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Research Article

COVID-19 and Adolescents of Chengalpattu District: A Cross-sectional Study

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A B S T R A C T

Introduction: COVID-19 is a potential public health concern which was identified and declared as public health emergency of international concern by the World Health Organisation.

Objective: To assess the knowledge and standard COVID-19 preventive practicing methods followed during pandemic among adolescents in the urban areas of Chengalpattu district.

Methods: A Community based cross-sectional study was conducted among the adolescents (10 years to 19 years) in urban field practising areas of a tertiary care private hospital during the second COVID wave. Data were collected through simple random sampling technique from 170 adolescents in the sampled households through face-to-face interview of respondents. Statistical analysis done using institutional licensed IBM-SPSS version 21.0 software.

Results: Majority of the study participants 53.5% were between the ages of 15 and 19. Of the participants, 52.4% were perusing their higher/ higher secondary education. Female respondents were 51.8% in the present study. 67% had good knowledge regarding the corona virus and 82% had good COVID-19 preventive practice during the pandemic.

Conclusion: Lack of equivalent knowledge emphasises the need of educating the younger community about the novel virus. Appropriate measures to improve COVID-19 knowledge should be taken by relevant stakeholders in view of yielding equilibrium between preventive practice and knowledge so that the disease will be eradicated in near future.

Keywords: Corona, SARS-CoV-2, Pandemic, Virus, Younger Age

Introduction

COVID-19 is an infectious disease caused by SARS-CoV-2 was first identified in Wuhan city, Hubei Province of China on December 2019.[1] On 30 January 2020, the World Health Organisation declared COVID-19 as public health emergency of international concern. On 11 March 2020, the WHO announced COVID-19 a pandemic.

India went into lockdown on March 25,2020 making it the largest lockdown, restricting 1.3 billion people. The lockdown had been extended for another two weeks

starting from May 4, 2020 and further extended it for many months.[2] As per the guidelines, the country was divided into red, orange and green zones. The government after reducing the spread of COVID-19 started lifting the lockdown step by step with several restrictions for the general public to experience the new normal. Red zones are designated as the hotspots and will not see any relaxations in comparison to the areas considered less prone for the spread of the virus.

The United States of America being the first most affected country with 30,541,000 confirmed cases (April 2021).[3] India holds third position with 12,928,574 confirmed cases of COVID-19 as of April 2021.[3] On 30 January 2020 India reported the first case of COVID-19. Tamilnadu has reported nearly 8,70,546 confirmed cases of COVID-19 with 12,821 deaths till date.[4] The highest prevalence of cases being recorded in Chennai followed by Coimbatore and Chengalpattu.[5]

The novel virus spreads via small droplets from coughing, sneezing etc. and also through aerosol transmission. The common symptoms reported were fever, cough, throat congestion, fatigue, loss of smell, loss of taste, shortness of breath and sometimes asymptomatic. All symptomatic suspects and asymptomatic contacts of COVID-19 patients were tested using a molecular test like Polymerase chain reaction (PCR) to detect SARS-CoV-2 and confirm infection.[6] India increased the number of testing laboratories gradually to curtail the infection.

Non-pharmaceutical interventions like; quarantine of exposed individuals, isolation of suspected/confirmed cases, and sensitization of the general public about control measures are the only available options to limit the spread of this new virus.[7] Development and distribution of a vaccine is one of the most optimistic strategies to overcome the pandemic crisis. World health organisation (WHO) is now guiding various pharmaceutical companies in establishing the vaccine.

As of January 2021, there are two vaccines that have been granted emergency use authorization by the Central Drugs Standard Control Organization (CDSCO) in India namely Covishield and Covaxin. India launched the COVID-19 vaccine on 16th January, 2021. The first group includes healthcare and frontline workers. The second group to receive COVID-19 vaccine are persons over 60 years of age and persons between 45 and 59 years with comorbid conditions from March 1st, 2021. from April 1st, 2021 the third group (45 years of age and above) started receiving vaccination.[8] The other vaccines which were approved later in India for emergency use are Sputnik – V (April 2021), Moderna (June 2021) and Johnson & Johnson's vaccine (August 2021). Vaccination among adolescents (12-18 years of age) was made available in October 2021.[9]

Considering the relevance of all the above factors, this study was aimed to evaluate the knowledge about COVID-19 and its standard preventive methods followed by the adolescents in urban areas of Chengalpattu district.

