

The effectiveness of a preventive health strategy based on the philosophy of preventive education and the introduction of Infusion to avoid dangers of infection with the Coronavirus COVID-19 among primary school children in the Kingdom of Saudi Arabia

Coronavirus Pandemic Research Initiative:
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فعالية استراتيجية وقائية صحية قائمة على فلسفة التربية الوقائية
ومدخل **Infusion** لتلافي أخطار الإصابة بفيروس كورونا COVID-19
لدى أطفال المرحلة الابتدائية بالمملكة العربية السعودية
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يستهدف البحث الحالي مواجهة جائحة كورونا الوبائية من خلال تصميم استراتيجية وقائية صحية قائمة على فلسفة التربية الوقائية ومدخل **Infusion** لتلافي أخطار الإصابة بفيروس كورونا COVID-19 في مناهج العلوم لدى أطفال المرحلة الابتدائية بالمملكة العربية السعودية. وتم تحديد قائمة متطلبات التربية الوقائية والصحية اللازمة لتلافي أخطار الإصابة بفيروس كورونا COVID-19 من خلال استبانة شملت (٨) محاور، وطبقت على عينة من المعلمين والمشرفين والأطباء بمحافظة تربة (٣٢)، وفي ضوء نتائجها تم بناء قائمة معايير التربية الوقائية والصحية تضمنت (٣) أبعاد رئيسية و(١٣٦) بند فرعي، تم استخدامها في تحليل محتوى (٢٤) كتاب علوم بالمرحلة الابتدائية، وفي ضوء هذه النتائج تم وضع التصور المقترح لتصميم استراتيجية قائمة على فلسفة التربية الوقائية ومدخل **Infusion** لتلافي أخطار الإصابة بفيروس كورونا الوبائي المستجد COVID-19 ، وتم تنظيم محتوى وحدة " تنوع الحياة وممالك الكائنات الحية في إطار متطلبات التربية الوقائية والصحية " واستخدام الأنشطة التعليمية الوقائية والصحية والمواقف التمثيلية المصطنعة اللازمة، والمهارات الوقائية والصحية والإسعافات الأولية، وإعداد دليل المعلم في تدريس الوحدة، وتم اختيار مجموعتي البحث (ضابطة وتجريبية) وتم تدريس الوحدة لطلاب الصف الخامس الابتدائي، المجموعة الضابطة (ن=٣٧تدريس) بالمحتوى والتنظيم العادي بمدرسة (عبدالرحمن بن صخر الابتدائية بتربة) ، في حين تم تدريس المجموعة التجريبية (ن=٣٦تدريس) بالاستراتيجية الوقائية الصحية بمدرسة (المنصورية الابتدائية بتربة) ، وبعد نهاية تدريس الوحدة تم

تطبيق اختبار المعارف العلمية الوقائية والصحية (٢٦) سؤالاً، وبطاقة ملاحظة المهارات الوقائية والصحية (٧) مهارات رئيسة، ومقياس الوعي الوقائي الصحي (٢٦) موقفاً، على طلاب مجموعتي البحث، وأسفر البحث عن نتائج أهمها :

- ١- لا يتضمن محتوى مناهج العلوم بالتعليم الابتدائي بالمملكة العربية السعودية متطلبات ومعايير التربية الوقائية والصحية اللازمة لتلافي أخطار الإصابة بفيروس كورونا COVID-19 ، حيث بلغت النسبة (٢,١٣%) .
- ٢- يوجد فرق ذو دلالة احصائية بين متوسطي درجات طلاب المجموعتين الضابطة والتجريبية في اختبار المعارف الوقائية الصحية ولصالح طلاب المجموعة التجريبية بعدياً.
- ٣- يوجد فرق ذو دلالة احصائية بين متوسطي درجات طلاب المجموعتين الضابطة والتجريبية في بطاقة ملاحظة مهارات الإسعافات الأولية ولصالح طلاب المجموعة التجريبية بعدياً.
- ٤- يوجد فرق ذو دلالة احصائية بين متوسطي درجات طلاب المجموعتين الضابطة والتجريبية في مقياس الوعي الصحي الوقائي ولصالح طلاب المجموعة التجريبية بعدياً.
- ٥- يوجد ارتباط دال إحصائياً بين اختبار المعارف الوقائية وبطاقة ملاحظة مهارات الإسعافات الأولية، ومقياس الوعي الصحي الوقائي .

