Effect of Student Health Champions Program about COVID-19 Safety Precautions on School Members knowledge and Practices

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Abstract

Background: Schools are important environment for promotion of healthy behaviors. COVID 19 preventive precautionary behaviors become mandatory worldwide for everyone. School health champion program is considered one way for school students to maintain and sustain their health and wellness knowledge and practices especially now regarding COVID 19 and help to disseminated it to other school members. **Aim of study**: to evaluate the effect of student health champions program about COVID-19 safety precautions on school members' knowledge and practices. **Study Design:** A quasi-experimental one group pretest - posttest research design was used. **Study Setting:** The current study was held in five preparatory shared-gender public schools allocated in five educational administrations in El- Beheira Governorate, Egypt. **Study Subjects**: The study included two subjects; 60 Student Health Champions were enrolled in the first semester for 2020-2021 academic year and 40 School Members in the same schools. **Data collection tools:** Three tools were used to collect the required data :Student Health Champions' /School Members' COVID-19 Safety Precautions Knowledge Structured Questionnaire, COVID-19 Safety Precautions Practices of Student Health Champions' /School Members' Structured Observational Checklist and Student Health Champions' educational program satisfaction Structured Questionnaire **Results**: Statistically significant relation was noticed between the students' knowledge and practices before the program application (r= 0.528, P= 0.000) and between their knowledge and practice scores after the program (r= 0.250, P= 0.054,). Also school members' knowledge and practices were improved post health champion program (75%, p < 0.001). As regard students' satisfaction towards COVID-19 school health champion safety precautions program, the majority of them (95%) had general satisfaction regarding the entire implemented program and they recommended other colleagues to participate in such programs in future. **Conclusion:** The present study demonstrated the effectiveness of the student health champions' program concept in learning and education delivery to other school members covering all aspects of COVID-19 knowledge and practices, consequently, increasing their knowledge and practices significantly. **Recommendations**: Disseminate the concept of school health champion in different schools with different topics. Encouraging the mass media to highlight the benefits of the study on motivating school students to participate in volunteer work in order to promote the health of others.

Keywords: School health, COVID 19, Health champion, precautionary measures, knowledge and practices

Introduction

Coronavirus Disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (World Health Organization, 2020a).

The outbreak started in Wuhan, China, in December 2019. Cases are rising daily in Africa, the Americas, and Europe. It was declared a Public Health Emergency of International Concern by the World Health Organization (WHO) on January 30, 2020 and a pandemic on March 11, 2020, World Health

Organization, reported that there has been a total of 4,248,389 confirmed cases worldwide. Among them, 294,046 have died (World Health Organization, 2020b; World Health Organization, 2020c).

The COVID-19 pandemic is much more than a health crisis in our time and now it is the greatest challenge countries have faced since World War Two, it affects all aspect of life of individual, families and communities in different ways as social, economical, emotional, educational and environmental (World Health Organization, 2020a). So Countries are racing to slow the spread of the disease by testing and treating patients, searching for effective vaccines, limiting travelling, quarantining citizens, and cancelling large gatherings such as sporting events, concerts, and schools (World Health Organization, 2020b; World Health Organization, 2020c).

The primary mode of spread of COVID-19 is via close contact between people, through small droplets generated by coughing, sneezing and talking (World Health Organization, 2020c; World Health Organization, 2020d; Centers for Disease Control and Prevention, 2020a). The incubation period is around 5 days, with a range of 2–14 days. Common symptoms include cough, fever, shortness of breath, fatigue and anosmia, and can be complicated by pneumonia and acute respiratory distress syndrome (Centers for Disease Control and Prevention, 2020a; Centers for Disease Control and Prevention, 2020b; Centers for Disease Control and Prevention, 2020c). Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness (Velavan and Meyer, 2020). Recommended measures for preventing and slowing down transmission include hand hygiene, wearing a face mask in public, social distancing, and isolation of suspects. Other measures include travel restrictions, lockdowns, and facility closures (Centers for Disease Control and Prevention, 2020b; Centers for Disease Control and Prevention, 2020c). This global health crisis always be a perfect time to reflect on people's current habits and implement ways to better serve their health (Centers for Disease Control

and Prevention, 2020b; Centers for Disease Control and Prevention, 2020c; Velavan and Meyer, 2020).

Adolescent school students phase is a transition period, as they become more independent, realizing their self-identity and esteem which will affect later their own personality and interests. If this critical period in life is well prepared, consequently it will formulate their future life by getting them acquainted with more healthy habits, ideas and concepts formed during this period and will influence the course of their adulthood (Keiana and Gregory, 2021). As school aged children experience physical, mental, emotional and social changes, their perception of themselves begin to change accordingly. This shift in students sense of self is a key characteristic of their social and emotional development (Timmons and Margolin, 2015).

Peer education approach is considered one of the most cost-effective, acceptable and effective health promotive strategies to provide health awareness to others especially with peers in the same age and characteristics (Keiana and Gregory, 2021). One of its main objectives is engaging young people in health interventions in a way that they can be as a role model for their peers and reliable and credible source of information (Belinda et al. (2021); Belinda et al. (2019)).

Student Health Champions Program as one of peer to peer education strategy is a guided-learning program designed to engage local school students in their health and prepare them for role as independent trainers to sustaining the Health Champions Program (Sean et al. (2015). The program also aims to increase school student's confidence, by empowering them with knowledge and practices about different topics related to health matter. One of the permanent effects of COVID-19 pandemic is changing in people's safety precautions, and social distancing related to COVID-19 which will be considered as normal health habit until the pandemic vanishes and be controlled (Sean et al. (2015); Lucarelli et al. (2014).

Significance of the Study: as School is one of the settings that requires intensive training about COVID-19 preventive measures

to be accessible to all school personnel, it needs support groups to provide all health related knowledge to school local community including peers, teachers, school staff, and their families. Its ultimate aim is to create 'ripples of health in the community' through supporting students to share health knowledge about COVID-19 with others (Keiana and Gregory, 2021). In spite of application of students health champion' strategy on COVID-19 as education models have many advantages, it has not been implemented in school setting previously. Moreover, the students' health Champions program may help in promoting and sustaining wellness measures through a variety of strategies as reaching students, staff, and community members to develop healthy precautionary COVID- 19 habits (Oliver et al. (2021); World Health Organization, 2020b; World Health Organization, 2020c; Sean et al. (2015); Lucarelli et al. (2014).

Aim of the Study

This study aimed to evaluate the effect of student health champions program about COVID-19 safety precautions on school members' knowledge and practices.

Operational Definition:

- **Student Health Champions:** In this study, the **Student Health Champions** are defined as the volunteer school students who are passionate about disseminating COVID-19 Safety Precautions for other school members.

- **School Members:** In this study, the school members are defined as any person in the school who interacts directly or indirectly with the student, such as: school principal, teachers, peers, and social workers.

Research Hypotheses

1. The Student Health Champions who receive the Program will exhibit higher scores level of knowledge and practices about COVID-19 safety precautions after the program than before it.

2. The school members who have been instructed by Student Health Champions will exhibit higher scores level of knowledge and practices about COVID-19 safety precautions after the program than before it.

3. The Student Health Champions who implemented COVID-19 safety precautions program on their school members will exhibit high satisfaction about student health champions' program experiences.

Materials and Methods

Materials

Design: Quasi - Experimental Research Design was used (One Group Pretest and Posttest).

