVID19 among the infected HCWs in Thanjavur, Tamilnadu, India with the aim of informing national COVID-19 prevention and control efforts. The study is aimed to find the KAP of covid appropriate behaviour among the infected. Health Care Workers form an important cohort among the general population. This study focuses on the knowledge, attitude, practice of the standard protocol for covid – 19 infection. The study also includes the epidemiological study of the infection among COVID POSITIVE HCWs.

Objectives :

Objective of the study is to know the impact of the covid – 19 infection among COVID POSITIVE HCWs and their attitude towards using COVID appropriate behaviour.

Methodology:

300 HCWs were chosen for the study during a seven month period from June 2020 to December 2020, who turned COVID POSITIVE during the same period, and were either admitted and treated for SARS-CoV2 Infection at Thanjavur Medical College Hospital, Thanjavur or treated in a nearby Covid Care Facility (Vallam) or Quarantined at Home.

The HCWs included Teaching Faculty of the above said medical college, Interns, Post graduates of various specialties working in the abovesaid medical college, Staff Nurses, Lab Technicians, Sanitary Workers, Ward Boys, Nursing Assistants.

A self developed questionnaire was prepared with 32 questions and administered to the covid positive HCWs. It included demographic details like Age, Sex, Place and 18 questions related to KAP categories. Additionally, duration of hospital stay, type of medications, oxygen therapy, blood group and co-morbidities were included.

Due consent to participate in the survey was obtained, through proper consent form.

Inclusion Criteria –

All HCWs who turned positive during the period between June 2020 to December 2020.

Exclusion Criteria –

HCWs who were not willing to participate in the survey and study were excluded. Those who didn't respond through phone calls or e-mails, were excluded.

Google forms were used to collect the responses. Tamil language was used to pen the questionnaire. The forms were sent through WhatsApp application. Those who were not having the application or not able to register their responses thro' the app, were called directly through phone and their responses obtained and filled appropriately.

Knowledge domain included 5 questions. This category was designed to know the travel history, knowledge about the importance of masking, handwashing and possible routes of the infection.

Attitude domain included 9 questions. This category included queries to know their attitude towards the infection and the course of illness they have gone through. Their reaction to their covid positivity, experiences during the course of the illness, attitude before and after the infection, the difficulties they faced during the infection and during hospital stay.

Practice domain included 4 questions. This category included the method of practicing the covid appropriate behavior (CAB), and the resultant practice they will follow after the infection.

Descriptive study included Age, Gender, Blood Group, Co-morbidities, Type of treatment, Severity of infection.

Internal comparison was done for two parameters. HCWs with comorbidities and without comorbidities were compared with the type of treatment they received. Influence of different age groups was compared with their practice of Covid Appropriate Behaviour.

Data was analyzed using Graphpad Prism Version 5.0.

Categorical data were summarized as n with %. Fisher's exact test was used to compare the frequency between groups. $P<0.05$ was considered statistically significant.

RESULTS:

Important observations from the study are as follows.

Table 1. Baseline Characteristics Of The Study Population (N=300).

S.No	Parameter	n	%
1	Age distribution		
	≤20 years	12	4
	21 – 40 years	210	70
	>40 years	78	26
2	Gender distribution		
	Male	122	40.7
	Female	178	59.3
3	Duration of hospital stay		
	<7 days	165	55
	≥ 7days	18	6
	Home quarantine	48	16
	At Vallam Care center	69	23
4	Co-morbidities		
	Present	53	17.7
	Absent	247	82.3
5	Under Oxygen support during Covid infection		
	Yes	17	5.7
	No	283	94.3
6	Type of medication taken		
	IV medications	48	16
	Oral medications	152	50.7
	Home remedies	100	33.3

Statistical Analysis:

Demography

70% were in the 21-40 years age group. 59.3% were females. 55% had less than one week hospital stay. 82.3% had no co-morbidities. 94.5% had normal course in the hospital without any need for oxygen support. 50.7% had only oral medications, 16% needed IV medications, 33.3 % had only home remedies (among the home quarantined and those in the covid care facility).