الكلمات المفتاحية: استراتيجيات وقائية صحية، مجابهة أخطار فيروس كورونا، مدخل Infusion في تنظيم مناهج العلوم، متطلبات ومعايير التربية الوقائية والصحية، المعارف العلمية الوقائية والصحية، مهارات التربية الوقائية والصحية، مهارات الإسعافات الأولية، الوعي الوقائي والصحي.

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ABSTRACT

The current research aimed at facing the Corona epidemic by designing a preventive health strategy based on the philosophy of preventive education and the Infusion approach to avoid the dangers of infection with the Coronavirus COVID-19 in science curricula among primary school children in the Kingdom of Saudi Arabia.

The list of preventive and health education requirements necessary to avoid the dangers of infection with the new epidemic COVID-19 virus for elementary school students in the Kingdom of Saudi Arabia was determined through a questionnaire that included (8) aspects of components, and was applied to a sample of teachers, supervisors and doctors in Tarbah Governorate No.(32), and in light of the results were built a list of preventive and health education standards that included (3) main dimensions and (136) sub-items, and in light of which the content of (24) science textbooks at the primary stage was analyzed, and in light of these results the A suggested framework was developed for building and designing a preventive and health educational strategy Innovative based on the philosophy of preventive education and the introduction of Infusion to avoid the dangers of infection with the emerging epidemic Coronavirus (COVID-19) among primary school students in the Kingdom of Saudi Arabia.

The content of the "Diversity of life and the kingdoms of living creatures" was organized within the framework of the preventive and health education requirements, the use of preventive and health educational activities, the necessary artificial representative situation, preventive and health skills and first aid, and the preparation of a teacher's guide in teaching the unit. The two research groups were selected. The unit for fifth grade elementary students, the control group of taught the of unit by normal organization at (Abdul Rahman Bin Sakher Primary School in Turbah), while the experimental group in the preventive health strategy at (Mansouriya

Elementary School in Turbah), After the end of the unit teaching, the preventive and health scientific knowledge test (26) questions, the preventive and health skills Observation checklist (7) basic skills, and the preventive health awareness measure (26) situations were applied to the students of the two research groups, and the search resulted in results, the most important of which are:

-^١The content of science curricula in primary education in the Kingdom of Saudi Arabia does not include the requirements and standards of preventive and health education necessary to avoid the dangers of Coronavirus (COVID-19), as the percentage reached (2.13%).

-^٢There is a statistically significant difference between the mean scores of the students of the control and experimental groups in the preventive health knowledge test, in favor of the students of the experimental group.

-^٣There is a statistically significant difference between the mean scores of the students of the control and experimental groups in the first aid skills observation card for the students of the experimental group afterwards.

-^٤There is a statistically significant difference between the mean scores of the students of the control and experimental groups in the preventive health awareness scale in favor of the students of the experimental group.

-^٥There is a statistically significant correlation between the preventive ambulance knowledge test and the primary ambulance skills observation card, and the preventive health awareness measure for group students.

Key words: preventive health strategy, Corona virus, Infusion in science curricula, requirements and standards of preventive education, preventive and health scientific knowledge, preventive health skills, Preventive and health awareness.

Introduction and sense of problem:

The Kingdom of Saudi Arabia is concerned with preserving human health and safety and building it intellectually and scientifically, in light of the Kingdom's vision (2030), believing that entry into the world and the ranks of the developed world is building a scientifically and health-conscious, educated human being with the necessary preventive requirements to avoid the dangers of epidemic diseases, and the emergency dangers that occur in the society.

Building people comes through the advanced education system, as education is the mainstay of comprehensive development in all life facilities, and this building includes in its aspects the preventive and health dimension of diseases in general, and epidemic diseases in particular, as the Kingdom's vision aims to educate people in preventive education And healthy health, in which the preventive awareness of the human being from the dangers of destructive epidemics to public health is growing (Saudi Arabia Vision 2030).