Setting: The study was conducted in five preparatory shared-gender public schools allocated in five educational administrations in El- Beheira Governorate, Egypt. These educational administrations namely: Damanhour, Kafr Eldawar, Kom Hamada, Eldelengat and Abo Homos. These schools are; Eflaka, Abo Salah, Absom, Atlemes and Eltohamy which were selected randomly.

Subjects:

The study included two subjects who attended the above-mentioned settings as follows:

1. Student Health Champions were enrolled in the first semester for 2020-2021 academic year and fulfill the following inclusion criteria:

   ▪ Agree and available to participate in the study

   ▪ Availability of mobile phone connected with internet for any inquiries through WhatsApp group (students' private number or parents' number).

   ▪ School Members who interact with the students (school principal, teachers, peers, and social workers). Agree and available to participate in the study.

Sample Size:

The Student Health Champions and School Members who accepted to enroll into the study and fulfilled the previously mentioned inclusion criteria were 60 and 40, respectively.
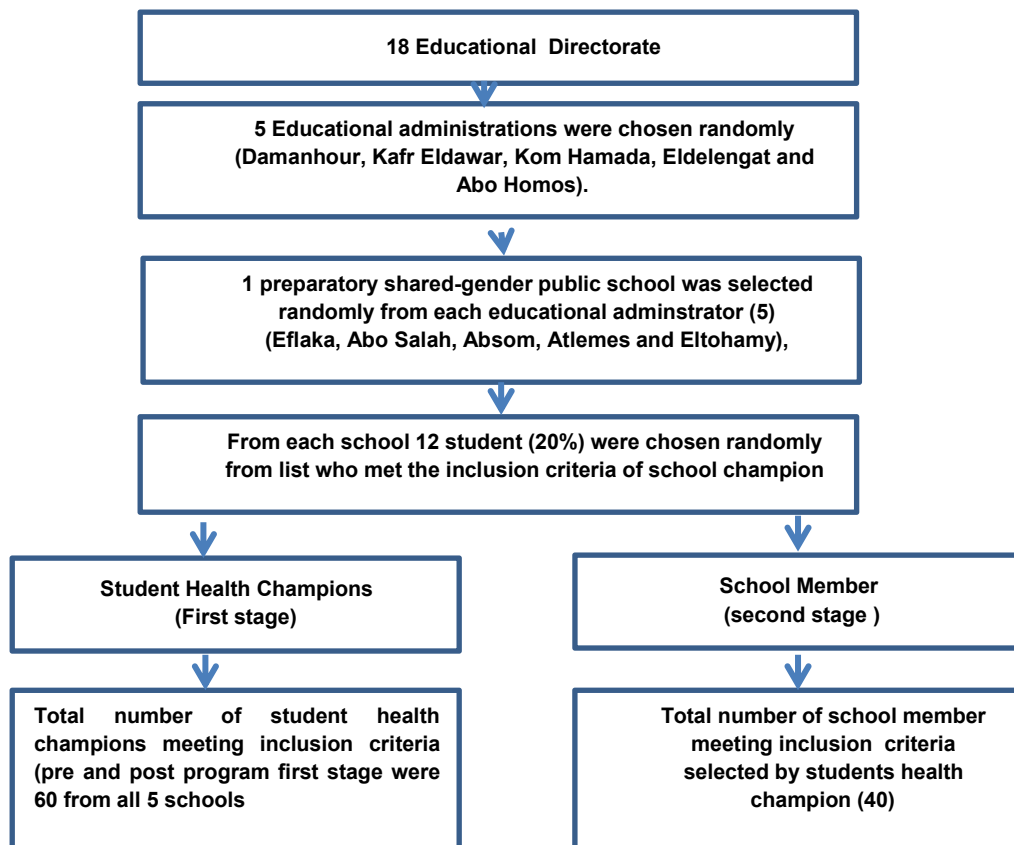
Sampling Technique: Figure (1)

A multistage/ cluster sampling technique was used as follow:

▪ El- Beheira Governorate composed of 18 educational administrations, First stage; five educational administrations were randomly selected (25%) namely: (Damanhour, Kafr Eldawar, Kom Hamada, Eldelengat and Abo Homos).

▪ At the second stage, one preparatory shared-gender public school was selected randomly from the previous five educational administrations by using equal allocation technique to be included

in the study (Eflaka, Abo Salah, Absom, Atlemes and Eltohamy), respectively.

▪ After announcing about the program in each school, a number of students recorded their names in a list requiring participation in the program. The researchers gave each student a number, and then numbers from the bowl were randomly selected to assign student health champions from each school.

▪ A total number of Student Health Champions were 60, and 40 "School Members" were selected by students themselves according to the inclusion criteria and availability due to pandemic situation.

Figure (1) Flow chart of sampling technique

Tools of Data Collection: Three tools were used to collect the necessary data for the current study.

Tool I: Student Health Champions' /School Members' COVID-19 Safety Precautions Knowledge Structured Questionnaire Sheet:

This tool was developed by researchers after reviewing recent literatures to assess the knowledge of participants about COVID-19 Safety Precautions habits (Oliver et al. (2021); World Health Organization, 2020b; Sean et al. (2015); Lucarelli et al. (2014). It is a self-administered questionnaire, included two parts as follows:

Part I: Demographic Characteristics of Student Health Champions/School Members:

▪ This part included name, telephone number, age (year), gender, school grade, residence (rural or urban) and occupation for school members.

Part II: Student Health Champions' /School Members' COVID-19 Safety Precautions knowledge:

▪ This part included 42 items representing five sections. These sections were **I)** Basics of COVID-19 Pandemic (13 items such as what is COVID-19 pandemic and why is it dangerous, Mode of transmission, role of children in transmission of infection, signs and symptoms, incubation period, people at risk and how to diagnose COVID-19 cases), **II)** Protective and control measures to slow the spread of COVID-19 at community level (10 items such as importance of daily cleaning and disinfection of school environment, school ventilation, safe waste collection, storage and disposal, policy of physical distancing inside and outside the classroom, daily screening for signs and symptoms of COVID-19 in teachers, students, school administrators,……etc,) , **III)** Protective and control measures to slow the spread of COVID-19 at personal level (12 items such as avoiding sharing personal equipment, using personal protective equipment, avoiding touching their face, eyes, mouth and nose, Physical distancing

with others, and reporting to their teachers / parents if they contacted with a person having warning signs of COVID-19), **IV)** Measures done if a person becomes sick (5 items such as policy of "staying home if unwell" and safe home protective measures) and **V)** Measures done if a person recovers from COVID-19 and returns to the school (2 items such as reassessing signs and symptoms of COVID-19 and results of related tests). In addition to these five sections, ask about participants' source of knowledge about COVID-19.

Scoring system: The responses was 'yes', 'no' and 'don't know'. One mark was given to 'correct' answer and zero was given to 'incorrect' and "don't know" answer. The total knowledge scores extended from 0 to 42 point as follows:

• Poor knowledge: 0 - < 21

• Fair knowledge: 21 - < 32

• Good knowledge: 32 - 42

Tool II: COVID-19 Safety Precautions practices of Student Health Champions' /School Members' Structured Observational Checklist:

This tool was developed by researchers after reviewing recent literatures to assess the practices of participants about COVID-19 Safety Precautions habits (Oliver et al. (2021); World Health Organization, 2020c; Sean et al. (2015); Lucarelli et al. (2014). It included 15 items representing three sections. These sections were **I)** Five steps of Hand Washing, **II)** Sneezing and coughing etiquette technique and **III)** Techniques of wearing, taking off and disposing of mask.