Material and Methods

A community based cross-sectional study was conducted within three months' duration among the adolescent population to assess the knowledge regarding COVID-19 and preventive practicing methods followed during the pandemic using a semi-structured pretested questionnaire. The study was approved by the Institutional Ethics Committee. This study was a community-based survey conducted during the second COVID wave[10,11] across three different urban areas in Chengalpattu, Tamilnadu. The data were collected through face-to-face interview of the respondents ensuring that both the investigator and the study participants were checked for body temperature using infrared thermometers, confirming that both investigator and the study participants wear protective face mask/ face shield and maintaining minimum of 3 feet distance between the participants and the investigator throughout the session.

Sample size of 145 was arrived based on the previous studies by Vijai C et al.[12] Allowing 10% non-responsive rate, the sample size was calculated to around 170. Simple random sampling technique was used to identify the study population based on certain inclusion criteria like age, place of residence and exclusion criteria such as older participants of age 20 years and above, mentally ill and COVID-19 positive patients. A total of 170 responses were collected from the three randomly selected areas out of five areas covered under the urban field practicing area of a tertiary care hospital.

The study was initiated during the second COVID wave prior to the initiation of COVID-19 vaccine for adolescents using a semi-structured pilot tested questionnaire to assess the knowledge and practicing methods followed during COVID-19 pandemic. The questionnaire had three sections to assess socio-demographic details, COVID-19 knowledge and preventive practicing methods followed during the COVID-19 pandemic. Section A comprises questions relating to general information and demographic data. Section B consists of ten question to assess the baseline knowledge regarding the COVID-19 infection. Each correct response is awarded one point. Accounting to total score of 10, a score of ≥ 6 was considered good knowledge and score of ≤ 5 is considered poor knowledge regarding COVID-19 infection. Section C had 10 questions to assess the perceived COVID-19 preventive practicing methods followed. Each correct response is awarded one point. Similarly, in this section, out of score 10, a score of ≥ 6 was considered good preventive practice and score of ≤ 5 is considered poor preventive practice with respect to COVID-19 infection.

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A brief description of the study, its objectives and the declaration of anonymity and confidentiality were explained to the participant's parents/caretaker before collecting the data. Informed and written consent was taken from all the participants' parents/caretakers at the time of enrolment. Following this, the participants were asked to answer the questions on knowledge regarding COVID-19 and protective measures followed during the pandemic. During the survey, participants were given full freedom to stop study participation at any stage before completing the questionnaire.

Descriptive statistics of the participants' baseline characteristics and responses were provided as frequency and percentage. The association between the categorical variables were assessed using Chi-square test. For all analyses, $p < 0.05$ was considered statistically significant. All statistical analyses were performed by using IBM-SPSS v21.0.

Results

The baseline characteristics of the study participants are shown in Table 1. Of the 170 study participants residing in urban Chengalpattu the majority of the sample 53.5% were between the ages of 15 and 19. There were 51.8% female respondents. By educational qualification, nearly half of them 52.4% were perusing their higher or higher secondary education. Nearly 70% of the adolescents had access to smartphones when compared to laptops. 48.8% were perusing their education from private institutes and 47.6% were from government schools.