The importance of preventive and health education is highlighted through the educational curricula, and the importance of this dimension increases through preventive and health education and training, which comes within the framework of teaching methods and strategies, in science curricula and interest in developing preventive and health scientific concepts, training students in preventive and health behaviors and skills, and developing their preventive awareness Towards epidemic diseases such as the emerging corona virus, COVID-19. (Saudi Ministry of Education, 2020, 13)

Some studies showed that the interest in using methods of prevention of dangers and damages that threaten the health and life of the human being and society, and employing these preventive methods in training students and providing them with health and preventive knowledge necessary for their safety and public health, has contributed to the development of some dimensions of preventive education, and contemporary scientific issues included in the developed curricula. (China Mental Health Association, 2020, 22-Rowell, J. & Dawson, C., 2013)

(Majid Abdel Rahman, 5, 2020) believes that flexibility in designing curricula, through the use of innovative educational strategies, according to current events and pathological conditions in society, must include the

inclusion of methods and skills of health prevention necessary to educate students about the dangers of these events and pathological conditions. Within the framework of designing and developing educational curricula, in order to achieve the requirements of prevention in society, including the emerging corona virus, COVID-19, which has become an epidemic disaster by the decision of the World Health Organization (WHO).

Therefore, the curricula are general and the science curricula in particular are entrusted with achieving the goals of security and safety of students and teachers by providing them with the preventive and health information necessary to prevent the dangers of the emerging corona virus, and training them in the necessary prevention and first aid skills regarding cases of infection with this epidemic virus, along with the awareness aspects to protect people from this Threats to public health in all suburbs of society.

The childhood stage is one of the important stages in Developing human life and future, and preserving the health and safety of children is one of the priorities of the objectives of education in the first educational stages, as children's knowledge and information are formed at the beginning of these stages, and children have contact with the neighboring community, whether at home, kindergarten or school, Which can be used for educational, health and preventive activities to develop their preventive awareness (Hussein Abbas, 2020, 81).

The activities of science in childhood are affected by the characteristics of children and the nature of the educational environment, community data, and the social, economic and health needs of individuals, and there are reasons and justifications calling for society to develop children's curricula, including: current events and problems, within society such as the Corona pandemic that afflicted the entire globe, in Early January 2020 AD, and it became an epidemic threatening human life, which was a strong motivation to reconsider the curriculum teaching strategies.

Science curricula must keep pace with the requirements and variables of life, and the needs of the human being within the society in which he lives, in light of the health crises and emergencies imposed by the Corona pandemic, which constitutes a basic requirement for training on health prevention measures from this crisis, and first aid skills to prevent and avoid these dangers (Zuhair Naji , 2020).

One of the basic objectives of the science curriculum is to teach students scientific explanations of what is happening from epidemic diseases within the community, their manifestations, methods of infection, health prevention measures, preventive behaviors and first aid, within the framework of strategies that study science.

The study (Hodges, et all, 2020) revealed the educational differences in the normal teaching environment, the teaching environment in case of emergency and what teaching strategies include in order to protect students from various disease dangers, by developing the preventive skills necessary for this pandemic, and some dimensions of preventive awareness associated with On the dangers of epidemic diseases spreading in the Corona pandemic.

The study (Muhammad Taha, 2020) also said that innovative teaching strategies in the context of the Corona pandemic should be concerned with teaching remotely and the optimal and effective use of educational technology innovations while performing educational activities of all kinds, to develop students' preventive skills, and develop their preventive awareness level.

The study (Ladyshevsky, RK, 2020) monitored the impact of the global COVID-19 pandemic on aspects of life around us, including education, as nearly (75) countries closed schools and closed education doors to nearly 400 million learners. As an alternative plan, some resorted Educational institutions for alternative education via the Internet, using innovative teaching strategies aimed at developing preventive awareness of students to overcome the effects of this pandemic.

Hence, it is necessary to search for innovative preventive and health educational strategies to add realistic scientific activities to prevent the dangers of the Corona pandemic, and methods of preventing epidemic diseases, after each principle, law or scientific theory so that the scientific content of science is related to the ideas, skills and preventive values to contribute to building knowledge, skills and awareness of students Preventive in order to fulfill the requirements of preventive and health education.

