

## **Health Preventive Program regarding COVID 19 among Primary School Age Students at Benha City**

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### **Abstract**

**Background:** Coronaviruses are a group of viruses that can cause a range of symptoms including a runny nose, cough, sore throat and fever. Some are mild, such as the common cold, while others are more likely to lead to pneumonia. They are usually spread through direct contact with an infected person and it causes severe illness in around a quarter of cases and can be deadly). **Aim of study:** Was to evaluate the effect of health preventive program regarding COVID 19 among primary school age students at Benha City. **Research design:** A quasi experimental design was utilized in this study. **Setting:** This study was conducted at seven Governmental Primary Schools in Benha City. Which selected randomly from total 108 schools that distributed into 7 sectors, The school were selected randomly one from each sector. **Sample:** The total number of sample was 150 student. **Tools:** **Tool one :** Included two parts as **the first part:** Included personal characteristics of the children **The second part:** Included primary school age students' knowledge regarding the COVID 19, **Tool Two:** Observational checklist that included Primary school age students' practice regarding prevention of the COVID 19. **Results:** There were highly statistically significant differences in all items of knowledge about COVID-19 after the program implementation, there were highly statistically significant difference in all items of students' practices pre and post-program implementation. **Conclusion:** Health preventive program regarding COVID-19 was succeed to improve the knowledge and improved health practices of primary school age students at Benha City. **Recommendations:** continues Health preventive program for students regarding COVID-19 should be provided in wide range.

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**Key words:** Health Preventive Program, COVID 19, Primary School Students

### **Introduction:**

Children are the greatest investment of any community and the main basic for its development. They are biggest promise for the future, as they will be apparent, workers, leaders, and decision-makers of tomorrow. The International Standard Classification of Education considers primary education as a single phase where programmes are typically designed to provide fundamental skills in reading, writing and mathematics and to establish

a solid foundation for learning, primary education or first stage of basic education( **Bertlett& Kenneth, 2019**).

A new coronavirus appeared in Wuhan, China at the start of December 2019 and has already infected hundreds of people in nearly a dozen countries. The World Health Organization(WHO) said that it's too early to declare a public health emergency globally, although the outbreak is a major emergency in China. The first suspected cases were officially

reported to the WHO on 31 December 2019, with the illness appearing just over three weeks earlier on 8 December 2019 (WHO, 2020).

Coronavirus is transmitted directly through respiratory droplets from infected individuals or contaminated materials. However, as a greater understanding of the virus is achieved, the routes of transmission have been widened by the World Health Organization (WHO) to include possible human-human contact, droplet, airborne, mother-to-child and animal-to-human transmission. The virus has an incubation period of up to 14 days in infected individuals either with common symptoms, including fever, cough and shortness of breath, or without signs of the infection (Asymptomatic). The ability of COVID-19 to cause severe complications in a relatively short span of time in a cross-section of infected individuals, with devastating repercussions ranging from acute pneumonia, respiratory distress syndrome, heart failure, cytokine storm and multi-organ dysfunction present a unique challenge and burden to health care facilities around the world. Transmission of coronaviruses from asymptomatic carriers is one of the major preventative challenges for controlling this viral infection (lauer et al., 2021).

In response to the declaration of global pandemic, extreme prevention methods were adopted by countries around the world. The public were instructed by the WHO to seek information about COVID-19 solely from well-trusted sources (e.g. national public health authorities) and to practice protective measures, including social distancing, hand hygiene and refraining from touching the eyes, nose and mouth with unwashed hands. It was previously reported that raising public awareness about the Middle East Respiratory Syndrome (MERS) and the importance of hand washing had shown

positive outcomes in containing previous MERS outbreaks in world (Yezli S, Khan A., 2020).

Community health nurses are valued for their adaptability and willingness to provide care in many settings, including community health clinics, churches, homeless shelters, and schools. The nurses provide comprehensive care to children within their homes, at organized events such as health fairs, and at agencies and institutions serving children who have particular health needs. Advanced practice nurses in communities improve access to care and lower costs at nurse-managed clinics on college campuses, at primary and secondary schools. And develop and implement corporate wellness programs, thereby supporting the health, productivity of employees and their organizations (Pervushin, 2019).

#### **Significance of the study:**

In Egypt, of 11 April 2020, total conformed cases were 1939 confirmed cases found in Egypt, also total death cases were 146 cases found in Egypt ( The Center for Systems Science and Engineering(CSSE), 2020).This study is important because preventive measures will decrease infection transmission and outbreak also mortality rate will decrease.

