Assessing COVID-19 Related Knowledge And Perceptions Of Preventive Health Care Employees Working In Health Region Kalmunai-Sri Lanka

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Abstract: According to Coronavirus disease Situation Report– 161 published by World Health Organization on 29 June 2020, globally 10 million cases and 500000 deaths and in Sri Lanka 2037 cases and 11deaths of COVID-19 had been reported . A poor understanding of the disease among Preventive Health care Employees might result in delayed treatment and rapid spread of the infection. This study aimed to investigate the knowledge and perceptions of Preventive health care Employees about COVID-19.A cross-sectional, study was conducted during June and July 2020, midst of COVID-19 outbreak in the country. A self-administered questionnaire with 25 survey item was used. A chi-square test was applied to investigate the level of association among variables, with significance set to P<.05. Out of 230 participants, 200 employees completed the survey and response rate was 86.95%.Among participants 71.5% (n=143) were female, 38.5% (n=77) were aged 40-49 years, and most of employees were Public Health Midwife (n=141, 370.5%) and least were Medical Officers of Health (n=11, 6%). Most participants (n=103, 51.3%) used Government web site to obtain information on COVID-19. A significant proportion of participants had poor knowledge on incubation period (n=41.20.5%) and more (n=187,93.5%)on complication of the disease. All the participants perceived very well about importance of taking travel history and category of waste related to patients (n=200,100%) and poorly (n=76,36%) perceived about the indication of personal protective equipment. Generally participant had moderate amount of knowledge (>57.62%) and positive perception (>69.01%) and Medical officers and Public Health Inspectors scored more than Public Health Midwife. As the global threat of COVID-19 continues to emerge, it was critical to improve the knowledge and perceptions of Preventive Health care Employees .Health ministry should provide a comprehensive and tailored educational and training programme, targeting all staff specially PHM , to promote preventive measures of COVID-19, to achieve equilibrium in terms of knowledge on COVID-19.

Keywords: COVID-19, Knowledge, Perception, Preventive Health care Employees

1. INTRODUCTION

The outbreak of Coronavirus Disease named as COVID-19 began at the end of 2019 in the city of Wuhan in China and spread throughout the world [1,2]. First case of COVID-19 was identified in Sri Lanka on 27 January 2020 in a foreign national. According to Coronavirus

disease Situation Report– 161 published by World Health Organization (WHO) on 29 June 2020, globally 10 million cases and 500000 deaths and in Sri Lanka 2037 cases and 11deaths of COVID-19 had been reported . Coronavirus was sprawling around the world but there was still no prophylactic management about this crucial attack. Country wide lockdown ,case detection and management , contact tracing , health education and awareness programmes and similar measures efficiently being implemented by Government to curtail the spread in Sri Lanka.

Like other viruses of the Coronaviridae family, the main clinical manifestations of the disease are fever which occurs in 99% of the affected persons, dry cough, dyspnea, sore throat and bilateral patchy infiltration on imaging. The most important transmission route currently agreed upon, is human-to-human via respiratory droplets or direct contacts. [3].The overall mortality rate of COVID-19 is 2% which is much lower than that of the Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS). To date, there is no antiviral curative treatment or vaccine that has been recommended for COVID-19 [4].More information about its distribution, transmission, pathophysiology, treatment, and prevention are being studied.