Scoring system: Each respondent was given scores according to their practice about COVID-19 protective measures. Each item was scored done or not done. A score of 1 was given to "Done ", and score 0 for "Not done". The scores of total practice ranged from 0 to 15 point as follows:

• Poor Practices: 0 - < 8

• Fair Practices: 8 - < 12

• Good Practices: 12 - 15

Tool III: Student Health Champions' educational program satisfaction Structured Questionnaire Sheet: This self-administered tool was developed by researchers after reviewing recent literatures to determine overall satisfaction of the Student Health Champions after the implementation of the study habits (Oliver et al. (2021); Sean et al. (2015); Lucarelli et al. (2014). It included 9 main parts representing different sections as follows; Health champion concept , Program objectives included 2 sub items (Clear and meet needs and expectations), Sessions/ Content included 6 sub items (Simple and easily understandable, Language clear and comprehensible sequence and well organized sessions, interesting and attractive, Easy to be applied and well organized Content), The educational materials used, The duration of training, Program usefulness, Recommendation to others to have same experience in future, Trainers qualifications (knowledge and abilities to convey and discuss the information given) and overall satisfaction about the champion program. The Student Health Champions were requested to rate their agreement about their satisfaction regarding with the program. Each respondent was either satisfied (2), partially satisfied (1) and unsatisfied (0)-

Methods:

- Permission to conduct the study was obtained by submission of official letters from the Dean of the Faculty of Nursing at Damanhour University to the undersecretary of the Ministry of Education in El-Beheira Governorate after explaining the study purpose.

- Permission from the selected five schools' principals was obtained after full explanation of the aim of the study to obtain their cooperation during conduction of the Student Health Champions' Program phases to gain their support.

Tools I, II and III were developed by the researchers after a review of the related literatures.

- A jury composed of 3 experts in the related fields as Community Health Nursing and Pediatric Nursing were consulted to examine the content validity of the study tools and all tools were verified to be valid.

- Reliability of tool I, II and III were tested by using Cronbach's coefficient alpha test and showed acceptable level of reliability 79%, 81% and 82.1%, respectively.

- A pilot study was conducted to test feasibility, clarity and applicability of the study tools. For both two subjects; 6 students and 4 school members within their schools. Those subjects were not involved in the study and necessary amendments were done accordingly.

Filed Work:

Student Health Champions Program on COVID-19 Safety Precautions

　　The Student Health Champions Program was conducted in the five schools and was divided into four phases: Assessment of school students for COVID-19 safety precautions knowledge and practices (6 days for 1st week), Planning for intervention strategies (6 days for 2nd and 3rd weeks), Implementation of interventions (6 days for 4th, 5th, 6th and 7th weeks) and Evaluation phase (6 days for 8th week).

- According to COVID-19 Pandemic, the Egyptian Minister of Education announced that the plan of new academic year 2020-2021 encourages a social distancing between school members as a safety precaution measure for COVID-19. Therefore, the attendance of preparatory school students was divided into three sections from Saturday to Thursday with every student required to attend school twice weekly.

- The researchers announced in the morning line of the school about the following:

　- The aim of the study, clarifying who are the Student Health Champions, and their role in health awareness about COVID-19 disease among school community.

　- The incentives for Student Health Champions and school members were in

the form of: a) certificates of appreciation, b) putting their pictures on the honor board as a permanent Student Health Champions in the school.

- The students who voluntary wanted to join the Student Health Champions program were requested to register their names with their class teacher.

▪ After acceptance of students who preferred to be School Health Champions and their parents, the Student Health Champions teams were allocated from the five selected schools after fulfilling the inclusion criteria. They were located in a list to be randomly selected from among them.

Phases of Student Health Champions Program

1- Assessment:

▪ Assessment of school environment such as (classroom overcrowding and ventilation, bathroom for availability of water and soap, availability of mask and alcohol).

▪ In each school, the accepted students were gathered if available due to school measures in a place to discuss how the program will be implemented and executed throughout all the process.

▪ **Pre-Test stage:** a pre-test was performed for Student Health Champions who accepted to participate by using the following tools:

▪ Questionnaire Sheet (Tool I) lasted about 20-30 minutes in classroom.

▪ Observational Checklist (Tool II) lasted about 5-10 minutes in school bathroom for every student.

2- Planning:

▪ Determine Goal, objectives and Performance Indicators

▪ Identify responsibilities of researchers, Student Health Champions and school members during the study.

▪ Develop timeline schedule for Student Health Champions Program

▪ Finalize plan.

3- Implementation: (Table 1)

Implementation of interventions phase of Student Health Champions Program was divided into two parts; Interventions for Student Health Champions and Interventions for School Members.

4- Evaluation:

▪ **For Evaluation of Student Health Champions/ School Members:** evaluation was performed by using Tool I and Tool II for student health champions and school members.

▪ **For Evaluation of Student Health Champions' Satisfaction** with the program process, content, objectives as mentioned before, it was performed by using tool III

Duration of data collection: The average time to complete Tool I ranged from 20- 30 minutes and 5-10 minutes for Tool II for each student. Assessment, Planning, implementation and evaluation activities continued from Saturday through Thursday during regular class periods. Data were collected by researchers through 2 months, starting from 17th October 2020 to the 10th December 2020.

Table 1. Implementation Sessions of Student Health Champions Program (Belinda and James (2021); Oliver et al. (2021); Sean et al. (2015); Lucarelli et al. (2014).

Goal
Raising Awareness among Student Health Champions and School Members about COVID-19 Safety Precautions.
In order to achieve this Goal, the following should be conducted: One Discovery session, Two Knowledge shared sessions and One Practice session over 4 regular school days.
Interventions for Student Health Champions
1ˢᵗ Day: Discovery Part (include 1 Session lasted 30 minutes in classroom:
Session (1): First session/Discovery session: To create relationship between researchers and Student Health Champions
Learning Objectives: Upon completion of this session, the Student Health Champions will be able to:
Identify purpose of the study
Establish Relationship with researchers
Discuss responsibilities of researchers, Student Health Champions and school members during the study.
Content:
Welcome and Introductions (Establish Relationship between researchers and Student Health Champions through many skills; Interpersonal skills, Verbal and Non-verbal communication skills, Listening skills, Empathy, Emotional intelligence, Networking skills and Team-building skills).
Magnitude of COVID-19 pandemic and importance of the study.
Responsibilities of researchers are: At the first stage, they were Trainers during training of the Student Health Champions; then became Facilitators during training of school members by Student Health Champions.
Responsibilities of Student Health Champions as a trainers of school members
Responsibilities of School Members as a trainee of Student Health Champions Program about COVID-19 Safety Precautions
Activities: *The Researchers would:*
Start to introduce themselves such as name, occupation, values clarification, life purpose, passions, etc.
Provide an environment that is appropriate for Student Health Champions to discuss life issues that are relevant to their lives. Find out what Student Health Champions were passionate about and share it with them.
Discuss their expectations from Student Health Champions program such as goal, objectives, performance indicators…. etc
Clarify the learning objectives of the program and the opportunity for Student Health Champions to write down their learning needs and what they expect to achieve through the program.
Receive the telephone numbers of Student Health Champions or their family members in the first session to develop a WhatsApp group for continuing education, periodic supervision for Student Health Champions while they are educating other school members, discuss and share educational materials used such as posters.
Materials:
Power Point Presentation, Recording for session summary, Posters, Role play and Handouts showing session structure.
Performance Indicators of Discovery Session are:
High attendance rates
Active student engagement in classroom
Break: 10 minutes.
2ⁿᵈ Day:
Theoretical Part (include 2 Knowledge Sharing Sessions lasted 30 minutes for each session in a classroom:
Session (2): Basics of COVID-19 Pandemic
Learning objectives: Upon completion of this session, the Student Health Champions will be able to:
Identify COVID-19 pandemic definition
Discuss mode of transmission, role of children in transmission of COVID-19, symptoms and emergency warning signs, incubation period and people at risk of developing sever disease and death and how to diagnose COVID-19 cases.
Content:
What is COVID-19 pandemic and Why it is dangerous?
Mood of transmission
Role of children in transmission
Symptoms and emergency warning signs
Incubation period
People at risk of developing sever disease and death
Diagnosis of COVID-19
Activities of Knowledge Shared Sessions 2 and 3:
At the beginning of each session, discuss with Student Health Champions the learning objectives of the session
During all knowledge sharing sessions, the Student Health Champions were distributed into small equal groups to facilitate group interaction.
The group can organize their thoughts on the board, or on sheets of paper throughout session activities.
Incorporating knowledge sharing into school community and provide different school community scenarios, Then Ask if the group would demonstrate their scenario in front of the class and encourage group discussion to analyze this scenario for strength and weakness aspects.
Provide incentives.
Provide feedback at the end of each session
Materials used in Knowledge Shared Sessions 2 and 3:
Power Point Presentation, Recording for session summary, Posters, Role play and Handouts showing session structure.