#### **Aim of the study:**

This study aimed to evaluate the effect of health preventive program regarding COVID 19 among primary school age students at Benha City .

#### **Research hypothesis**

Primary school students' knowledge and practices about COVID 19 will be improved after the implementation of the preventive program than before the program implementation.

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### **Subjects and methods:**

#### **Research design:**

A quasi – experimental design was used in carrying out this study.

#### **Setting:-**

The study was conducted at seven Governmental Primary Schools in Benha City which named, Abd el Menem Reyad, Ebn Khaldon, El Imam Mohammed Abdu, El Thowra, Taha Hussein, Huda Sharawi and Anas Ebn Malek. Which selected randomly from total 108 schools that distributed into 7 sectors. The school were selected randomly one from each sector.

#### **Sampling:**

Multistage random sample technique was used, as 25% of total students at academic year 2020 at selected primary schools in Benha City. The total number of sample was 150 student were chosen according to the following criteria : Fourth and fifth grade

**Tools for data collection:** Two tools were used to collect data:-

**First Tool:-**A structured interviewing questionnaire was designed by the researcher based on reviewing the related literature, and written in simple clear Arabic language and consisted of two parts and included:

**The first Part: (A):-**It consisted of seven questions related to the personal characteristics of the student and included children's sex, age, ranking of the student among the brothers, academic grade, place of residence and social media was used .

**The second Part:** Was developed to evaluate student's knowledge regarding COVID-19 and included 12 questions as( definition, incubation period, high risk group to

COVID-19, symptoms, modes of transmission, diagnosis of COVID-19, complications, health procedures followed infection, methods of prevention, if there were drugs or vaccines, balanced diet for infected children and student's information sources), this tool was used pre and post program implementation.

#### **Scoring system for student's knowledge:-**

Student's knowledge was calculated as follows( 2) score for complete correct answer, while( 1) score for incomplete correct answer. And (0) for incorrect answer. For each question of knowledge, the score of the items was summed- up and the total divided by the number of items, giving a mean score for the part. These scores were converted into a percent score. Student's total knowledge score was classified as the following:

#### **Total scores of knowledge= 24 equal 100%**

- Good when total score was 75% to 100% (> 18)
- Average when the total score was 50% to less than 75% ( 12-18)
- Poor when the total score was less than 50% (< 12)

**Second tool:** Observational checklist for student's practices regarding the prevention of COVID-19, it contains 5 questions, (steps of hand washing, steps of the right way of wearing surgical mask, steps about getting rid and changing surgical mask, steps following during sneezing or coughing and maintaining social distance.

#### **Scoring system for student's practices:**

Each step has 3 levels of answers: done, and not done. These were respectively scored 0, 1. The score of the items were summed- up and the total divided by the number of the items.

- Done regularly when total score was > 60% (>19)
- Done irregularly when the total score was <60% when total score (<19).
- Not done when the total score was 0%, when total score (0).

#### **Content validity of the tools:**

Tools validity test was done through five expertise's of Faculty Nursing Staff from Community Health Nursing Department-Faculty of Nursing Benha University specialties who reviewed the tools for clarity, relevance, comprehensiveness, and applicability.

#### **Reliability of the tools:**

Reliability of tools was applied by researcher for testing the internal consistency of the tool, by administration of the same tools to the same subjects under similar condition on one or more occasion. Answers from repeated testing were compared ( Conbachs Alpha Coefficient ) equal 0.729% for knowledge and 0.801% for student's practices

#### **Ethical considerations:**

Permission has been obtained orally from each student conducting the interview and given a brief orientation to the study, subjects were given an opportunity to refuse the participation after explanation of the purpose of the study. Also they were reassured that information gathered will be confidential and used only for the purpose of the study. The study maneuvers will not cause any harmful effects the participants.

#### **Pilot study:**

A pilot study was conducted on a sample of 10 % of primary school age students of total number and chosen randomly before embarking on the data collection and they were not included in the study sample to test the tools

feasibility, applicability according to the results obtained from the data, there was no modification needed so the pilot study was excluded in the main study sample.

