



A Quasi-Experimental study On Knowledge and Attitudes Regarding COVID-19 among Secondary School Students

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Abstract

Background: Pandemic coronavirus disease 2019 is considered an emerging disease that is highly infectious, caused by a coronavirus in December 2019 in the city of Wuhan, China. The coronavirus has affected the educational process worldwide and led to the closure of schools, universities, and colleges in mid-March 2020. **Objective:** To evaluate the effect of an educational intervention on the knowledge and attitudes of secondary school students regarding COVID -19. **Methods:** a quasi-experimental design was adopted. A target sample of 60 students was selected from secondary school students in Udaipur City from Nov. 20 to Jan. 20, 2021. The instruments used in this study consisted of a self-structured questionnaire that included four sections to assess secondary school students' demographics variables, knowledge and attitude about COVID -19. The questionnaire was designed using Google forms regarding COVID-19 and the survey link was presented to the respondents through Whats-app groups. **Results:** A significant difference was found between secondary school students' knowledge and attitudes before and after the intervention. Most of the students had a poor level of knowledge and attitudes before the test, which improved after the intervention. **Conclusion:** It was concluded that secondary school students' knowledge and attitude improved after exposure to an educational intervention. The delivery of educational interventions was significantly effective in increasing the level of knowledge and attitudes among secondary school students regarding COVID-19.

Keywords: COVID-19, School, knowledge, attitudes, students.

Introduction:

The WHO declares that on March 12, COVID-19 was a global pandemic that spread widely and rapidly from the city of Wuhan to other parts of the world, threatening the lives of many people¹. At the end of January 2020, the World Health Organization (WHO) declared a public health emergency of international concern and called on all countries to make joint efforts to prevent the rapid spread of COVID-19². Extraordinary efforts have been made to control the spread of COVID-19 in Egypt. Its clinical picture begins with an asymptomatic infection and develops into a severe disease and is accompanied by a high mortality rate³. At the time of writing (May 16, 2020), more than 4,425,485 cases of COVID-19 and 302,059 deaths have been registered worldwide². In Egypt, there are 11,228 positive individuals and 592 deaths⁴. The coronavirus is characterized by rapid transmission, which occurs in close contact with an infected person and is not the only mode of transmission². Symptoms of the coronavirus include fever, dry cough, fatigue, Myalgias, shortness of breath, sore throat, runny nose and sneezing. Images that illustrate the morphology of corona viruses; club-shaped viral tip polymers, colored red, create the appearance of a corona surrounding the eye when viewed by electron⁵. Research shows that older people and people with underlying health conditions such as cardiovascular disease, diabetes, chronic respiratory disease and cancer are more likely to develop serious illnesses from the coronavirus².

All aspects of human activities globally affected by the COVID-19 outbreak in education, research, sports, entertainment, transportation, worship, social gatherings/interactions, economics, business and politics. Indeed, the entire world was in distress due to the threats of COVID-19⁶.

Health authorities have made considerable efforts to control the disease through various measures. Public education is seen as an important measure that can help control disease. Efforts to control the spread of COVID-19, including non-medical interventions and preventive practices such as social distancing and self-isolation⁷.

Most parts of the world were on lockdown and people were working from home to reduce the spread of the coronavirus and the incidence of people infected with the coronavirus. An increased need for protective gowns, disinfectants, face masks, and gloves was required⁸.

There was no reliable treatment for the coronavirus, but studies were going on in the same line all over the world to come up with a vaccine against the virus. However, recent events show that behavior change can help control the spread of COVID-19⁹. Preventive measures designed to help manage the COVID-19 pandemic include improving individual habits such as hygiene, including frequent hand washing with alcohol, close coughing and sneezing, and other protective practices such as wearing masks, avoiding touching the face, social distancing and reducing contact with other people by isolating at home and avoiding travel and gatherings. The coronavirus is seen as a problem that requires greater coordination and cooperation to support the successful management of the outbreak and know how to avoid its adverse effects. The consequences of COVID-19 may be more severe; if people do not follow public health

regulations and advice². Since there is no definitive treatment for COVID-19, it is important that people are strictly aware of social distancing and hand washing¹⁰.

Personal knowledge and practices related to COVID-19 are influenced by adherence to these control and prevention measures according to the "KAP theory". It is a theory of health behavior change, where this change in human behavior involved three consecutive themes, namely acquiring the right knowledge, generating attitudes, and acquiring practice¹¹.