Break: 10 minutes.
Session (3): Prevention and Control Measures of COVID-19
Learning objectives: Upon completion of this session, the Student Health Champions will be able to:
Explain Protective and Control Measures to slow the spread of COVID-19 at Community Level
Discuss Protective and Control Measures to slow the spread of COVID-19 at Personal Level
Clarify Measures done if a person becomes sick
Identify Measures done if a person Recovers from COVID-19 and returns to the school
Content:
Schedule for daily cleaning and disinfection of the school environment.
School ventilation.
Safe waste collection, storage and disposal.
Daily screening practices for Symptoms and emergency warning signs of COVID-19 in teachers, students, school administrators.
Personal hygiene practices like cough and sneeze into a tissue or their elbow, avoid touching their face, eyes, mouth and nose, avoid sharing personal equipment, using personal protective equipment.
Age-appropriate mask use.
Shield vulnerable groups.
Report for their teachers / parents if they contacted with a person having warning signs of COVID-19
Policy of "staying home if unwell"
Policy of Physical distancing inside and outside the classroom,
Performance Indicators of Knowledge Shared Sessions 2 and 3 are:
High attendance rates
Active student participation in classroom
Increase the level of knowledge post-test compared with pre-test regarding COVID-19 pandemic definition, mode of transmission, role of children in transmission, symptoms and emergency warning signs, incubation period, people at risk of developing sever disease and death, diagnosis of COVID-19 cases, Protective and Control Measures to slow the spread of COVID-19 at Community Level and Personal Level, Measures done if a person becomes sick and Measures done if a person Recovers from COVID-19 and returns to the school
Break: 10 minutes.
Practical Part (include 1 Practices Training Workshop lasted 1 hours in School Bathroom:
Learning objectives: Upon completion of this practices training workshop, the Student Health Champions will be able to:
Demonstrate five steps of Hand Washing.
Apply sneezing and coughing etiquette technique.
Practices technique of how to put on, use, take off and dispose of a mask.
Content:
Hand Washing Technique
Coughing and Sneezing Etiquette Technique
Face Mask put on, use, take off and dispose Technique
Activities:
Creating school' bathroom as a learning environment conducive to learning COVID-19 Safety Protective and Control Measures.
Providing opportunities for Student Health Champions to demonstrate and redemonstrate the techniques.
Giving rationales for technique steps based on knowledge sessions
Materials:
COVID-19 Safety Precautions practices Structured Observational Checklist (Tool II)
Personal Protective Equipment
Soap and Alcohol
Performance Indicators:
High attendance rates.
Active student participation in practices training workshop.
Increase the level of skills about COVID-19 Safety Protective and Control Measures including five steps of Hand Washing, Practice Basics of Respiratory Hygiene and How to put on, use, take off and dispose of a mask.
Interventions for School Members
The Student Health Champions reviewed the educational resources and recordings of sessions' summary to be ready to educate the school members.
The Student Health Champions selected their team from their school members; the total sample was 40 participants from five preparatory schools. Some of Student Health Champions preferred to train their school member by own self and others preferred to make a team of 2-3 students for conducting the educational sessions.
The Student Health Champions provided the same knowledge shared sessions and practices training workshop for their selected school members.
The researchers attended the all sessions with passive role (facilitators only).
Handout and Posters were prepared and disseminated by the researchers to Student Health Champions to be used in their sessions.
The pre-test and post-test for school members were performed by the researchers.
Closing Session lasted 10-15 minutes in classroom
The Student Health Champions will evaluate the satisfaction of the program in achieving its objectives through **Tool III.**

Ethical considerations:

The researchers received written assent from students and written consent from their parents to participate in the study as "Student Health Champions" for a period of (8 weeks). In addition they received a written consent from school members in the same schools. Privacy and anonymity of the study subjects and confidentiality of the collected data was maintained throughout the study.

Statistical analysis:

The collected data and responses were entered through the Statistical Package for Social Sciences (SPSS) software version 26.0. The level of significance (p-value) was set at $\leq$ 0.05. Following data entry, the data were checked and verified in order to avoid any error or missed data.

Descriptive statistics measures:

Continuous variables were represented as arithmetic means $\bar{x}$ and standard deviations $\pm$ SD, while categorical variables were represented as number, frequencies and percentages. The mean percent scores for knowledge, and practices about COVID-19 Safety precautions were calculated.

Analysis of numeric data:

The following statistical tests were used: Independent sample t-test, Chi-square and Pearson correlation

Results

Table (2) shows the distribution of the studied students according to their socio-demographic characteristics. Regarding the students' age, it ranged from 12.0 to 150 years with a mean of 13.70 ± 0.748. It was noticed that more than three quarters (76.7%) of the students were females, and more than half of them (58.3%) were from rural areas. On the other hand, one fifth (20.0%) of the students declared that they have knowledge about COVID- 19. Additionally, internet was the first source of knowledge about COVID- 19 as mentioned by (83.3%) of the students, followed by media (58.3%), friends (33.3%), school personnel (25.0%) and finally, family members as reported by (16.7%) of the students who had

knowledge about COVID- 19. While, school nurse was reported by only (8.3%) of the students.

Table (3) reveals the students' knowledge level regarding COVID 19 before and after the application of the program. With respect to basics of COVID- 19, less than two thirds (65.0%) of the students had poor knowledge level which declined to (6.6%) post intervention. A statistically significant difference was found between pre and post intervention ($\chi^2 = 84.57$, P= 0.000).

Concerning the protective and control measures to slow the spread of COVID-19 at community level, the majority (81.7%) of the students had poor knowledge level, and decreased to (18.3%) after the program with a statistically significant difference between the two phases ($\chi^2 = 74.77$, P= 0.000).

Regarding protective and control measures to slow the spread of COVID-19 at personal level, it was noticed that none of the students had good knowledge level before the program, but elevated to (90%) of the students after the program. A statistically significant difference was found between pre and post program implementation ($\chi^2 = 99.11$, P= 0.000)

The same table reveals that more than two thirds (68.3%) of the students has poor knowledge regarding measures done if a person becomes sick before the program, and decreased to (5.0%) of the students at the evaluation with a statistically significant difference between the two phases ($\chi^2 = 60.63$, P= 0.000).