Table 2. Summarization Of Knowledge Domain Regarding Covid-19 Infection (N=300).

S.No	Parameter		n	%
1	Travel before acquiring Covid-19 infection	Yes	22	7.3
		No	275	91.7
		Couldn't remember	3	1
2	Importance of using mask	Knew but did not bother much	71	23.7
		Don't know how to use	15	5
		Knew and used perfectly	202	67.3
		Knew and Used but not up to satisfaction	12	4
3	Importance of hand-washing before infection	Knew and Practiced very good	204	68
		Knew and Practiced satisfactory level	78	26
		Did not practice	6	2
		Not bothered	12	4
4	Possible route of acquiring Covid-19	From Close member of family/friend/relative	15	5
		Went outside and contracted	10	3.3
		Do not know how I got Covid	14	4.7
		From patient being a health care worker	261	87
5	Possibility of second Covid-19 infection	Possible	139	46.3
		Not possible as immunity develops after first infection	90	30
		No idea	20	6.7
		Vaccination is must	51	17

Knowledge Domain –

91.7% denied any travel history before acquiring the infection. 67.3% used the mask as told in the protocol, 23.7% knew how to use the mask, but didn't properly follow it. 68% practiced hand-washing in a proper manner. 87% concurred that possible way of spread of the infection was from the patients in wards. Being a HCW, must have acquired from a hospitalized patient. 46.3% knew the possibility of a second covid infection in them, though they had a natural infection.

Table 3. Summarization Of Attitude Domain Regarding Covid-19 Infection (N=300).

S.No	Parameter		n	%
1	Patient's Reaction to Covid-19 Positivity	Not worried much	190	63.3
		Felt stigmatizing	7	2.3
		Wonder how could it have happened	83	27.7
		Felt as terrible thing happened	20	6.7
2	Reactions of other persons towards Patient's Covid-19 positivity	Treated as just another fever without worry	50	16.7
		Supportive and caring	160	53.3
		Kept me at a distance	20	6.7
		Worried too much	70	23.3
3	Experience during the infection	Terrible and others should not get it	161	53.7
		Went just like any other fever	131	43.7
		Felt waste of time	6	2
		It will be over and I will be immune	2	0.7
4	Feeling after Covid Infection	It is all over now	180	60
		Terrible and awful thing happened to me	24	8
		Not big issue as told by other	62	20.7
		No idea	34	11.3
5	Attitude before infection	Not bothered much	185	61.7
		Very panicky	100	33.3
		No idea	15	5
6	Attitude after infection	Panicked	118	39.3
		Not bad	142	47.3
		No idea	40	13.3
7	Lesson learnt from the Covid-19 pandemic	Health is more important than others	180	60
		Judicious use of natural resources	70	23.3
		Hygiene plays important role	50	16.7
8	Attitude of health care workers towards self as patient	Supportive	204	68
		Caring	21	7
		Rude	60	20
		Unpleasant	15	5
9	Difficulty during hospital stay/home quarantine	Economical difficulties	12	4
		Physical difficulties	185	61.7
		Emotional difficulties	103	34.3

Attitude Domain –

Being a HCW and exposed to the infection (while doing covid ward duty and general ward duty) for the past 4 to 6 months, they had no big worries about covid infection and hospitalization. 63.3% not worried much about the infection. 27.7% couldn't figure out how the infection could have been acquired despite following the SOP properly. 53.3% observed that the care and support given by the family and friends was very helpful emotionally to come out of the crisis. 53.7% reacted that the course of the hospital stay during the infection was terrible and getting a reinfection would be horrible and has to be prevented. But 43.7 % felt it just like another viral fever and was feeling better after the second day of fever. Before and after the infection, the attitude was a bit depressing, but definitely not very panicky. The mood and attitude during the infection was the understanding that Health is the Priority among all other needs. 68% felt that the other HCW treated them with utmost care and support. Physical difficulties were more compared to economical or emotional difficulties.