Table 1.Socio-demographic characteristics of the study population

Socio demographic characteristics	n (170)	(%)
Age		
10 -14 years	79	46.5
15 -19 years	91	53.5
Gender		
Male	82	48.2
Female	88	51.8
Socio-economic class		
Class 1	21	12.4
Class 2	70	41.2
Class 3	43	25.3
Class 4	17	10.0
Class 5	19	11.2
Educational status		
Middle school	42	24.7
Higher/ Higher secondary	89	52.4
Not attending school regularly	39	22.9
Institution		
Private School	83	48.8
Govt. School	81	47.6
Govt aided School	6	3.5
Gadget's usage		
Smart phone	119	70.0
Laptop/ Tab	38	22.4
None	13	7.6

Figure 1 & 2 describes the participants COVID-19 knowledge. Out of the 170 participants, the majority (67%) had good knowledge. Poor knowledge was more apparent in questions related to the vaccine availability, symptoms of COVID-19 and cause of the disease, in which the wrong responses rate were 42.9%, 30.6% and 12.9% respectively. The mean total knowledge score was 5.98.

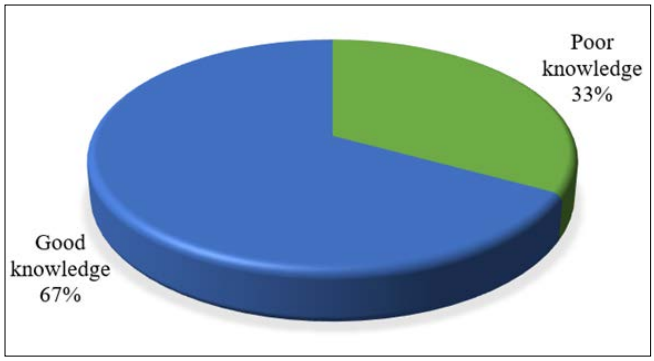

Figure 1.Knowledge regarding COVID-19 (n=170)

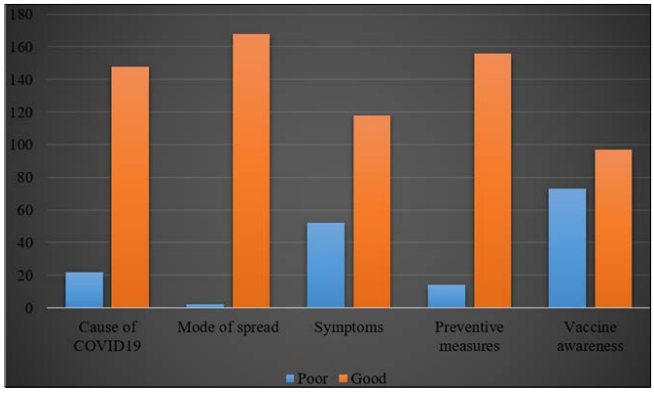

Figure 2.Variables related to COVID-19 knowledge (n=170)

The majority of participants reported (48.8%) social media and television as the main source of knowledge and a considerable percent stated newspaper and other sources (43.5%) respectively. The least source was telephone (7.6%).

Table 2 represents the association between knowledge regarding COVID-19 and sociodemographic data among

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the study participants were age, gender, educational status and gadgets usage were found to be statistically significant (p value < 0.05).

Table 2.Association between knowledge regarding COVID-19 and sociodemographic data

Socio-demographic characteristics	Knowledge (n=170)		P - value
	Poor	Good	
Age			
10 -14 years	13 (31.7%)	66 (51.2%)	0.029
15 -19 years	28 (68.3%)	63 (48.8%)	
Gender			
Male	20 (35.7%)	62 (54.4%)	0.022
Female	36 (64.3%)	52 (45.6%)	
Educational status			
Middle school	7 (14.3%)	35 (28.9%)	0.0001
Higher/ Higher secondary	14 (28.6%)	75 (62%)	
Not attending school regularly	28 (57.1%)	11 (9.1%)	
Institution			
Private School	15 (46.9%)	68 (49.2%)	0.137
Govt. School	14 (43.8%)	67 (48.6%)	
Govt aided School	3 (9.3%)	3 (2.2%)	
Gadget's usage			
Smart phone	33 (61.1%)	86 (74.1%)	0.001
Laptop/ Tab	11 (20.4%)	27 (23.3%)	
None	10 (18.5%)	3 (2.6%)	
Socio-economic status			
Class 1	7 (12.5%)	14 (12.3%)	0.300
Class 2	19 (33.9%)	51 (44.7%)	
Class 3	16 (28.6%)	27 (23.7%)	
Class 4	9 (16.1%)	8 (7%)	
Class 5	5 (8.9%)	14 (12.3%)	