The nurse plays an important role in preventing the spread of the disease by encouraging student adherence, which is influenced by the student's knowledge, attitudes, and practices toward COVID-19, and by providing health education about the prevention and control of COVID-19. Evidence shows that student knowledge is important in managing pandemics¹². Many facts about student perceptions and practices can be obtained by assessing students' knowledge about the coronavirus, which helps identify attributes that influence students' adoption of healthy practices and sensitive behaviors¹³.

At this critical moment, there is a need to improve students' knowledge, attitudes and practice towards COVID-19. Because they are from the health care team and play an important role in patient care, which includes decision-making for patients within another multidisciplinary health care team, they are responsible for nursing care, counseling and prevention, health education, and patient care evaluation¹⁴.

Objective of the study:

The aim of the study was to evaluate the effect of an educational intervention on the knowledge and attitudes of secondary school students regarding COVID-19.

Research hypothesis:

1. There will be significant difference between the pre test and post test knowledge scores of Secondary school students regarding COVID-19.
2. There will be significant difference between the pre test and post test attitude scores of Secondary school students regarding COVID-19.

Research methodology:

Research design: -A quasi-experimental research design was adopted in this study.

Settings:-The current study was conducted in the Udaipur city.

Sampling technique: Purposive sampling was used to achieve the objective.

It includes 60 secondary school students in Udaipur city via whatsappgroup with use of google form. Who meet the following inclusion criteria: secondary school students aged 15 to 18, of both gender and Welling to participate in the study.

Data collection tool and techniques:

After a comprehensive literature search and based on the latest available information from the World Health Organization, the pre-validated Center for Disease Control and Prevention questionnaire was modified by the researchers as follows:

- Separate questionnaire:

- It consisted of four parts.

Part (1):- Demographic data included age, gender, residence and source of information.

Part (2): To assess knowledge regarding COVID-19 consisted of (20) items which include (definition of COVID-19, risk factors of COVID-19, signs and symptoms of COVID-19, treatment and modes of transmission and preventive measures COVID-19.

Part (3): The assessment of attitude towards COVID-19 consisted of (6) items.

A health education English and Hindi booklet prepared by researchers, including an educational intervention program related to COVID-19.

Scoring system:

• The scoring system for the current study was as follows:

A. Knowledge about COVID-19. It contains 20 questions; were answered on a YES/NO basis. 1 point was assigned for a correct answer, zero points for an incorrect one. The total knowledge score ranged from zero to 20, with a high score indicating good knowledge about COVID-19. Items were assessed for internal reliability using Cronbach's alpha coefficient of 0.72. The total student knowledge score was divided into three levels:

1. Scores above ($\geq 70\%$) considered good
2. Scores between 50% - < 70% were considered fair
3. Scores below 50% were considered poor.

B. Attitudes toward COVID-19. It contains 6 questions; in the attitude section, scores were calculated based on respondents' responses to each attitude statement, 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, and 5 = strongly agree. A score was calculated by averaging respondents' responses to the six statements. Total scores ranged from 6 to 30, with high scores indicating positive attitudes. Likert scales were assessed for internal reliability using Cronbach's α . Cronbach's alpha coefficient was 0.81, indicating internal reliability.

The students' total attitude score was divided into three levels:

1. Scores above ($\geq 75\%$) considered positive.
2. Scores between $51\% - < 75\%$ were considered moderate.
3. Scores $\leq 50\%$ were considered negative.

Validity and Reliability:

The content and content validity of the instruments were assessed in terms of clarity, comprehensiveness, appropriateness and relevance by a panel of five expert professors in the field of pediatric nursing and community health nursing. The board determined the face and content validity of the instruments after the modifications.

Reliability was assessed through- Cronbach's alpha reliability test $\alpha = 81\%$. The reliability of the instruments was estimated using the Pearson correlation coefficient test for comparing variables. The Pearson correlation coefficient for the variables ranged between ($P < 0.5$) and ($P < 0.001$), indicating a highly significant positive correlation between the subjects' variables.

Ethical considerations:

The research proposal was approved by the Institutional Ethical Committee (IEC) Pacific Medical University with reference number -TCN/R/2021/42, Dated on 9Sept.2020. The participants were informed about the purpose of the research and written consent obtained prior to enrolling them. Anonymity was maintained throughout the research and no information related to individual respondents is available in public domain.