Table 4. Summarization Of Practice Domain Regarding Covid-19 Infection (N=300)

S.No	Parameter		n	%
1	Practice on mask usage in Covid-19	Practicing mask is perfectly useful	247	82.3
		Practicing mask is somewhat useful	37	12.3
		No use of mask in prevention	14	4.7
		No idea about mask	2	0.7
2	Practice on hand-washing	Good practice as it helps all from infection	258	86
		Somewhat useful	31	10.3
		No use of handwash in Covid prevention	5	1.7
		No idea	6	2
3	Usefulness of yoga and breathing exercises	Very helpful	190	63.3
		Practicing even after infection	45	15
		I do not follow	60	20
		Not aware about the yoga	5	1.7
4	Helping society after recovery from Covid	Teach others regarding preventive measures	107	35.7
		Will practice mask and social distancing properly	176	58.7
		Will not practice as everyone will catch infection	12	4
		No idea	5	1.7

Practice Domain –

Mask practice should be accorded the topmost priority and it works best. 82.4% obliged to this statement. 86% concurred that perfect handwashing is very helpful from catching the infection. 63.3% felt that practicing Yoga, Breathing exercises kept them free from anxiety. It helped them from coming out of the disease early. 58.8% observed the practice of masking and social distancing as nearly helpful from getting a second infection.

Table 6. Comparison Of Influence Of Age Group Of Healthcare Workers With Respect To The Practice Regarding Covid-19 Infections In The Study.

S.No	Parameter		Age group			Chi square value	Df	P value
			≤20 years (n=12)	21 – 40 years (n=210)	>40 years (n=78)			
1	Practice on mask usage in Covid-19	Practicing mask is perfectly useful	8 (66.7)	175 (83.3)	64 (82.1)	15.8	6	0.015*
		Practicing mask is somewhat useful	1 (8.3)	25 (11.9)	11 (14.1)			
		No use of mask in prevention	2 (16.7)	9 (4.3)	3 (3.8)			
		No idea about mask	1 (8.3)	1 (0.5)	0 (0)			
2	Practice on hand-washing	Good practice as it helps all from infection	9 (75)	177 (84.3)	72 (92.3)	19.6	6	0.003*
		Somewhat useful	1 (8.3)	27 (12.9)	3 (3.8)			
		No use of handwash in Covid prevention	0 (0)	4 (1.9)	1 (1.3)			
		No idea	2 (16.7)	2 (1)	2 (2.6)			
3	Usefulness of yoga and breathing exercises	Very helpful	8 (66.7)	127 (60.5)	55 (70.5)	7.24	6	0.299
		Practicing even after infection	1 (8.3)	33 (15.7)	11 (14.1)			
		I do not follow	2 (16.7)	46 (21.9)	12 (15.4)			
		Not aware about the yoga	1 (8.3)	4 (1.9)	0 (0)			
4	Helping society after recovery from Covid	Teach others regarding preventive measures	6 (50)	71 (33.8)	30 (38.5)	9.46	6	0.146
		Will practice mask and social distancing properly	6 (50)	125 (59.5)	45 (57.7)			
		Will not practice as everyone will catch infection	0 (0)	12 (5.7)	0 (0)			
		No idea	0 (0)	2 (1)	3 (3.8)			

Data are expressed as n with %. Fisher's exact test was used to compare the frequency between the groups. * indicates p<0.05 and considered statistically significant. NS = Not significant.

From the above table, it is evident that HCWs above 20 years feel that the practice of mask is perfectly helpful in the prevention of covid infection (24). On the contrary, HCWs less than 20 years had less belief in using mask and their prevention in covid infection.