The study (Naguib Atew, 2008) believes that the health and environmental culture is one of the requirements of the scientific culture necessary to develop science curricula at the elementary stage, as the study

presented a proposed vision for developing science curricula in the higher primary grades in the framework of focusing on aspects of science, technology and society, including the requirements of health and environmental culture for students Primary stage.

The study (Rowell, & Dawson, 2013 - Lyndon, 2013) aimed to identify basic Aspects or components that must be taken into account when developing science education strategies from The most important of them are: Keeping up with recent scientific achievements such as issues of cloning and base cells, gene therapy, gene-modified crops, genetic engineering, life technology, epidemic diseases and methods of prevention, chemical and biological warfare, future and quality of life, space science and energy crisis, and preventive skills associated with these dimensions.

The study (Wright, 2013) is concerned with identifying preventive standards for students from the age of (4-11 years) in elementary schools in Minnesota, USA, about health problems and their dangers through a set of activities, instructions and preventive measures necessary for them within the elementary school, as part of a plan to develop the science curriculum It reached (18) preventive and emergency standards, and dealt with knowledge, skills, values, and preventive various dangers and diseases.

The study (Gerlovich, 2013) dealt with the preventive education standards in science curricula in American schools by presenting the preventive requirements required of teachers and students inside primary schools while teaching science curricula, and the practical measures necessary to prevent students from contracting epidemic diseases, and the study showed the growth of these standards among students through Apply a preventive test to them at the end of the science curriculum.

The study (Abdul Rahman Al-Qahtani, 2014) focused on preventive methods for treating seasonal influenza cases by adopting prevention methods and training students on them in schools through the use of science laboratories and the presentation of preventive educational films and educational plays, and the use of some medical professionals in teaching science and prevention curriculum flu.

As for the study (Stephen, J. E. 2014), it dealt with teaching preventive education to primary school students in London, England, in the science curriculum, using typical sources from environmental reality such as doctors

and nurses, the dangers of medicines and their types, how to use them, and the necessary prevention and aid skills in cases of serious diseases, The study concluded with the importance of teaching preventive education to students and developing their preventive and ambulatory skills about medicines and dangerous diseases that afflict them at this age.

The study (Weiler, 2012) aimed to develop science curricula through teaching preventive health education in elementary schools in the state of Mississippi, USA, within the framework of using health, therapeutic and medicinal situations in the school in front of students. Environment, the study also provided a set of preventive skills and treatment for these diseases.

While the study (Poche, & Carlton, 2014) provided preventive and health methods to protect students from health hazards that negatively affect their eyes, especially children, and the study also clarified some first aid measures in cases of injury, through the unit A study in the science curriculum based on some preventive skills needed for eye health.

The study (Robert, 2014) identified the protective education standards necessary for science curricula to prevent diseases and dangers that afflict primary education students in Sydney, Australia, through personal interviews with teachers, as the study resulted in identifying (20) standards for preventive education related to diseases. And health risks due to infection with these diseases, and the study recommended the necessity of developing science education strategies in light of these standards.

The study (Harvey, 2014) dealt with the protection and safety of primary education students in the state of California, USA, by training teachers on the necessary protective education skills at this stage, and teaching these skills to students from the age of (6-12) years old. The program dealt with teaching the necessary protective skills. To protect students from diseases through: developing protective teacher skills so that he can develop these skills for students, safety and protection of students from diseases, safe materials used in training these skills, and the study concluded the importance of protective education skills needed to protect students from diseases and develop them through curricula Sciences.

The study (Fawzia Hamdan, 2018) aimed at ways to promote school health in middle schools in Jeddah, Saudi Arabia, through school principals exercising their roles, by providing preventive and health services to

students through preventive and health counseling courses, and working to allocate a room or health clinic in the school To train female students in first aid for emergencies, and to provide a set of preventive and curative services for students to raise their preventive and health standards.