Figure 3 & 4 describes various practicing methods followed by the participants during the pandemic. The overall mean practice score was 7.37. Out of the 170 participants, the majority (82%) had good practice while 18% reported poor practice toward COVID-19. Nearly 97.1% stated that they wear face mask while stepping out, 65.3% reported that they were able to follow social distancing while 34.7% agreed that they were unable to follow in the public gatherings.

Only 53.3% were practicing proper disposal techniques while others reported that they dispose along with household wastes and in public places.

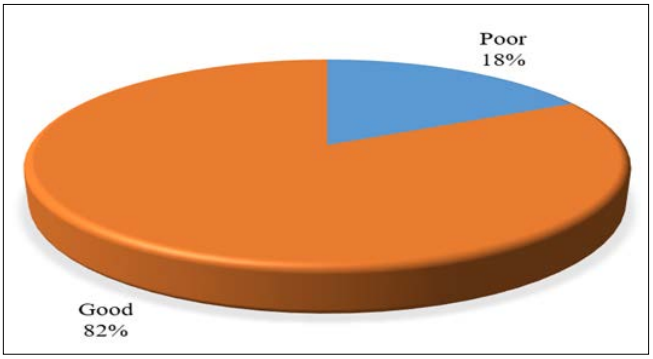

Figure 3.Preventive practicing methods followed (n=170)

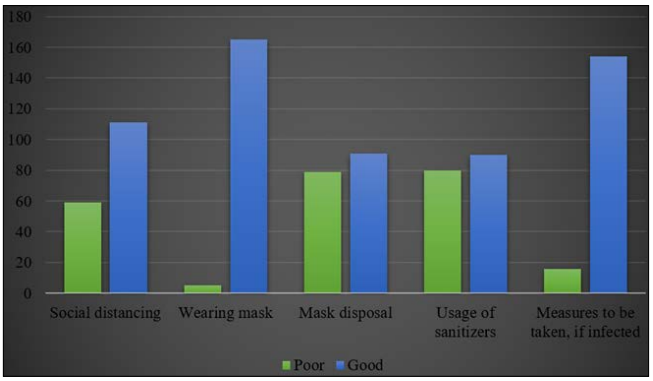

Figure 4.Variables related to preventive practicing methods followed during COVID-19 pandemic (n=170)

Table 3 represents the association between precautionary practice measures followed to prevent COVID-19 and sociodemographic data in which educational status was found to be statistically significant (p value < 0.05).

Table 3.Association between preventive practicing methods followed during pandemic and socio-demographic characteristics

Socio-demographic characteristics	Practicing method (n=170)		P-value
	Poor	Good	
Age			
10-14 years	19 (61.3%)	60 (47.2%)	0.160
15-19 years	12 (38.7%)	67 (52.8%)	
Gender			
Male	16 (53.3%)	66 (47.1%)	0.538
Female	14 (46.6%)	74 (52.9%)	
Educational status			
Middle school	11 (28.2%)	31 (23.7%)	0.0004
Higher/Higher secondary	11 (28.2%)	78 (59.5%)	
Not attending school regularly	17 (43.6%)	22 (16.8%)	

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Institution			
Private School	15 (44.1%)	67 (49.6%)	0.650
Government School	17 (50%)	64 (47.4%)	
Government aided School	2 (5.9%)	4 (3%)	
Gadget's usage			
Smart phone	36 (69.2%)	83 (70.3%)	0.988
Laptop/ Tab	12 (23.1%)	26 (22.1%)	
None	4 (7.7%)	9 (7.6%)	
Socio-economic status			
Class 1	2 (6.7%)	19 (13.6%)	0.805
Class 2	14 (46.6%)	56 (40%)	
Class 3	9 (30%)	34 (24.3%)	
Class 4	2 (6.7%)	15 (10.7%)	
Class 5	3 (10%)	16 (11.4%)	