Additionally, more than half (55.0%) of the students had poor knowledge level regarding measures done if a person recovers from COVID- 19 before the program application, which decreased to (3.3%) of the students after the program, with a statistically significant difference between the two phases ($\chi^2 = 77.18$, P= 0.000).

Finally, only (3.3%) of the students had good total knowledge level about COVID- 19 safety precautions before the program, and this percentage raised to (90.0%) of the students after the program with a statistically significant difference between the two phases ($\chi^2 = 91.58$, P= 0.000).

Table (4) illustrates the students' knowledge mean scores before and after the application of

the program. It was found that the students' mean score regarding basics of COVID- 19 was 3.60 ± 1.264 before the program, and raised to 11.24 ± 1.488 after the program with a statistically significant differences in the mean scores of basics of COVID- 19 across the study phases (t= 30.31, P= 0.000).

Regarding protective and control measures to slow the spread of COVID-19 at community level, the mean score was 0.70 ± 0.637 before the program, while it raised to 4.32± 0.383 at the evaluation with a statistically significant difference across the study phases (t= 37.73, P= 0.000).

According to protective and control measures to slow the spread of COVID-19 at personal level, the mean score was 0.85 ± 0.178 before the program, while it raised to 4.75± 1.176 at the evaluation with a statistically significant difference across the study phases (t= 25.63, P= 0.000).

With respect to measures done if a person becomes sick, the students' knowledge mean score was raised from 0.20 ± 0.434 before the program to 1.60 ± 0.666 at the evaluation phase with a statistically significant difference between the mean scores (t= 13.64, P= 0.000).

Concerning measures done if a person recovers from COVID- 19, the students' knowledge mean score was elevated from 3.12 ± 1.207 to 14.97 ± 1.707 after implementing the program with a statistically difference between them across the study phases (t= 43.91, P= 0.000).

Additionally, the total knowledge mean score was 8.47 ± 2.611 before the program and raised to 36.88 ± 6.686 at the evaluation with a statistically significant difference across the study phases (t= 30.66, P= 0.000).

Table (5) portrays the level of health practice of the students regarding COVID- 19 safety precautions before and after the program. With respect to hand washing, only (1.7%) of the students had good practices regarding it , while (90.0%) of the them become able to do it correctly after the program with a statistically significant difference across the study phases (χ^2= 96.44, P= 0.000).

Concerning the coughing and sneezing etiquette, none of the students performed it correctly before the program and had poor practice regarding it , while, the majority of them had a good practices after the program (83.3%) with a statistically significant differences between them (χ^2= 91.11, P= 0.000).

Regarding wearing, taking off and disposing of mask, it was noticed that only (3.3%) of the students had good practice concerning it, but this percentage raised to (63.3%) in the evaluation phase with a statistically significant difference between them (χ^2= 97.97, P= 0.000).

Moreover, only (1.7%) of the students had good of total health practices before the program that raised to (90.0%) of them after the implementation of the program with a statistically significant difference between them (χ^2= 103.15, P= 0.000).

Table (6) shows the students' health practices mean scores before and after the program.

A statistically significant difference was found in hand washing mean scores across the program (t= 19.65, P= 0.000), where it was 1.98 ± 0.112 before the program, and raised to 4.15 ± 0.848 after the program. Moreover, the coughing and sneezing etiquette mean scores was 0.92 ± 0.259 before the program, while it raised to 2.22 ± 0.682 after the program with a statistically significant difference between them (t= 13.80, P= 0.000).

Additionally, it was noticed that wearing, taking off and disposing of mask mean score raised from 1.23 ± 0.368 before the program to 5.75 ± 1.119 after the program with a statistically significant difference between them (t= 29.72, P= 0.000).

Lastly, the total health practice elevated from 4.13 ± 1.806 before the program to 12.12 ± 2.515 after the program with a statistically significant difference between them (t= 19.98, P= 0.000).

Table (8) exemplify the studied students satisfaction level regarding the implemented training program about COVID- 19 school health champions received. It was clear from the table that the majority of students (95%) were satisfied with the concept of health champion program and find it interesting. 86.7% and 93.3% of them mentioned that they were satisfied with the clearness of program objectives and that it met their expectations, respectively. Concerning

program content, 80% and 83.3% of the school champions declared their satisfaction about the simplicity and easiness of the program as well as the easiness of applying it, respectively. Also, 90% of them were satisfied with the clearness of the language used and the sequence and organization of the sessions. Moreover it was clear from the table that all the students (100%) were satisfied about the organization and attractiveness of the content of the program.

Additionally, 85% of the students reported their full satisfaction with the educational materials used as it was suitable and attractive, while more than three quarters (78.3%) of them were satisfied with the duration of the program implementation. Also, 95% of the students were satisfied with the concept of program usefulness and 96.7% of them reported that they recommend it to other colleagues if it is implemented again.

Furthermore, 100% and 95% of the students were satisfied with trainers (researchers) about their sufficient knowledge as well as their ability to lead the discussion in appropriate ways, respectively. Finally, it was clear from the table that the majority of the students (95%) had general satisfaction regarding the entire program.

Table (9) shows the distribution of the school members according to their basic characteristics.The table reveals that the mean age of the school members was 27.70 ± 11.99, and less than three quarters (70.0%) of them were males. Furthermore, more than half (57.5%) of them were from urban areas. The same table shows that less than one third (32.5%) of the school members had knowledge about COVID-19.

Media was the main source of their knowledge as mentioned by all of them (100.0%), followed by internet (61.5%), school health nurse or physician (53.8%), friends (38.5%) and family members (30.8%).

Table (10) portrays the knowledge level of the studied school members regarding COVID-19 before and after the program.

It was noticed that only 10.0% of the school members had good knowledge about basics of COVID- 19 before the program and raised to (75.0%) of them after the program with a statistically significant difference between them ($\chi^2= 36.15$, P= 0.000).

With respect to protective and control measures to slow the spread of COVID-19 at community level, only (5.0%) of the school members had good knowledge level, compared to (92.5%) after the program with a statistically significant difference between them ($\chi^2= 61.473$, P= 0.000).

Regarding protective and control measures to slow the spread of COVID-19 at personal level, only (2.5%) of the school members had good knowledge level before the program, compared to (70.0%) of them after the program with a statistically significant difference between them ($\chi^2= 55.567$, P= 0.000).

Moreover, more than one tenth (12.5%) of the school members had good knowledge regarding measures done if a person becomes sick, compared to (77.5%) of them after the program, with a statistically significant difference between them ($\chi^2= 35.031$, P= 0.000).

Additionally, in the preprogram phase, (7.5%) of the school members had good knowledge regarding measures done if a person recovers from COVID- 19 compared to (75.0%) of them after the program with a statistically significant difference between them ($\chi^2= 41.367$, P= 0.000).

Lastly, only (7.5%) of the school members had good total knowledge level regarding COVID- 19 before the program and raised to three quarters (75.0%) of them after the program with a statistical significant difference between them ($\chi^2= 46.286$, P= 0.000).

Table (11) portrays the knowledge mean scores of the school members regarding COVID-19 before and after the program.

It was noticed that basics of COVID- 19 mean score before the program was 2.58 ± 1.411 and raised to 11.92 ± 1.423 with a statistically significant difference between them (t= 29.477, P= 0.000).

Regarding protective and control measures to slow the spread of COVID-19 at community level, it was elevated from 0.81 ± 0.277 before the program to 4.09 ± 0.383 after the program, with a statistically significant difference between them (t= 43.887, P= 0.000).