The study (Muhammad Eid, 2019) defined the dimensions of awareness of aspirations necessary for social studies courses, and the extent to which it included their content, as the awareness included aspirations: the level of knowledge, skills, trends related to achieving safety from hazards, fires, and natural disasters, and their prevention, and it showed the decline of the objectives and content of the curricula And methods of prevention necessary from dangers.

The study (UNESCO, 2020) aimed at the importance of distance teaching with students in scientific and health curricula in the context of the emerging Corona virus pandemic, and to provide prevention methods for students, to prevent infection with such epidemic dangers, and to preserve the health and safety of young people from the epidemic spreading around the globe.

As for the study (Zuhair Naji, 2020), it dealt with the requirements of distance teaching in light of the Corona pandemic, and providing digital remote doses that are appropriate methods of health prevention from the epidemic virus, through a proposed model in teaching using materials And digital teaching tools.

The current research team conducted an exploratory study on fifth grade students in the first semester 2019-2020 about their preventive information related to epidemic diseases and seasonal influenza. The study included a questionnaire consisting of questions: What are the epidemic diseases that affect students in the winter season? What are the types of seasonal influenza that affect students in educational stages? What preventive measures are needed to prevent epidemic diseases and seasonal influenza? What first aid is needed during and after infection with epidemic diseases and seasonal influenza?

How important is the science curriculum in educating students to prevent these epidemic diseases and seasonal influenza? What is the scientific content of the science curriculum that deals with the requirements of preventive education? What do you think of the content of the science

curriculum in light of preventive education? What are your suggestions on developing a science curriculum to educate students about the dangers of epidemic diseases and seasonal influenza? Where the results of the survey study indicated the following:

(١) There is insufficient information related to epidemic diseases and seasonal influenza.

(٢) The low level of preventive education skills and procedures necessary to prevent epidemic diseases.

(٣) The science curriculum deviates from the procedures and requirements of preventive education necessary for epidemic diseases.

(٤) Not employing scientific information in the service of students' healthy and preventive life reality

(٥) The science curriculum is devoid of applications, skills, and scientific activities necessary to avoid epidemic diseases and seasonal influenza.

(٦) Science curriculum is responsible for teaching epidemic disease prevention and first aid measures.

(٧) The science curriculum should be developed within the framework of the requirements of preventive education from the dangers of epidemic diseases to preserve the general health of students and members of society.

The findings of the research team from the results of the exploratory study, in terms of not linking and employing science information with emergency situations and managing health crises such as epidemic diseases and seasonal influenza, and thus the science curriculum is taught away from what is going on in the environment in terms of health and pathological changes.

In addition to the results of previous studies, it will be a necessary to conduct research based on an innovative educational health strategy based on the philosophy of preventive education and the Infusion approach to avoid the dangers of infection with the Coronavirus COVID-19 among primary school children in the Kingdom of Saudi Arabia.

The research team also conducted a second exploratory study applied to a group of science teachers in elementary schools (15 teachers) in the first semester of the year 2019-2020 in Taraba and Al-Arak schools, where they were asked to try to develop solutions and proposals to develop the science curriculum at the primary stage to confront epidemic diseases and seasonal

influenza. Which affects students in the winter season while studying and the first aid skills needed for them.

Where the results of the second exploratory study indicated that there are proposals to develop the science curriculum for teachers, including:

(١)The necessity to include and monitor events and diseases that occur in the environment and prevent their dangers.

(٢)The necessity to include the procedures and concepts of preventive and health education the content of the science curriculum.

(٣)Training students on preventive, health and first aid skills within the school.

(٤)The perception and comprehension of primary school students of such issues is easy and fast if they are taught in the framework of an educational play.

(٥)Teachers suggest, to maintain the health and safety of students, prevention of epidemic diseases and seasonal influenza should be taught within the framework of health and environmental sciences.