Discussion

The study concludes that, respondents aged 10-14 years, males, perusing higher/higher secondary education and with increased access to smartphones living in urban areas were positively associated with high knowledge and preventive practices scores towards COVID-19. The mean knowledge and practice score against COVID-19 in the present study were 5.98 and 7.37 which was significantly less when compared to study by Narayana G et al.[13] conducted among adults which showed mean scores of 7.47 and 8.81 respectively.

The knowledge regarding COVID-19 was 67% and preventive practice measures followed was 82% in the present study which was higher when compared to 45.95% and 48.01% in a study by Pareek S et al. conducted among adults.[14] This difference might be due variations in duration and study population. The later study was conducted as soon as the pandemic was declared while our study was conducted several at the end of second pandemic wave. Alternatively, a study by Reuben RC et al.[15] resulted that 99.5% had knowledge of COVID-19. Also study by Narayana G et al.[13] concluded that around 90% of respondents are aware of the disease.

A study by Vijai C et al.[12] clinched that 56% gained knowledge regarding COVID-19 from newspaper and television news, while 24% from social media and 16% from government official websites. Whereas study by Pandey S et al.[16] showed that majority of the respondent's 68.3% trusted on television, 62% showed their trust on official government websites and 49% says newspaper as most authentic sources of news dissemination.

Reuben et al.[15] stated that 55.7% and 27.5% of respondents had internet/social media and television (TV) as their major source of knowledge. The present study showed that majority 48.8% gained knowledge from social media and television when compared to other sources. This discrepancy may be because of the predominant younger age group (10 to 19 years) in our study who are likely to be more digitalised in view of online classes.[17]

In the current study 97.1% practiced wearing facemask while stepping out whereas in Vijai C et al.[12] study, washing hands (87.7%), using antiviral & antibacterial (76.3%), and wearing a mask (82.6 %) were identified by majority of the respondents as prevention methods.

65.3% of respondents practiced effective social distancing while in public gatherings in the present study which was considerably higher when compared to study by Vijai C, Suryalakshmi SM[2] were 39.6% felt social distancing through lockdown was effective preventive measure and 49.3% respondents accepted that facemask is protective.

52.9% carried alcohol-based sanitizers while stepping out and 58.8% respondents disinfected frequently touched surface at home in the present study which was less when compared to 94.7%, 81.7% and 58.6% of the respondent's opinion on alcohol-based sanitizers, soap/detergents and cleaning of surfaces with diluted chlorine could kill COVID-19 virus in study by Reuben RC et al.[15] This might be due to the difference in financial status of the study populations to purchase alcohol-based sanitizers.

Pandey S et al.[16] study shows 32% walk regularly through crowded places and 15% visit occasionally to crowded places whereas in the present study 78.8% of respondents mentioned that they step out less frequently.

Limitations

As the study has been conducted a few days before the onset of adolescent COVID-19 vaccination in Tamilnadu and being published after implementation of COVID-19 vaccination, the score regarding knowledge of COVID-19 might have been negatively influenced with respect to vaccines.

Conclusion

The increased preventive practice among the younger population reflects effectiveness of health education against novel SARS-CoV-2 infection. Furthermore, increased preventive practicing method plays a vital role in protecting the adolescents as there is no approved vaccination for the younger age group at present. It also reduces the doubling time of the disease in community. Appropriate

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measures to sustain COVID-19 knowledge and preventive practice methods among adolescents such as continuing online classes, encouraging vaccination of the eligible adult population at home, educating their parents/caretakers to abide by the precautionary measures as directed by the government so as to eradicate the disease in near future.

Conflict of Interest: None

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