WHO recommends prevention of human-to-human transmission by protecting close contacts and health care employees from being infected and stopping infections from animal sources [5]. Primary preventive measures include regular hand washing, social distancing, and respiratory hygiene like covering mouth and nose while coughing or sneezing [6].Medical staff especially Preventive Health care Employees (PHE) have always been at risk of contagious diseases. Knowing that COVID-19 can be probably transmitted even from asymptomatic individuals, the risk is multiplied[7].In a study, the rate of transmission to health professionals was 29% [8].As PHEs are at the frontline of COVID-19 pandemic response, at risk of not only exposed to dangers of pathogen exposure but also long working hours, psychological distress, fatigue, occupational burnout and stigma, and physical violence [9].Many health workers have lost their lives to COVID−19, a tragedy to the world and a barrier to fight against the disease [10].In Sri Lanka preventive activities are effected by a team of PHEs at the grassroot level. The team consists of Medical Officer Of Health (MOH) is as leader and Public Health Inspector (PHI) and Public Health Midwife (PHM) are main members [11].A poor understanding and knowledge of the disease among PHEs can result in inefficient and delayed preventive activities leading to rapid spread of infections. This study was conducted at the midst of outbreak in June and July of 2020.Government and many non-governmental organizations had already started training and awareness programme for PHEs. WHO reported on 23 July 2020 'In the absence of a vaccine, adopting Infection Prevention and Control (IPC) measures is the ONLY effective way to interrupt the transmission of COVID-19'. A team of Microbiologist and Virologists representing the Sri Lanka College of Microbiologist and the Ministry of Health and WHO Sri Lanka technical staff reviewed WHO global IPC guidelines and adapted them to design a set of training modules on IPC guidelines related to COVID-19 in the Sri Lankan setting to enhance the knowledge of PHEs and thereby increase their IPC-related practices, enabling them to respond to COVID-19 successfully[12].

The level of knowledge and perceptions of PHEs toward COVID-19 remained unclear as there was no recent study. Therefore this study was aimed to assess the Covid-19 related Knowledge and perceptions of Preventive Health Care Employees working in Health Region Kalmunai-Sri Lanka .A basic evaluation was necessary to identify the gaps and prescribe effective measures to build up their capacity which was highly important for a well-organized preventive actions.

2. MATERIALS AND METHODS

2.1. Sampling and data collection

This was an office of MOH based cross-sectional descriptive study conducted in June and July of 2020. Study population consisted of all the MOH, PHI and PHM attached to 13 MOH offices in Kalmunai health region. The number of the questionnaires distributed were 230 and out of which 200 PHEs responded. Non response rate was 13.04 %.

2.2 Study Instruments

Self-administered questionnaire was used as study instruments. A 25-item survey instrument was developed using WHO course materials on emerging respiratory viruses, including COVID-19 [13]. The instrument had been used in many international studies [14].

The questionnaire comprised of 03 variables with 25 indicators . There were 3 components in the questionnaire. Part 'A' component was on socio demographic characteristics such as age, gender , professional category, handled patients or suspects of COVID-19 ,participated in the training or discussion and source of information. Part 'B' component was on knowledge. This part consisted of questions focusing on etiology, incubation period, symptoms, transmission, complication , treatment methods and risk prevention of COVID-19. Each response was scored as "1" (correct) and "0" (wrong), with scores ranging from 1 to 7. A cutoff level of ≤4 was considered to indicate poor knowledge about COVID-19 whereas >4 was considered adequate knowledge about COVID-19. Third part was on perception toward COVID-19 was assessed using 7 items such as viability of virus, fatality rate of disease, treatment method, waste management , travel history, disinfection and indication of Personal Protective Equipment(PPE), and each question was labeled as good (scored as "1") or poor perception (scored as "0"). Scores ranged from 0 to 7. The participants' perceptions were classified as good (score >5) or poor (score ≤5). Socio demographic factors were independent variable and Knowledge and perception were dependent variables.

Pre-Testing was done at a non-selected MOH office. Self-administered questionnaire were filled by the participants and confidentiality of the information was assured. SPSS version 21statistical software was used to perform statistical analysis on the survey data. Descriptive statistic for the socio demographic data of the respondents and survey items were analyzed. Basic measurement frequencies and proportion were calculated. The chi-square test was used to investigate the level of association among variables. A 'p' value of less than .05 was considered statistically significant.

3.RESULT

A total of 200 PHEs responded to the questionnaire giving a response rate of 86.95 % . Initially, the descriptive analysis was carried out to identify the socio-demographic characteristics of the sample. Cronbach's alpha coefficient was 0.72 for the whole questionnaire with 25 questions. It has been indicated that 0.7 or more to be an acceptable reliability coefficient [15]. Accordingly, all the variables were of satisfactory level of reliability coefficient.