As revealed from the extrapolation of previous studies and research, the following:

- 1- The importance of science curricula as it relates to environmental, preventive, health, applied and life aspects.
- 2- Teaching science at the primary level aims to maintain the general health of students, prevent them from contracting any diseases, and enable them to perform the initial skills of first aid in the event of epidemic hazards or injuries.
- 3- There are attempts to develop science curricula at the primary stage, including: using technological means, defining a list of preventive education standards, using environmental teaching models in preventive education, defining preventive activities and practical procedures, using various teaching methods for preventive education in developing science curricula.
- 4- There has been no attempt to use an innovative educational health strategy based on the philosophy of preventive education and the Infusion approach to avoid the dangers of infection with the Coronavirus COVID-19 among primary school children in the Kingdom of Saudi Arabia.

5- And then the current research builds this strategy and measures its effectiveness in the three aspects: cognitive, skill, and emotional.

Defining the research problem:

The research problem is determined by the Corona pandemic invading the whole society, and in a dangerous epidemiological manner, which led us to search for new preventive and health strategies to confront this pandemic, among which is the building and design of an innovative preventive educational health strategy based on the philosophy of preventive education and the Infusion approach to avoid the dangers of infection with the COVID – 19 In primary school children in the Kingdom of Saudi Arabia.

To address the study of this problem, the research tried to answer the following main question:

How to design an innovative preventive educational health strategy based on the philosophy of preventive education and the introduction of Infusion to avoid the dangers of COVID-19 infection among primary school children in the Kingdom of Saudi Arabia?

From this main question, the following sub-questions as:

- 1- What are the requirements for preventive and health education necessary to avoid the dangers of infection with the Coronavirus (COVID-19) emerging epidemic among primary school students in the Kingdom of Saudi Arabia?
- 2- What is the list of preventive and health education standards necessary to avoid the dangers of infection with the new epidemic Corona virus among primary school students in the Kingdom of Saudi Arabia?
- 3- What is the suggested vision for designing an innovative preventive, health and educational strategy based on the philosophy of preventive education and the introduction of Infusion to avoid the dangers of infection with the emerging epidemic Coronavirus (COVID-19) among primary school students in the Kingdom of Saudi Arabia?
- 4- What is the effectiveness of suggested preventive health strategy in teaching a unit of the fifth grade primary science curriculum in developing the preventive health scientific knowledge necessary to avoid infection with the new epidemic Corona virus among students?
- 5- What is the effectiveness of the suggested preventive health strategy in teaching a unit of the fifth grade primary science curriculum in

developing the performance of preventive, health and ambulance skills among students?

- 6- What is the effectiveness of the proposed preventive strategy in teaching a unit of the fifth grade primary science curriculum in developing preventive health awareness among students?

Importance of research: The importance of research stems from:

- 1- The importance of science curricula and their life, environmental, preventive and health applications, as they are among the scientific approaches that help in preparing a generation capable of facing epidemiological changes and dangers.
- 2- The direct, temporary response to confronting the new epidemic Corona virus sweeping across the globe with multiple epidemic infections.
- 3- Responding to the recommendations of the World Health Organization and the research and studies of conferences that dealt with epidemic diseases to prevent their dangers.
- 4- Responding to the directions of the Deanship of Scientific Research at Taif University in the Kingdom of Saudi Arabia in confronting the emerging epidemic Corona virus.
- 5- To inform the planners and curriculum developers in developing science curricula in primary education urgent needs and requirements of society, to prepare students in terms of preventive, health, life and skills.
- 6- Relying on the goals of preventive and health education in science curricula in primary education by preserving the health and safety of students.
- 7- The recommendations of current research that help in a decisive confrontation with the dangers of the emerging corona virus.

Research objectives:

- 1- Determining the requirements of preventive education in science education to prevent infection with the dangers of the Coronavirus pandemic among fifth-grade students by designing a questionnaire for this purpose.
- 2- Presenting a sagged strategy based on the philosophy of preventive education and the introduction of Infusion in teaching the fifth grade science curriculum.

- 3- Presenting a sagged study unit from the fifth grade science curriculum in light of the requirements of preventive education to confront the dangers of infection with the Coronavirus.
- 4- Exposing the effectiveness of the proposed preventive strategy in confronting the dangers of infection with the epidemic Coronavirus in the aspects: cognitive, skill and emotional among fifth grade students.