Concerning protective and control measures to slow the spread of COVID-19 at personal level, it was raised from 0.79 ± 0.248 before the program to 3.93 ± 0.798 after the program, with a statistically significant difference between them (t= 23.765, P= 0.000).

With respect to mean score of measures done if a person becomes sick, it was 0.31 ± 0.421 before the program and raised to 1.07 ± 0.763 after the program, with a statistically significant difference between them (t= 5.516, P= 0.00).

Moreover, the mean score of measures done if a person recovers from COVID-19 increased from 4.38 ± 1.274 before the program to 12.45 ± 2.347 after the program with a statistically significant difference between them (t= 19.112, P= 0.000).

Finally, the total knowledge mean score was 8.87 ± 2.113 before the program and increased to 33.46 ± 4.286 after the program with a statistically significant difference between them (t= 32.546, P= 0.000).

Table (12) shows the levels of health practices among the school members before and after the program.

Concerning hand washing, none of the school members had good practices before the program compared to (82.5%) of them after the program with a statistically significant difference between them (χ^2= 41.701, P= 0.000).

While, those who followed coughing and sneezing etiquette and performed correct technique of wearing, taking off and disposing of mask as considered good practices before the program were (17.5%) and (5.0%) of the school members respectively, compared to (77.5%) and (57.5%) of them after the program, respectively. A statistically significant difference was detected between them (χ^2= 30.195, P= 0.000 and χ^2= 27.598, P= 0.000 respectively).

Finally, only (5.0%) of the school members had good total health practices before the program compared to (75.0%) of them after the program with a statistically significant difference between them (χ^2= 42.462, P= 0.000).

Table (13) shows the school members health practices mean scores before and after the program.

Concerning hand washing mean score, it was raised from 1.41 ± 0.237 to 4.67 ± 0.596 with a statistically significant difference between them (t= 31.849, P= 0.000).

With respect to coughing and sneezing etiquette, the mean score was 0.85 ± 0.184 before the program and elevated to 2.55 ± 0.624 after the program, with a statistically significant difference between them (t= 16.527, P= 0.000).

Regarding technique of wearing, taking off and disposing of mask mean scores, it changed from 1.83 ± 0.432 before the program to 5.01 ± 0.927 after the program with a statistically significant difference between them (t= 19.665, P= 0.000).

Lastly, the mean score of the total health practices was 4.09 ± 0.998 before the program compared to 12.23 ± 1.172 after the program, with a statistically significant difference between them (t= 33.444, P= 0.000).

Table (14) reveals the correlation between the knowledge and the health practices of the school members before and after the program.

Statistically significant relations were noticed between school members knowledge and practices before the application of the program (r= 0.256, P= 0.048), as well as after the program (r= 0.330, P= 0.010).

Table (2): Distribution of the Student Health Champions according to demographic data

Demographic data	Total (N=60)

	No.	%
Age (years)		
- 12-	12	20.0
- 13-	24	40.0
- 14-15	24	40.0
Min. – Max. 12.0 – 15.0 Mean ± SD. 13.70 ± 0.748		
Sex		
- Female	46	76.7
- Male	14	23.3
Residence		
- Urban	25	41.7
- Rural	35	58.3
Academic year		
- First preparatory	20	33.3
- Second preparatory	20	33.3
- Third preparatory	20	33.3
Have knowledge about COVID-19		
- Yes	12	20.0
- No	48	80.0
Sources of knowledge #	N= 12	
- Media	7	58.3
- Internet	10	83.3
- Friends	4	33.3
- Family members	2	16.7
- School personnel	3	25.0
- School health nurse	1	8.3

Multiple responses were allowed

Table (3): Comparison of the knowledge level of the Student Health Champions regarding COVID-19 safety precautions before, and after the application of the program.

Items	Total (N= 60)				Test of Significance
	Pre		Post		
	No.	%	No.	%	
Basics of COVID-19 Pandemic					
- Poor	39	65.0	4	6.6	X^2=84.57
- Fair	19	31.6	4	6.6	P= 0.000*
- Good	2	3.3	52	86.7	
Protective and Control Measures to slow the spread of COVID-19 at Community Level					
- Poor	49	81.7	8	18.3	X^2=74.77
- Fair	8	13.3	2	3.3	P= 0.000*
- Good	3	5.0	50	83.3	
Protective and Control Measures to slow the spread of COVID-19 at Personal Level					
- Poor	48	80.0	3	5.0	X^2=99.11
- Fair	12	20.0	3	5.0	P= 0.000*
- Good	0	0.0	54	90.0	
Measures done if a person becomes sick					
- Poor	41	68.3	3	5.0	X^2=60.63
- Fair	10	16.7	8	13.3	P= 0.000*
- Good	9	15.0	49	81.7	
Measures done if a person Recovers from COVID-19 and return to the school					
- Poor	33	55.0	2	3.3	X^2=77.18
- Fair	20	33.3	3	5.0	P= 0.000*
- Good	7	11.7	55	91.7	
Total Knowledge about COVID-19 safety precautions					
- Poor	40	66.7	2	3.3	X^2=91.58
- Fair	18	30.0	4	6.7	P= 0.000*
- Good	2	3.3	54	90.0	

X^2 Chi Square Test X^2 Comparison across the pre and post intervention * statistically significant at $p \leq 0.05$

Table (4): Comparison of the knowledge mean scores of the Student Health Champions regarding COVID-19 safety precautions before, and after the application of the program.

Items	Total (N= 60)		Test of Significance	
	Pre Mean ±SD	**Post** Mean ±SD		
Basics of COVID-19 Pandemic	3.60±1.264	11.24±1.488	t= 30.31	P= 0.000*
Protective and Control Measures to slow the spread of COVID-19 at Community Level	0.70±0.637	4.32±0.383	t= 37.73	P= 0.000*
Protective and Control Measures to slow the spread of COVID-19 at Personal Level	0.85±0.178	4.75±1.176	t= 25.63	P= 0.000*
Measures done if a person becomes sick	0.20±0.434	1.60±0.666	t= 13.64	P= 0.000*
Measures done if a person Recovers from COVID-19 and return to the school	3.12±1.207	14.97±1.707	t= 43.91	P= 0.000*
Total knowledge	8.47±2.611	36.88±6.686	t= 30.66	P= 0.000*

t= Paired t test   t Comparison across the pre and post   * Statistically significant at p ≤ 0.05

Table (5): Comparison of the health practices level of the Student Health Champions regarding COVID -19 safety precautions before, and after the application of the program.

Items/ practices	Total (N= 60)				Test of Significance
	Pre		**Post**		
	No.	%	No.	%	
Hand Washing Technique					
- Poor	32	53.3	0	0.0	X^2=96.44
- Fair	27	45.0	6	10.0	P= 0.000*
- Good	1	1.7	54	90.0	
Coughing and Sneezing Etiquette Technique					
- Poor	34	56.7	0	0.0	X^2=91.11
- Fair	26	43.3	10	16.7	P= 0.000*
- Good	0	0.0	50	83.3	
Techniques of wearing ,taking off and disposing of mask					
- Poor	55	91.7	1	1.7	X^2=97.97
- Fair	3	5.0	21	35.0	P= 0.000*
- Good	2	3.3	38	63.3	
Total health practices					
- Poor practices	52	86.7	0	0.0	X^2=103.15
- Fair practices	7	11.7	6	10.0	P= 0.000*
- Good practices	1	1.7	54	90.0	

X^2 Chi Square Test X^2 Comparison across the two(the pre and post intervention) phases of the study

* Statistically significant at p ≤ 0.05

Table (6): Comparison of the health practices mean scores of the Student Health Champions regarding COVID-19 safety precautions before and after the application of the program.