Similarly, practicing hand washing was also found to be useful in the prevention of covid infection in the above 20 years age group. So, the knowledge and attitude in practicing the covid appropriate behaviour was found to be nearly exacting in the above 20 years age group. It was also found to be statistically significant.

Table 7. Comparison Of Factors With Respect To Comorbidities Observed In The Study Population

S.No	Parameter		Comorbidities		Chi square value	df	P value
			Present (n=53)	Absent (n=247)			
1	Gender	Male	21 (39.6)	101 (40.9)	0.029	1	0.999 (NS)
		Female	32 (60.4)	146 (59.1)			
2	Duration of stay	<7 days	26 (49.1)	139 (56.3)	3.92	3	0.271 (NS)
		≥ 7days	6 (11.3)	12 (4.9)			
		Home quarantine	10 (18.9)	38 (15.4)			
		At Vallam Care center	11 (20.8)	58 (23.5)			
3	Oxygen support	Yes	6 (11.3)	11 (4.5)	3.85	1	0.049*
		No	47(88.7)	236 (95.5)			
4	Medications	IV medications	16 (30.2)	32 (13)	10.2	2	0.006*
		Oral medications	20 (37.7)	132 (53.4)			
		Home remedies	17 (32.1)	83 (33.6)			

Data are expressed as n with %. Fisher's exact test was used to compare the frequency between the groups. * indicates p<0.05 and considered statistically significant. NS = Not significant.

Table 5: Incidence Of Covid With Respect To The Blood Group Observed In The Study (N=300)

S.No	Type of blood group	n	%
1	A positive	62	20.7
2	A negative	2	0.7
3	B Positive	113	37.7
4	B negative	6	2
5	AB positive	23	7.7
6	AB negative	3	1
7	O positive	88	29.3
8	O negative	3	1

Co-morbidities –

Internal comparison was done among HCWs with co-morbidities and without co-morbidities. HCWs with co-morbidities had the need for oxygen therapy more than those who didn't have any co-morbidities. And the need for IV medications was more for HCWs who had co-morbidities. Thus the need for oxygen therapy, IV medications was more in HCWs with co-morbidities compared to HCWs without co-morbidities and it was found to be statistically significant. Females outnumbered males in total numbers affected, reflecting the Staff Nurses (23). 82.3 % had no co-morbidities. Only 6% had more than a week stay in the hospital. And HCWs with co-morbidities had no significant increased stay in the hospital. Thus gender and duration of hospital stay was not statistically significant for HCWs with co-morbidities when compared with HCWs without co-morbidities.

B Positive blood group individuals had the highest incidence of the infection. O Negative individuals had the least.

CONCLUSION

The results and the feedback from HCW's covid infection is more valuable in the sense that they are not biased and there is no problem with the recall. More female HCWs are infected reflecting the infection in nurses, with increased incidence among the 21 to 40 age group(23). Most of them had no co-morbidities, and had a less than one week hospital stay. More than 80% of them knew the importance of using face mask, perfect hand-washing and social distancing. Three-fourth and above strongly believed that the source of infection is a patient from the hospital they worked. Despite natural infection, more than fifty percent of the HCWs felt they will have a second covid infection. B positive blood grouped HCWs topped the list. And Negative blood grouped workers had the least chance of getting an infection. " A negative" had the least infected rates. And HCWs above the age of 20 had a much better positive attitude in the covid appropriate behaviour than those aged less than 20 (16) (18) (24).

From the above observations, it may be concluded that HCWs are an important study group, can be used to assess the reach of health education materials and media and programs. The information shared by them forms a reliable source and can be helpful in formulating further programmes.

HCWs form an important link in the society between the administrators and the general population. Any health information that needs to be conveyed, can easily reach the society through them. So, any KAP gaps found in the HCWs needs to be taken seriously and corrected (22).. Small gap in KAP among HCWs will reflect in the general population as large gaps.

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