#### **Preventive program construction:**

The general objectives of preventive program implementation is evaluating the effect of health preventive program regarding COVID-19 among primary school age students. This program provided students with knowledge and practice needed for them and the specific objectives are:

- Define COVID-19 and Mention modes of transmission of COVID- 19.
- Discuss the still life period of COVID-19 on surface and Identify incubation period of COVID-19.
- Enumerate signs and symptoms of COVID-19 and Discuss suspected persons for infection with COVID-19.
- Identify confirmed patients with COVID-19.
- Explain methods of preventive measures during dealing with suspected persons or confirmed patients.
- Discuss methods of treatment or vaccination for COVID-19 and Explain methods of preventive measures against COVID-19.
- Apply avoidance ways of infection regarding COVID-19.
- Apply proper steps of hand washing .
- Apply proper technique of using face mask.
- Identify methods of psychological support and Explain fact of rumors about COVID-19.

**(I) Preparatory phase:** Preparation of the study design and data collection tool was based on reviewing current and international related literature about COVID-19 by using periodical

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journal, magazines, books, and computer search to construct the tools and the preventive program.

**(II) Assessment and Planning phase:** The researcher had visited Seven Governmental Primary Schools in Benha City, and The researcher introduced her self to students and explained the purpose of the study and the importance of proper practice for decreasing infection and complications.

- Each day researcher spend 4 hours, each student interviewed using pre designed interviewing sheet to obtain the data needed; each interview lasted 30- 45 minutes.
- An interviewing was conducted to collect baseline data from students regarding knowledge about COVID-19 and actual practices before program implementation. Students were observed and evaluated during practices regarding COVID-19.
- Areas of weakness in student's knowledge and practices were identified and implementation program objectives were set.
- The researcher planned the preventive program after interviewing related literature built on the assessment of the student's knowledge and practices obtained from questionnaire sheet and observational checklist about student.

**(III) Implementation phase:** The program was implemented at the previous mentioned settings. Student knowledge and practices needs were assessed in order to be met. The actual field work was carried out for data collection at the mid of October 2021 to the end of December 2021. The researcher was available two days per week (Sundays and Mondays) from 8am- 12pm. The total students included in the study were 150 student. The students who fulfilled the criteria was invited to participate after providing students with a simple and full evaluation of the aim and process of the study, and the student who agreed was interviewed using the questionnaire sheet. Researcher filled student's

assessment sheet. The time of first interviewing needed for each student range between 30- 45 minutes. Teaching module was designed based on level of student's knowledge and the practices. Five teaching sessions were conducted focusing on information included in the booklet. This program was provided in five sessions (2 theoretical and 3 practical). Time for each was 30- 45 minutes.

### **Teaching methods:**

All students received the same health preventive program content using the same teaching methods, which were (lecture, brain storming and discussion).

**Teaching aids:** Suitable teaching aids were specially prepared for the intervention, as booklet and colored posters.

**Evaluation phase:** Evaluation of this program was done by using the post- test questionnaire which was the same format of pre- test questionnaire to compare the change of student's knowledge and practices immediately after implementation of heath preventive program construction.

### **Statistical analysis:**

The collected data were organized, tabulated and analyzed by using Statistical Package for Social Science (SPSS) version 20 which was used frequencies and percentages for qualitative descriptive data and  $\chi^2$  was used for relation test and mean standard deviation was used for quantitative data and correlation coefficient test (r) was used for correlation analysis, the degree of significance was identified.

P value > 0.05 not significant

P value < 0.05 significant

P value < 0.001 highly significant.

**Results:**

**Table (1):** Shows that 14.7% of the studied students reported complete answer regarding definition of COVID-19 pre program but this percentage increased to 74.7% post program implementation. 6.0% of the studied students reported complete answer regarding incubation period of COVID-19 pre-program but this percentage increased to 73.3% post-program implementation. 89.3% of the studied students didn't know high risk groups to COVID-19 pre-program but this percentage decreased to 4.0% post-program implementation. 74.7% of the studied students didn't knowledge complications of COVID-19 pre-program but this percentage decreased to 6.0% post-program implementation. 82.0% of the studied students reported incomplete answer regarding methods of prevention from COVID-19 pre-program but this percentage decreased to 17.3% post-program implementation, and 70.7% of them reported incomplete answer regarding balanced diet for an infected child with COVID-19 pre program but this percentage decreased to 22.0% post program implementation. Also, this table showed that, there were highly statistically significant differences in all items of knowledge about COVID-19 after the program implementation.

**Figure (1):** Illustrates that 13.3% of the studied students had good total knowledge score about COVID-19 pre-program but this percentage increased to 76.7% post-program implementation, while 58% of them had poor total knowledge score about COVID-19 pre-program but this percentage reached to 7.3% post-program implementation.