Perception	Total (N= 60)		Test of Significance	
	Pre Mean ±SD	**Post** Mean ±SD		
Hand Washing Technique	1.98±0.112	4.15±0.848	t= 19.65	P= 0.000*
Coughing and Sneezing Etiquette Technique	0.92±0.259	2.22±0.682	t= 13.80	P= 0.000*
Techniques of wearing ,taking off and disposing of mask	1.23±0.368	5.75±1.119	t= 29.72	P= 0.000*
Total health practices	4.13±1.806	12.12±2.515	t= 19.98	P= 0.000*

t= Paired t test   t Comparison across the pre and post intervention   * Statistically significant at p ≤ 0.05

Table (7): Relationship between the Student Health Champions' knowledge and practices regarding COVID-19 safety precautions mean scores before, and after the application of the program.

		Knowledge (Pre)	Practice (Pre)	Knowledge (Post)	Practice (Post)
Knowledge (Pre)	r				
	P				
Practice (Pre)	r	0.528			
	P	0.000*			
Knowledge (Post 1)	r	0.465	0.320		
	P	0.000*	0.013*		
Practice (Post1)	r	0.275	0.562	0.250	
	P	0.033*	0.000*	0.054	

R= Pearson Correlation   * significant at P≤ 0.05

Table (8): Distribution of the Student Health Champions satisfaction regarding the received training program Received (N=60)

Satisfaction domains	Dissatisfied		Partially satisfied		Satisfied	
	No.	%	No.	%	No.	%
Health Champion concept	-	-	3	5.0	57	95.0
Program objectives:	2	3.3	6	10	52	86.7
Clear						
Meet needs and expectations	-	-	4	6.7	56	93.3
Program Content / session						
Simple and easily understandable	5	8.3	7	11.7	48	80.0
Language (clear and comprehensible)	-	-	6	10	54	90.0
Sequence and sessions are well-organized	3	5.0	3	5.0	54	90.0
Interesting and attractive	-	-	-	-	60	100
Easy to be applied	5	8.3	5	8.3	50	83.3
Content well Organized	-	-	-	-	60	100
The educational materials used for simplifying the content are suitable and attractive.	4	6.6	5	8.4	51	85.0
The duration of training received is enough for accomplishing the program.	2	3.3	11	18.4	47	78.3
Program usefulness	-	-	3	5.0	57	95.0
Recommended to others to have same experience in future	-	-	2	3.3	58	96.7
Program Trainers qualifications						
-Acquainted with required knowledge and skills to convey the information adequately.	-	-	-	-	60	100
- Had ability to lead the discussions and answering the trainees inquires adequately.	1	1.7	2	3.3	57	95.0
General satisfaction of the entire program	-	-	3	5.0	57	95.0

Table (9): Distribution of the studied School Members according to socio–demographic data

Socio–demographic data	Total (N=40)	
	No.	%
Age (years)		
- < 20-	16	40.0
- 20-	8	20.0
- 30-	6	15.0
- ≥ 40	10	25.0
Min. – Max. 12.0 – 45.0 Mean ± SD. 27.70 ± 11.99		
Sex		
- Female	12	30.0
- Male	28	70.0
Residence		
- Urban	23	57.5
- Rural	17	42.5
Job		
- Administrators	5	12.5
- Teachers	10	25.0
- Workers	9	22.5
- Students	16	40.0
Have knowledge about COVID-19		
- Yes	13	32.5
- No	27	67.5
Source of knowledge #	N= 13	
- Media	13	100.0
- Internet	8	61.5
- Friends	5	38.5
- Family members	4	30.8
- School health nurse /physician	7	53.8

Multiple responses were allowed

Table (10): Comparison of the knowledge level of the studied School Members regarding COVID-19 safety precautions before and after the application of the program.

Item	Total (N= 40)				Test of Significance
	Pre		Post		
	No.	%	No.	%	
Basics of COVID-19 Pandemic					
- Poor	27	67.5	5	12.5	X^2= 36.150
- Fair	9	22.5	5	12.5	P= 0.000*
- Good	4	10.0	30	75.0	
Protective and Control Measures to slow the spread of COVID-19 at Community Level					
- Poor	22	55.0	1	2.5	X^2= 61.473
- Fair	16	40.0	2	5.0	P= 0.000*
- Good	2	5.0	37	92.5	
Protective and Control Measures to slow the spread of COVID-19 at Personal Level					
- Poor	30	75.0	0	0.0	X^2= 55.567
- Fair	9	22.5	12	30.0	P= 0.000*
- Good	1	2.5	28	70.0	
Measures done if a person becomes sick					
- Poor	23	57.5	4	10.0	X^2= 35.031
- Fair	12	30.0	5	12.5	P= 0.000*
- Good	5	12.5	31	77.5	
Measures done if a person Recovers from COVID-19 and return to the school					
- Poor	23	57.5	2	5.0	X^2= 41.367
- Fair	14	35.0	8	20.0	P= 0.000*
- Good	3	7.5	30	75.0	
Total Knowledge about COVID-19					
- Poor	27	67.5	1	2.5	X^2= 46.286
- Fair	10	25.0	9	22.5	P=0.000*
- Good	3	7.5	30	75.0	

X^2 Chi Square Test   * Statistically significant at $p \le 0.05$

Table (11): Comparison of the knowledge mean scores of the studied School Members regarding COVID-19 safety precautions before and after the application of the program.

Items	Total (N= 40)		Test of Significance
	Pre	Post	
	Mean ±SD	Mean ±SD	
Basics of COVID-19 Pandemic	2.58 ±1.411	11.92 ± 1.423	t= 29.477 P= 0.000*
Protective and Control Measures to slow the spread of COVID-19 at Community Level	0.81 ± 0.277	4.09 ± 0.383	t= 43.887 P= 0.000*
Protective and Control Measures to slow the spread of COVID-19 at Personal Level	0.79 ± 0.248	3.93 ± 0.798	t= 23.765 P= 0.000*
Measures done if a person becomes sick	0.31 ± 0.421	1.07 ± 0.763	t= 5.516 P= 0.000*
Measures done if a person Recovers from COVID-19 and return to the school	4.38 ± 1.274	12.45 ± 2.347	t= 19.112 P= 0.000*
Total knowledge	8.87 ± 2.113	33.46 ± 4.286	t= 32.546 P= 0.000*

t= Paired t test   * Statistically significant at p ≤ 0.05

Table (12): Comparison of the health practices level of the studied School Members regarding COVID -19 safety precautions before and after the application of the program.

Item	Total (N= 40)				Test of Significance
	Pre		Post		
	No.	%	No.	%	
Hand Washing Technique					
- Poor	22	55.0	0	0.0	X²= 41.701
- Fair	18	45.0	7	17.5	P= 0.000*
- Good	0	0.0	33	82.5	
Coughing and Sneezing Etiquette Technique					
- Poor	23	57.5	4	10.0	X²=30.195
- Fair	10	25.0	5	12.5	P= 0.000*
- Good	7	17.5	31	77.5	
Techniques of wearing ,taking off and disposing of mask					
- Poor	26	65.0	8	20.0	X²= 27.598
- Fair	12	30.0	9	22.5	P= 0.000*
- Good	2	5.0	23	57.5	
Total health practices					
- Poor practices	22	55.0	3	7.5	X²= 42.462
- Fair practices	16	40.0	7	17.5	P= 0.000*
- Good practices	2	5.0	30	75.0	

X² Chi Square   * Statistically significant at p ≤ 0.05

Table (13): Comparison of the health practice mean scores of the studied School Members regarding COVID-19 safety precautions before, and after the application of the program.