3.1 Socio- demographic profile of the respondents

Table 1 : Socio- demographic profile of the respondents(n = 200)

Socio- demographic factors	Frequency	Percentage
Gender		
Male	57	28.5
Female	143	71.5
Age		
30-39	68	34
40-49	77	38.5
50 ≤	55	27.5
Professional category		
MOH	12	06
PHI	47	23.5
PHM	141	70.5
Involvement in patients/suspects Management		
Involved	32	16
Not Involved	168	84
Attending training		
Attended	200	100
Not attended	00	

Source :survey data

Majority of the respondent were females (71.5 %). Major part of respondents belonging to age group of 40-49 years (38.5%) and PHM category was the largest population(70.5%) . Only one MOH division reported cases and 16% of PHEs had involved in the case / suspect management. Almost all the participant had participated in some sort of training (Table 1).

3.2 Reliable source of information of COVID-19 of respondent

Table 2 : Participants reliable source of information of COVID-19(n = 200)

Response	Source of information of COVID-19			
	News media (TV, Radio, etc..) n (%)	Social media n (%)	Government websites n (%)	Family and friends n (%)
Least used	1 (0.5)	2 (01)	1 (0.5)	53 (26.5)
Some time	126 (63)	50 (25)	50 (25)	84 (42)
More often	11 (5.5)	55 (27.5)	46 (23)	48 (24)
Mostly used	62 (31)	93 (46.5)	103 (51.3)	15 (7.5)

Source :survey data

Regarding the reliable source of information, the participants indicated that Government web site (51.3 %) was the mostly used source. Social media was used more often (27.5 %), News media (TV,Radio ,ect..) was some time(63%) utilized. PHEs obtained information from Family and friends (26.5) least (Table 2).

3.3 Knowledge about COVID-19 of respondent (N=200).

Table 3. Knowledge about COVID-19 of respondent.

Items in Knowledge component	Correct responses	Chi-square test value(p value)

	MOH (n=12) n (%)	PHI (n=47) n (%)	PHM (n=141) n (%)	Total correct responses n	
Etiology	08 (66.6)	29 (61.7)	47 (33.31)	84 (42)	14.834 (0.001)
Transmission	11 (91.66)	41 (87.23)	127 (90.07)	179 (89.5)	0.366 (0.833)
Incubation period	11 (91.66)	17 (36.19)	13 (9.2)	41 (20.5)	55.328(0.001)
Symptoms	07 (58.3)	29 (61.7)	25(17.7)	61 (30.5)	36.818 (0.001)
Complication	11 (91.66)	40 (85.1)	130 (92.1)	187 (93.5)	2.056 (0.358)
Treatment	11 (91.66)	41 (87.23)	100 (70.92)	152 (76)	6.860 (0.032)
Prevention	11 (91.66)	38 (80.85)	112 (90.07)	161 (80.5)	1.059 (0.589)
Total	69(82.1)	206(62.6)	559(57.62)	903(62.28)	22.565 (0.001)

Source :survey data

There was a significant difference (p=0.001)was found in the response to etiology of COVID-19. Majority of MOH and PHI knew that COVID-19 supposed to originate from bats and only low number PHM(33.31%) selected this response. Almost 90% of the PHEs had understood that mode of transmission was through air, contact and feco- oral rout. PHEs knowledge about the incubation period of the disease varied(p=0.001) significantly. Generally MOHs(91.66%) were aware that it was 2-14 days and others had different ideas. Only 9.2% of PHM responded correctly. More than half of MOHs and PHIs knew that fever, head ache, cough, sore throat and flue were the common symptoms and around 70% of the PHM were unaware of the symptoms. When consider about complication of the disease 93.5% of PHE had identified Pneumonia, respiratory failure and death were some of the complication. The fact that supportive care was the only currently available mode of treatment was recognized by majority of MOH and PHI and only 70.92% of PHM. More than 80.55% of PHEs understood that hand washing, social distancing, avoid touching of patients and avoiding crowded places and respiratory hygiene and cough etiquette were some of the preventive measures for COVID-19 .