Data Collection:

The researchers used an online Google form to create the survey. The researchers shared a link with students to collect data, which included an online questionnaire. Link given in WhatsApp groups. On the opening page of the online questionnaire, students were informed about the objectives and expected outcomes of the study. All student responses were collected in an online spreadsheet to evaluate the effect of an educational intervention related to COVID-19 on knowledge, attitudes among secondary school students. The phone numbers of all the students studied were taken for tracking. The online questionnaire was used three times. It was first used as a pre-educational intervention application to assess secondary school students' knowledge and attitudes regarding COVID-19. It was then used again as an immediate post-educational intervention application and a follow-up after 2 week to evaluate the effect of the program.

Statistical analysis: The obtained data were checked, prepared for computer recording, coded, analyze and compile into a table. Data entry and analysis were performed using the statistical software package SPSS 17.0. Data are expressed as mean, SD, number and percentage. ANOVA test used to determine significance for numerical variables and using Person's correlation for numerical variable within the same group, $P >$

0.05 was not significant, $P < 0.05$ was significant, $P < 0.01$ was moderately significant and $P < 0.001$ was highly significant.

Result:

The 60 students who answered the questionnaire, (74%) were male and (26%) were female. The age of the participants ranged from 15 to 18 years (100%). In terms of residence, the students lived in urban areas were 78% and 22% lived in rural areas (Table 1). Regarding students' sources of information about COVID-19, the results showed that the main source of information about COVID-19 was social media (85%), followed by television (5%) and (10%) was family member. (Table-1)

Shows the knowledge of secondary school students about COVID-19 before/after and 2 week after the implementation of the educational intervention. This table indicated that there was an improvement in the knowledge of secondary school students compared to that of the preschool intervention. There was a highly significant difference between secondary school student's knowledge about COVID-19 between pre/post and 2 week after the implementation of the educational intervention (p -value < 0.000). Of all subjects, 60 (100%) had a low level of knowledge before the test. In the posttest, 48 (80.0%) secondary school students had a good knowledge level and 7 (11.67%) were average and 5 (8.33) were poor knowledge score. (Table-2).

There has been an improvement secondary school students' attitudes compared to preschool intervention knowledge. There was a highly statistically significant difference between secondary school student's attitude toward COVID-19 between before/after and 2 week after the implementation of the educational intervention (P value < 0.000). Attitudes of secondary school students were measured with 6 items. The highest negative result was responded regarding the attitude related to COVID-19: "feels anxiety when you think about the coronavirus disease/COVID-19". The highest positive result was answered for attitude items related to COVID-19: "regular hand washing, social distancing and wearing masks can protect". However, the lowest positive attitude score is for the attitude item: There were highly significant differences ($p < 0.000$) in the mean attitude scores of secondary school students before/immediately after and 2 week after the implementation of the COVID-19 intervention (Table 3). Of all subjects, In the Pre-test (75%) had a negative attitude, followed by moderate (18.33%) and positive (6.66%). In the posttest, (88.88%) had positive attitude in secondary school students, which improved after the implementation of the intervention (Table-3).

A highly statistically positive correlation was found between the total score of knowledge and attitude in the school students and after 2 week of implementation of the educational intervention ($P = 0.004$, $P = 0.005$).

Table-1.Percentage distribution of secondary school students according to their characteristics (N=60)

| S.N. | Characteristics | N=60 | % |
|-----------|------------------------------|------|-----|
| 1. | Gender | | |
| | - Male | 44 | 74% |
| | - Female | 18 | 26% |
| 2. | Age(years) | | |
| | 13 - 16 year | 58 | 88% |
| | 17 - 20 year | 2 | 12% |
| 3. | Residence: | | |
| | Urban | 47 | 78% |
| | Rural | 13 | 22% |
| 4. | Source Of Information | | |
| | Social Media | 51 | 85 |
| | Television | 3 | 5 |
| | Family Member | 6 | 10 |

Table-2.Comparison of (Pre test and Post test) secondary school student's level of knowledge related to COVID-19.

(N=60)

| Items | Score Range | Pre-test | | Post test | | P-value |
|----------------|-------------|----------|--------|-----------|--------|---------|
| | | No. | % | No. | % | |
| Poor | 0 to 7 | 52 | 86.67% | 5 | 8.33% | 0.000 |
| Average | 8 to 14 | 6 | 10% | 7 | 11.67% | 0.000 |
| Good | 15 to 20 | 2 | 3.33% | 48 | 80% | 0.000 |
| Mean ±SD | | 2±0.41 | | 5±1.33 | | 0.000 |

Table-3.Comparison of (Pre test and Post test) secondary school students level of attitude related to COVID-19.