**Figure (2):** Shows that only 17.3% of the studied students had total satisfaction practices score pre-program but this percentage increased to 86.7% post-program implementation and 82.7% of them had total unsatisfactory practices

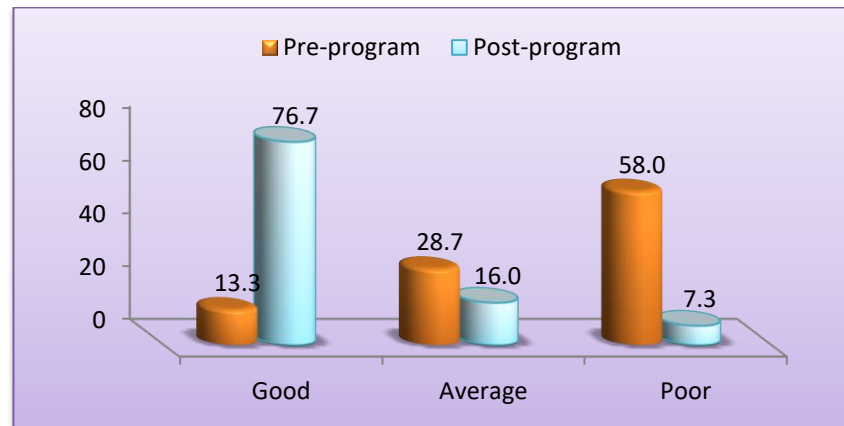
score pre-program but this percentage decreased to 13.3% post-program implementation.

**Table (2):** Shows that; there were highly statistically significant difference in all items of students' practices pre and post-program implementation ( $P < 0.001$ ). 15.3% of the studied students had total satisfactory practices regarding to steps following during sneezing or coughing pre-program but this percentage increased to 88.7% post-program implementation, 22.7%, 15.3% of them had total satisfactory practices regarding steps of hand washing and steps of wearing surgical mask pre-program respectively but this percentage increased to 87.3% post-program implementation.

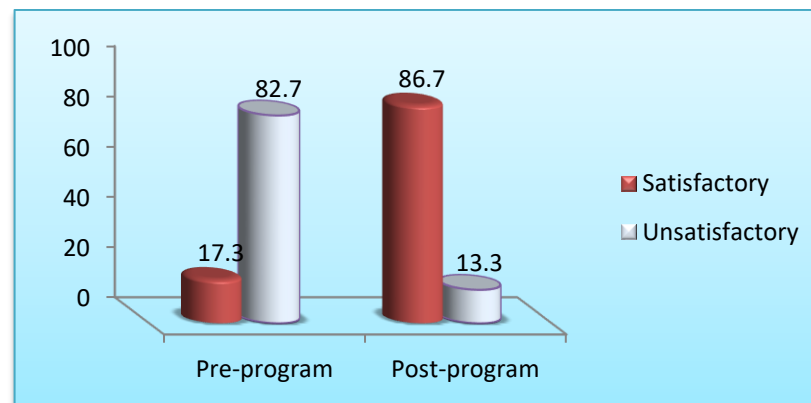
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**Table (1): Frequency distribution of the studied students regarding to their knowledge pre and post program implementation (n=150).**

Student's knowledge about COVID-19	Pre program						Post program						X2	p-value
	Complete answer		Incomplete answer		Don't know		Complete answer		Incomplete answer		Don't know			
	No	%	No	%	No	%	No	%	No	%	No	%		
Definition of COVID-19	22	14.7	90	60.0	38	25.3	112	74.7	27	18.0	11	7.3	109.24	.000
Incubation period of COVID-19	9	6.0	0	0	141	94.0	110	73.3	0	0	40	26.7	142.08	.000
High risk group to COVID-19	11	7.3	5	3.3	134	89.3	116	77.3	28	18.7	6	4.0	219.87	.000
Symptoms of infection with the COVID-19	24	16.0	93	62.0	33	22.0	123	82.0	22	14.7	5	3.3	131.14	.000
Modes of transmission for COVID-19	29	19.3	79	52.7	42	28.0	125	83.3	18	12.0	7	4.7	123.20	.000
Diagnosis of COVID-19	19	12.7	83	55.3	48	32.0	117	78.0	21	14.0	12	8.0	129.17	.000
Complications of COVID-19	24	16.0	14	9.3	112	74.7	114	76.0	27	18.0	9	6.0	150.49	.000
The health procedures followed with a child infected with COVID-19	27	18.0	105	70.0	18	12.0	107	71.3	31	20.7	12	8.0	89.22	.000
Methods of prevention from COVID-19	19	12.7	123	82.0	8	5.3	114	76.0	26	17.3	10	6.7	131.22	.000
There are drugs or vaccines for COVID-19	49	32.7	0	0.0	101	67.3	115	76.7	0	0.0	35	23.3	58.59	.000
Balanced diet for an infected child with COVID-19	16	10.7	106	70.7	28	18.7	107	71.3	33	22.0	10	6.7	114.19	.000