A significant knowledge gap(p=0.001) had been observed among PHEs. Although generally their level of knowledge was good ,as all the category scored more than 57% which was the cutoff point. MOHs had more knowledge (82.1) than PHI and PHM (Table .3).

3.4 Perception about COVID-19 of respondent .

Table 4. Perception about COVID-19 of respondent (N=200).

Items in perception component	Correct responses				Chi-square test value(p value)
	MOH (n=12) n (%)	PHI (n=47) n (%)	PHM (n=141) n (%)	Total correct responses n (%)	
Viability of virus	9(75)	31(65.9)	69(48.92)	109(54.5)	6.282(0.043)
Fatality of disease	10(83.33)	30(63.82)	65(46.09)	105(57.5)	9.311(0.010)

Vaccination as treatment	11(91.66)	35(74.4)	104(73.75)	147(73.5)	1.901(0.387)
Category of waste of patients	12(100)	47(100)	141(100)	200(100)	-
Travel history	12(100)	47(100)	141(100)	200(100)	-
Disinfection	12(100)	41(87.23)	110(78.01)	163(81.5)	4.885(0.087)
Indication of PPE	8(66.66)	13(27.65)	51(36.17)	72(36)	6.319(0.042)
Total	74(88.09)	244(74.16)	682(69.01)	996(71.14)	15.473(0.001)

Most of the MOH (75%) and PHI (65.9%) believed that corona virus could not live in outside environment for several days and majority of the PHM (75.5%) thought incorrectly virus could live. PHEs had different opinion which was statistically significant (p=0.01) of fatality of COVID-19 .Majority of MOH and PHI perceived the fatality of the disease was low and 77.5% of PHM had understood it wrongly as highly fatal. More than 73% of PHEs positively perceived that vaccination was not a treatment method for COVID-19.All PHEs accurately got the opinion of all the items used by COVID-19 patients should be treated as infectious waste and travel history was very important when investigating patients. All the MOHs and more than 87% of PHIs knew that TCL could be used as disinfectant and 78.01% of PHM erroneously believed that it could not be used. When consider the indication of PPE more them 64% of PHEs had no clear ideas. They perceived that it was essential for all of them to wear PPE when go for field visits.
Though there was a significant variation ($p<0.001$) in the overall perception of PHEs, more than 69% of them had positive perception about the facts of COVID-19. MOH and PHI perceived more positively than PHM (Table 4).

4. DISCUSSION

Study was conducted in June and July in 2020 at the midst of outbreak in Sri Lanka to investigate the level of knowledge and perception toward COVID-19 among PHEs .By this time Ministry of health had already started many on line training and awareness programme.Many informative hand books and leaflets had been published and made available to PHEs. Further , COVID-19 was a global topic of discussion in the media and among the general public and health workers. With the mounting COVID-19 transmission raising tensions for everyone, including for health officials and health systems, an important question arised regarding how to manage information to help frontline PHEs in times of public health crisis.

Study revealed that level of knowledge and positive perceptions on COVID-19 was moderate among PHEs. However there was a significant variation and deficits could be observed across the categories of PHEs.

It was found that more than 51.3% (n=103) of PHEs used official government websites as a primary source of information about COVID-19. This indicated that the COVID-19-related updates posted online by official government health authorities had positive implications for improving PHEs' knowledge levels. Obtaining information from reliable sources is crucial for circulating unbiased and reliable data about the pandemic and is essential for PHEs' preparedness and response. However, a finding of significant concern was more than 46%

(n=93) of PHEs used social media as a source of information. Generally, there was a vast diversity of materials available through the internet, including unverified malicious information, that cuold spread quickly and misguided PHEs. Health authorities and scientists had warned that widespread fabrication about COVID-19 was a serious concern causing xenophobia worldwide [16.17]. In this regard, PHEs should carefully evaluate COVID-19-related information and should use scientific and authentic content as information sources.