Health practices	Total (N= 40)		Test of Significance
	Pre	Post	
	Mean ±SD	Mean ±SD	
Hand Washing Technique	1.41±0.237	4.67±0.596	t= 31.849 P= 0.000*
Coughing and Sneezing Etiquette Technique	0.85±0.184	2.55±0.624	t= 16.527 P= 0.000*
Techniques of wearing ,taking off and disposing of mask	1.83±0.432	5.01±0.927	t= 19.665 P= 0.000*
Total health practices	4.09±0.998	12.23±1.172	t= 33.444 P= 0.000*

t= Paired t test   * Statistically significant at p ≤ 0.05

Table (14): Relationship between the studied School Members' knowledge and practice regarding COVID-19 safety precautions mean scores before and after the application of the program. (N=40)

		Knowledge (Pre)	Practice (Pre)	Knowledge (Post)	Practice (Post)
Knowledge (Pre)	R				
	P				
Practice (Pre)	R	0.256			
	P	0.048*			
Knowledge (Post)	R	0.409	0.474		
	P	0.001*	0.000*		
Practice (Post)	R	0.086	0.246	0.330	
	P	0.516	0.058	0.010*	

R= Pearson Correlation   * significant at P≤ 0.05

Discussion

The novel corona virus disease COVID-19 is a current global health crisis (Momtazmanesh, et al, 2020). Education has been recognized as an effective measure to prevent and control the spread of the disease as it will lead to acquiring appropriate knowledge and complying with preventive practices (Peng, et al, 2020). On a national level, many countries are educating their communities with accurate data and instructions regarding the appropriate preventive measures such as social distancing, sanitation and isolation in order to reduce the spread of the disease (Heymann, & Shindo, 2020).

The current health champion program aimed to equip the students and other school members with adequate COVID-19 safety precautions. This is similar to a study carried out by Gray, et al (2020) who stated that school children should receive health education regarding hand washing, care in cough and sneezing, tissue use and disposal, physical distancing and what to do when feeling unwell (Gray, et al, 2020). Furthermore, another study implemented by Mboya, et al (2020) mentioned that communities should receive educational sessions about COVID-19 cause, mode of transmission, and adherence to preventive measures, as well as identifying perceived hotspots for COVID-19 transmission (Mboya, et al, 2020).

The role of health champion is providing peer-to-peer coaching as well as delivering formal and informal education. The results of the current study revealed that the health champion program was effective, and the students who participated in it were satisfied by its results. This may be explained in the light of that the students in this age group (12-15 years) tend to try new issues and gain new experience; also they may be attracted by the novelty of the idea and willing to accomplish the task in order to gain sense of industry according to what have been explained in the psychosocial theory of development for this age group (Erikson, 1968). This finding is supported by a couple of studies; the first was carried out by Yusuf, et al (2015) who evaluated an oral health promotion program targeting children in primary schools, and declared that the program received positive feedback from the health champions (Yusuf, et al, 2015). The second study was performed by Patel, et al (2016) who implemented an intervention to increase hand hygiene compliance and reported that patients' hand hygiene compliance had improved after patients' contact by health champions (Patel, et al, 2016). On the other hand, Goedken, et al (2019) who was investigating hand hygiene compliance proclaimed that participants had described some barriers to the role of health champions (Goedken, et al, 2019).

The current study revealed that the majority of health champions who participated in the study were females (76.7%). This may be attributed to the fact that females are less likely to take risky activities than males and are more willing to learn about safety precautions in order to follow it. This finding is similar to the findings of another study implemented in Iran reporting that female students were more than males and had better level of knowledge about COVID-19 (Taghrir, et al, 2020).

The present study portrayed that the majority of the health champions and school members said that the internet and media were the

most used sources of information. This is congruent with the results of another study performed in Poland which mentioned that the participants used general websites and social media as the main sources of knowledge regarding COVID-19 (Nazar, et al, 2020).

The existing results also declared that the majority of the participants generally had a good level of knowledge after implementing the program regarding basics of COVID-19, protective and control measures to slow the spread of COVID-19 at community and personal levels, as well as measures done if a person becomes sick or recovers from COVID-19. This may be attributed to the students' enthusiasm to participate in the study and implement it correctly as they were contented by acting as a role-model and health champions to the rest of the school members. These findings are supported by a number of studies which stated that the majority of participants had good level of knowledge about covid-19 (Clements, 2020., Zhong, et al, 2020., Erfani, et al, 2020., Geldsetzer, 2020., Galle, et al, 2020). On the contrary, these findings are dissimilar to the findings of Bhagavathula, et al (2020) who reported that a significant number of healthcare workers displayed poor knowledge about COVID-19 infection (Bhagavathula, et al, 2020).

Implementing multiple strategies and tailored educational programs about the importance of following preventive behaviors as wearing masks and hand washing can reduce COVID-19 spread in schools and communities (Leeb, et al, 2020., Doung-ngern, et al, 2020., Ehrhardt, et al, 2020). The CDC and WHO recommended that all people should wear masks when in public in order to reduce the disease transmission (US Centers for Disease Control and Prevention, 2020., World Health Organization, 2020). In addition, hand hygiene is a critical public health control method to prevent the spread of infectious pathogens (Herbert, et al, 2020).

The current results showed that the health practices level of the majority of the studied sample regarding hand washing, coughing and sneezing etiquette and wearing, taking off and disposing of mask had improved after implementing the program. This level of good health practices is higher than that mentioned by a couple of studies who stated that only about half of the studied school children showed a good behavior of hand washing, mask wearing and proper coughing and sneezing etiquette (Chen, et al, 2020., Biswas, et al., 2019).

Conclusion

The findings of the present study concluded that, there was a statistically significant improvement in student health champions' knowledge and practices about COVID 19 safety precautions. Also they exhibited high satisfaction about health champions' program experiences and they will recommend it to other colleagues if it is implemented again.

Also it was concluded from the study that, the school members who have been instructed by Student Health Champions exhibited higher scores level of knowledge and practices about COVID-19 safety precautions after the program than before it.

Furthermore, the study concluded that the students' education delivery model through the concept of health champion was effective as it significantly increased the knowledge and practices related to COVID19 of school members.

Such benefits can accomplish in different topics to enhance health promotive activities in school.

Recommendations

Based on the findings of the current study the following recommendations are suggested:

1. Coordination and cooperation protocol between the Faculty of Nursing and school directorate should be reinforced to accomplish such programs in various topics to promote the health of students and school members.

2. Disseminate the concept of school health champion in different schools with different topics.

3. Encouraging the mass media to highlight the benefit of the study in providing school students with the courage to participate in volunteer work in order to promote health of others.

4. Disseminate the ideas of developing an infection control committee in schools for the

sustainability of ideas of preventive precautionary measures in general.

5. Further research on larger number of participants and different topics are needed to evaluate the effectiveness of students' education delivery model through the concept of health.

Conflict of Interest

The authors declared that they have no conflict of interest.

Author Contribution

All researchers were part of the initial design of the research. They shared in collected and analyzed the data, wrote, and edited the final version of the text of the manuscript and formatted it and submitted it for publication.

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