**Figure (1): Percentage distribution of the studied students regarding to their total knowledge score pre and post-program implementation (n=150).**



**Figure (2): Percentage distribution of the studied students regarding to their total practices score pre and post-program implementation (n=150).**



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**Table (2): Frequency distribution of the studied students regarding to their total practices items pre and post-program implementation (n=150).**

Total practices items	Pre-program				Post-program				X2	p-value
	Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory			
	No	%	No	%	No	%	No	%		
Steps of hand washing	34	22.7	116	77.3	131	87.3	19	12.7	126.72	0.000**
Steps of wearing surgical mask	23	15.3	127	84.7	131	87.3	19	12.7	155.63	0.000**
Steps about getting rid of and changing the mask	20	13.3	130	86.7	130	86.7	20	13.3	161.33	0.000**
Steps following during sneezing or coughing	23	15.3	127	84.7	133	88.7	17	11.3	161.59	0.000**
Steps of maintaining social distancing	63	42.0	87	58.0	129	86.0	21	14.0	63.02	0.000**

**Discussion:**

Coronaviruses designated as Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV2), the causative agent of coronavirus disease 2019 (COVID-19), which carries a high infectious rate in humans. The infectious nature of the disease, rising numbers of cases, especially in crowded areas such as schools (**Kassie et al., 2020**).

Concerning on the studied students knowledge regarding to COVID-19 pre and post program, the present study showed that, less than one fifth of the studied sample had complete answer regarding to definition of COVID 19, majority of them didn't know incubation period of COVID 19, and the most of them didn't know right answer regarding to high risk group to infection with the COVID 19 pre program.

After program implementation; most of the studied sample had complete answer regarding symptoms of infection with the COVID 19, less than three quarters of them had complete answer regarding the health procedures followed with infected with COVID 19, slightly more than three quarters of them had complete answer regarding the methods of prevention from COVID 19, less than three quarters of them had complete answer regarding balanced diet for an infected child with COVID 19. The table showed highly statistically significance differences in all items of student's knowledge pre and post program implementation . From the researcher point of view, this might be due to health authorities in Egypt carry out targeted public information campaigns to promote the spread of accurate knowledge about COVID-19 among primary students.

These finding were supported by **Baloran, (2020)**, who studied "Knowledge, Attitudes, Anxiety, and Coping Strategies of Students During COVID-19 Pandemic, Philippines" and found that, in view of students' knowledge about COVID-19, a full 73.58% of their students knew that the COVID-19 could spread through touching, sneezing, kissing, and food. 97.55% of them were aware that the primary symptom of the COVID-19 infection is fever. Also, 91.70% of their students understood the importance of staying at home as a precautionary measure to stop the spread of the virus in the community.

According the findings of the current study, only 13.3% of the studied students had good total knowledge score regarding COVID- 19 compared by more than three quarters of studied students had good knowledge regarding COVID - 19 post program implementation, These findings were supported by **Wen et al., (2020)**, they studied "Knowledge, Attitudes, Practices of Primary and Middle School Students at The Outbreak of COVID-19 in Beijing, China" and found that there were improving in their students total knowledge score post program compared to pre-program. The overall correct rate for COVID-19 knowledge was 74.1% post program, while only 13.5% had incomplete answer and could identify the high-risk places of cross-infection and warning body temperature, This might be due to the effect of guidelines that enhance studied students knowledge.

According to the studied students' total practices score pre and post program, This study clarified that; less than one fifth of the studied students had total satisfactory practices score pre –program which increased to the most of the studied students hadn't total satisfactory practices score post program .

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According to the studied students' total practices items pre and post program, the current study showed that; there were highly statistically significant differences for all items related to students' practices items pre and post program (P- value < 0.001), less than one quarter of the studied student washed hands pre-program and this percentage increased to the most of them post program, While less than one fifth of them getting rid of and changing the mask pre-program and this percentage increased to the most of them post- program. This might be due to effect of program implementation and reinforcement of that enhance students practices through evaluating after the program implementation.