(N=60)

| Items | Score Range | Pre-test | | Post test | | P-value |
|-----------------|-------------|----------|--------|-----------|--------|---------|
| | | No. | % | No. | % | |
| Negative | 6 to 15 | 45 | 75% | 1 | 1.66% | 0.000 |
| Moderate | 16 to 25 | 11 | 18.33% | 6 | 10% | 0.000 |
| Positive | 25 to 30 | 4 | 6.66% | 53 | 88.88% | 0.000 |
| Mean ±SD | | 4±1.50 | | 1±1.69 | | 0.000 |

Discussion:

The world is now facing the coronavirus pandemic, which is considered highly contagious. Several preventive measures were mentioned to prevent its spread among students. However, for these preventive measures to be effective, students need adequate and sufficient knowledge. Knowledge, attitude is key to disease prevention and control. Health care teams include nurses and are responsible for providing knowledge, providing quality management, and protecting individuals from illness during an epidemic period¹⁴.

The current study revealed that more than half of the participants were female and less than half were male. The age of the participants ranged from 15 to 18 years. These results were almost supported by a study conducted by Dafni and Maddalena (2020), who in their study in Italy found that the age of the participants ranged from 14 to 19 years and that women were more than half of the participants.

Similarly, a previous study mentioned that the Internet was the main source of information about COVID-19. This reflects the importance the internet in promoting health, especially during infectious diseases and pandemics. The presence of technology in these closed months plays an important role in providing knowledge and helping students continue their studies. More attention should be paid to the use of technology, especially social media resources, especially Facebook or Whats App, as they help promote public health awareness among students¹⁵. The current study shows that there was an improvement in the knowledge of secondary school students compared to the knowledge of the pre-educational intervention. A highly statistically significant difference was found between pre test and post test (P-value <0.000) among secondary school student's knowledge regarding COVID-19. This may be related to the impact of the COVID-19 learning programs on knowledge, students, and the brochure, which covered all identified needs and knowledge gaps on the topic among secondary school students. Students need to have sufficient and correct knowledge about COVID-19 from a biological and scientific point of view and not only socially, because correct information during the pandemic is considered a key point to focus on in this research. The current study revealed that of all the subjects, they had a low level of knowledge before the test; in the posttest, most secondary school students had a good level of knowledge, which indicated the importance of the intervention, which was effective in improving students' knowledge. This reflected the students' desire to increase their awareness and knowledge and the importance of good practice during COVID-19 as a method of prevention and protection against coronavirus infection. The current study illustrated that there was an improvement in secondary school students' attitudes compared to the pre-intervention knowledge. There was a highly statistically significant difference between secondary school student's attitude toward COVID-19 between pre/post and 2 week after the implementation of the intervention (P value <0.000). This is due to the correlation between students' attitude and knowledge, which suggests that sufficient knowledge, reflects their positive attitude among students towards COVID-19. The current study revealed those secondary school students' attitudes were measured using 6 items. The highest negative result was answered for the attitude item related to COVID-19: "feel anxious when thinking about the coronavirus disease / COVID-19". This was a country like Indian where stress and

anxiety can occur because basic precautions are not available (World Health Organization, 2020) and there is not enough information about the disease. Knowledge is essential to achieve positive attitudes and promote positive behavior among students, which helps individuals' cognition to invest a sense of infection regarding COVID-19.

The current study revealed that there was an improvement in secondary school students' practical knowledge regarding COVID-19 before/immediately after the implementation of the educational intervention and after the three-month educational intervention, where there were highly significant differences ($P=0.000$) with respect to the practice of all preventive measures against COVID - 19. It is related to the correlation between secondary school students' attitude and practical knowledge, suggesting that their positive attitude influences their actions towards COVID-19.

Conclusion:

It concluded that secondary school students' knowledge and attitude improved after exposure to the intervention. Intervention delivery was significantly effective in increasing the level of knowledge and attitudes among secondary school students regarding COVID-19. Therefore, the said research hypothesis was statically supported. Secondary school students have poor knowledge about COVID-19.

Recommendation:

1. Training programs for students well prepared to provide instruction on the prevention and control of COVID-19 through verbal and written instructions.
2. Encourage collaboration between educational institutions, medical providers, and medical personnel in educating secondary school students about COVID-19, which will help increase awareness, reduce disease spread, prevention, and control.

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