Research Design:

- 1- The research follows the experimental approach with the control and experimental groups to find out the effectiveness of the preventive health strategy in avoiding the dangers of infection with the Coronavirus.
- 2- The research also uses the descriptive approach in describing the symptoms of infection with the epidemic Corona virus on those infected with the virus, by using the history of some disease cases in the form of educational films.
- 3- The research also uses the statistical approach in the steps and applied research procedures in interpreting the results between groups to reach sound preventive and health decisions.

Research assumptions:

- 1- Science curricula can be developed within the framework of the requirements of preventive and health education appropriate for primary education students to prevent the dangers of infection with the Coronavirus.
- 2- A preventive health strategy can be presented in the teaching of a selected unit of the fifth-grade science curriculum in light of the philosophy of preventive education to avoid the dangers of infection with the Coronavirus and to develop first aid skills.

Research Hypotheses:

- 1- The content of science curricula in primary education in the Kingdom of Saudi Arabia does not include some of the requirements necessary to avoid the dangers of infection with the Coronavirus.
- 2- There is no statistically significant difference between the mean scores of the students of the control and experimental groups in the preventive and health scientific knowledge test, the preventive and health skills performance observation card, and the preventive health awareness measure beforehand.

- 3- There is statistical significance between the mean scores of the students of the control and experimental groups in preventive and health scientific knowledge in favor of the students of the experimental group.
- 4- There is a statistically significant difference between the mean scores of the students of the control and experimental groups in the performance observation card of preventive and health skills in favor of the students of the experimental group remotely.
- 5- There is a statistically significant difference between the mean scores of the students of the control and experimental groups in the preventive awareness, in favor of the students of the experimental group.
- 6- There is a statistically significant correlation between the preventive and health scientific knowledge test, the preventive and health skills observation card, and the preventive and health awareness measure for students of the experimental group in the post application.

Research limitations: The research adhered to the following limits:

- 1- Science curriculum for the fifth grade of primary school for the year 1440-1441 H corresponding to 2020-2021 AD.
- 2- A group of fifth grade primary students in Turbah Governorate, Taif, Makkah Al-Mukarramah.
- 3- A group of science teachers and supervisors at the primary level in Turbat Al-Taif Governorate.
- 4- A group of doctors at Turbah Al-Taif Governorate Hospital.
- 5- A list of requirements and dimensions of preventive education necessary to avoid the dangers of infection with the Coronavirus.
- 6- A proposed strategy in teaching the unit "the diversity of life and the kingdoms of living things within the framework of preventive and health education requirements" of the fifth-grade science curriculum.
- 1- - \forall Measuring the effectiveness of the proposed strategy through a test of preventive and health scientific knowledge, the performance observation card of preventive and health skills, and a measure of preventive and health awareness.

Search Procedures: The search is proceeding according to the following procedures:

1- To answer the first question of the research questions related to “What are the requirements of preventive and health education necessary to avoid the dangers of infection with the new epidemic COVID-19 virus among primary school students in the Kingdom of Saudi Arabia?” The following was done:

(١)Examining previous studies and research related to the dangers of epidemic diseases.

(٢)Conducting personal interviews with: science teachers at the primary level, doctors specializing in epidemic, chest and seasonal diseases, in order to determine the dimensions and items of the questionnaire of preventive and health education requirements.

(٣)Building a questionnaire to determine the requirements of preventive and health education necessary to avoid the dangers of infection with the Coronavirus COVID-19 among primary school students.

(٤)Presenting the questionnaire in its initial form to a group of referees in the field of curricula and methods of teaching science, and physicians to express their opinions and suggestions on the questionnaire.

(٥)Amending the questionnaire in the light of the opinions of the jury committee to reach its final form.

(٦)Applying the questionnaire to a group of science teachers and supervisors at the elementary stage in Turbah governorate to determine the preventive education requirements necessary to avoid the dangers of infection with the new epidemic Corona virus among primary school students.

(٧)Collecting raw data in preparation for Taxonomy and analysis.

(٨)Determine the list of preventive education requirements necessary to avoid the dangers of infection with the new epidemic Coronavirus among primary school students.