Only very few number (n=41, 20.5%) of the PHEs believed that incubation period of COVID-19 was 2- 14 days (P=0.001). If these responses were truly representative of PHEs, this could have adverse consequences on patient care and also on the dynamics of potential COVID-19 outbreaks. This apparent lack of knowledge could result in delays in the implementation of necessary confinement measures which may increase the burden of COVID-19. .Surprisingly 30.5% of PHEs chose wrong response to symptoms of disease. One of duty of PHEs was to screen the suspects in the quarantine /isolation centers. They had to get the history of presenting complain daily to check whether symptoms of covid-19 appeared in them. If PHEs did have the knowledge about the symptoms, how could they evaluate situation .Unfortunately they might miss the cases which would cause devastating effect. Additionally, some PHEs (25%) were inaccurate on some basic knowledge, for instance, COVID-19 could be treated with vaccination and existing antivirals . Finally, a vast majority of PHEs strongly agreed with the preventive measures such as hand washing, social distancing, avoiding physical contact of patients and crowded places and respiratory hygiene and cough etiquette which they implemented daily and also used to educate the public.

The findings of this study pointed out a substantial gap between the amount of information available on COVID-19 and the depth of knowledge among different categories of PHEs, particularly about etiology, incubation period, symptoms and treatment method. This was unfortunate because the surge of COVID-19 was globally devastating, and a large number of resources were provided by health care authorities to educate PHEs and to improve their knowledge of COVID-19. One possible explanation for the differences in knowledge across the categories was that doctors were more educated in infectious diseases and pharmacotherapy because of their continuous professional development. Further MOHs were multi linguistics and could grab the information easily from any source. Therefore, our findings suggested that greater encouragement from health authorities was needed to distribute COVID-19-related knowledge to all categories of PHEs, especially PHI and PHM.

Generally, most participants had a positive perception of the prevention and control of COVID-19. However, discrepancies were identified in the viability of virus, fatality of disease and indication for personal protective equipment. Around 42 % of PHEs erroneously believed that COVID-19 was highly fatal. This point was important because this believe would make them anxious and depressed and unable to perform their preventive activity effectively. Satisfactorily large number of PHEs were quiet sure about the waste management of COVID-19 patients and important of travel history.

There were several circulars send by Ministry of health ,Sri Lanka regarding preventive measures, indication for PPE and staff protection [18]. However 36% of PHEs predominantly PHIs did not perceive the correct indication. They believe all the staff should wear PPE during field visit. This assumption and when it was not fulfilled would make them feel unsafe and dissatisfaction and would create an unhealthy working environment. This fact certainly had a negative impact on prevention and control programme. While there was a moderate positive perception across the categories, MOH and PHIs perceived considerably more than PHM. This finding might be due to MOH and PHI involved in the preventive activities many

fold more than PHM. Involvement is a positive momentum which continually pushes them forward to perform assigned duty actively.

5. LIMITATIONS

Study was conducted only in Health Region Kalmunai of Sri Lanka and the result cannot be generalized. No research had been done before on this topic in Sri Lanka .There was little literature evidence to support the result of this project in the context of Sri Lanka.In addition, the data presented in this study were self-reported and partly depend on the participants' honesty and recall ability; thus, they might be subjected to recall bias.

6. CONCLUSION

This study found generally knowledge and perception of PHEs was good, However gaps were found in some specific aspects. This good amount of knowledge and perception could be considered to have contributed substantially to the successful management of the pandemic in Sri Lanka so far. The findings also demonstrated that in addition to government source, PHEs were also using less authentic sources for information; this should be addressed immediately as it ultimately would affect knowledge and perception.The study recommended that health ministry should provide a comprehensive and tailored educational and training programme, targeting all PHEs specially PHM , to promote all precautionary and preventive measures of COVID-19, to achieve equilibrium in terms of knowledge on COVID-19.

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