These results were in harmony with **Joseph & Lennox, (2021)**, they studied "Twists, Turns and Thrills during COVID-19: Music Teaching and Practice in Australia" and found that there were highly statistically significant differences for total practices related to student's practices items pre and post program implementation (P- value < 0.001)

### **Conclusion**

Health preventive program regarding COVID-19 was succeed to improve the knowledge and improved heath practices of primary school age students at Benha City. Less than one fifth of the studied students had good total knowledge score about COVID-19 pre-program but this percentage increased to more than three quarter post-program implementation, while more than half of them had poor total knowledge score about COVID-19 pre-program but this percentage reached to few post-program implementation, only less than one fifth of the studied students had total satisfactory practices score pre-program but this percentage increased to the most post-program implementation and the

most of them had total unsatisfactory practices score pre-program but this percentage decreased to less than one fifth post-program implementation, there was positive statistically correlation between the studied students total knowledge score and their total practices score pre and post-program implementation.

### **Recommendations:**

1. Health preventive program for students regarding COVID-19 should be provided in wide range.
2. Posters showing preventive measures including hand washing steps, wearing surgical mask, getting rid and changing surgical mask, dealing when sneezing or coughing and maintaining social distances should be available at schools.
3. Providing with digital thermometers for easily checking up temperature for students.
4. Continuous Periodic medical examination should be done regularly for early detection of infection with COVID-19.

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## برنامج الوقاية الصحية المتعلق بفيروس كورونا المستجد 19 بين طلاب المرحلة الابتدائية في مدينة بنها ياسمين سيد عبد الباسط - هويدا صادق عبد الحميد - سماح سعيد صبري- منى عبد الله عبد المرضي

فيروسات كورونا هي مجموعة من الفيروسات التي يمكن أن تسبب مجموعة من الأعراض بما في ذلك سيلان الأنف والسعال والتهاب الحلق والحمى. بعضها خفيف، مثل نزلات البرد، في حين أن البعض الآخر أكثر عرضة للإصابة بالالتهاب الرئوي. عادة ما تنتشر من خلال الاتصال المباشر مع شخص مصاب وتسبب مرضاً شديداً في حوالي ربع الحالات ويمكن أن تكون مميتة. لذا هدفت هذه الدراسة إلى تقييم أثر برنامج الوقاية الصحي فيما يتعلق بمرض كوفيد 19 بين طلاب المرحلة الابتدائية بمدينة بنها. تصميم البحث: تم استخدام تصميم شبه تجريبي في هذه الدراسة و قد أجريت هذه الدراسة في سبع مدارس ابتدائية حكومية في مدينة بنها، وهي: عبد المنعم رياض، وابن خلدون، والإمام محمد عبده، والثورة، وطه حسين، وهدى الشعراوي، وأنس بن مالك. والتي تم اختيارها عشوائياً من إجمالي 108 مدرسة موزعة على 7 قطاعات، وتم اختيار المدارس بشكل عشوائي واحدة من كل قطاع و قد بلغ عدد أفراد العينة 150 طالب و طالبة. فيما يتعلق بالوقاية من فيروس كورونا المستجد و أوضحت النتائج أن هناك علاقات ذات دلالة إحصائية عالية بين مجموع ممارسات الطلاب قبل البرنامج وبعده، بينما لا توجد علاقة ذات دلالة إحصائية بين مجموع درجات ممارسات الطلاب في الجنس والعمر، الترتيب والدرجة الأكاديمية ومكان الإقامة، كانت هناك علاقات ذات دلالة إحصائية بين مجموع ممارسات الطلاب المدرسين وبين عمل آبائهم وأمهاتهم بعد تنفيذ البرنامج، بينما لا توجد علاقة ذات دلالة إحصائية بين مجموع الطلاب وممارسات آبائهم. العمر والمستوى التعليمي وأمهاتهم. العمر والمستوى التعليمي قبل وبعد تنفيذ البرنامج، كان هناك ارتباط إيجابي إحصائياً بين مجموع درجات المعرفة للطلاب المدرسين وإجمالي ممارساتهم قبل وبعد تنفيذ البرنامج واوصت الدراسة بتقديم برنامج الوقاية الصحية للطلاب فيما يتعلق بفيروس كورونا المستجد على نطاق واسع.