2- To answer the second question of the research questions, which stated: “What is the list of preventive and health education standards necessary to avoid the dangers of infection with the new epidemic Corona virus among primary school students in the Kingdom of Saudi Arabia?” The following was done:

(١)Use the preventive breeding requirements list previously prepared in building the structure of the list of standards

(٢)Defining the main dimensions of the list of preventive and health education standards, and setting a procedural definition for each of them.

(٣)Determine the items of each dimension of the criteria list (knowledge, skill, and sentimental) in light of the results of previous studies and recommendations of scientific conferences related to infection with the Coronavirus, and the recommendations of the World Health Organization to confront the emerging corona virus.

(٤)Building a list of preventive health education standards necessary to avoid infection with the dangers of the emerging corona virus, and to evaluate the content of primary school science curricula.

(٥)Presenting the list of standards to the jurey committe and experts, and amending it in light of their opinions.

(٦)Applying the list of standards to the elementary school science curricula.

(٧)Monitoring the results in preparation for their Taxonomy and analysis.

3- To answer the third question of the research questions, which stated: “What is the proposed vision for building and designing an innovative preventive and health educational strategy based on the philosophy of preventive education and the introduction of Infusion to avoid the dangers of infection with the emerging epidemic Corona virus COVID-19 among primary school students in the Kingdom of Saudi Arabia?” following:

(١)Determine the preventive and health frameworks and procedures necessary to build the structure of the preventive and health strategy to avoid the dangers of infection with the emerging corona virus.

(٢)Determine the opinions of those interested in teaching science on the prevention of epidemic diseases, and the results of previous studies, research and conferences that dealt with the dangers of the Corona virus, methods and manifestations of infection and patterns of prevention.

(٣)Defining the concepts, scientific activities, preventive health procedures and skills necessary for the elementary school science curricula in the Kingdom of Saudi Arabia.

(٤) Determine the foundations for building and designing the preventive and health strategy to avoid the dangers of the emerging corona virus, in light of the list of preventive and health education standards and the results of evaluating primary school science curricula.

(٥) Determining the steps of the preventive health strategy in the science curriculum at the primary stage within the framework of the previous steps.

(٦) Presenting a suggested framework for building and designing an innovative preventive, health and educational strategy based on the philosophy of preventive education and the Infusion approach to avoid the dangers of infection with the emerging epidemic Coronavirus, COVID-19 among primary school students in the Kingdom of Saudi Arabia.

4- To answer the fourth question of the research questions, which stated: "What is the effectiveness of the proposed preventive health strategy in teaching a unit of the fifth grade primary science curriculum in developing preventive health scientific knowledge necessary to avoid infection with the new epidemic Corona virus among students?" The following was done:

(١) Organizing a study unit in the fifth-grade science curriculum in light of the suggested framework of the previous preventive health strategy, based on scientific concepts and activities, preventive health skills and first aid, and guidance and awareness measures related to the goals and content of the emerging epidemic Corona virus, within the framework of the goals and content of science curricula in elementary school in the Kingdom of Saudi Arabia (student guide).

(٢) Preparing the teacher's guide for teaching the unit of study in light of the preventive health strategy.

(٣) Determine the list of preventive health scientific concepts and facts in the study unit.

(٤) Prepare a test in the preventive and health scientific knowledge necessary to avoid the dangers of infection with the COVID-19 virus in the subjects included in the study unit.

(٥) Presenting the test in its initial form to a group of experts and referees to express their opinions and suggestions about it.

(٦) Amending the test in light of the opinions of the jury committee, to reach its final form.

- 5- To answer the fifth question from the research questions, which stated: “What is the effectiveness of the proposed preventive health strategy in teaching a unit of the fifth grade science curriculum in developing the performance of preventive, health and ambulance skills among students?” The following was done:
- (١) Identify the skills, preventive and health behaviors, and first aid skills, including the unit and necessary to avoid the dangers of infection from the emerging corona virus.
 - (٢) Preparing a note card to perform preventive, health, and ambulance skills to avoid the dangers of infection from the emerging corona virus.
 - (٣) Presenting the note card to the jury committee to amend its errors and reach its final form.
- 6- To answer the sixth question from the research questions, which stated: “What is the effectiveness of the proposed preventive strategy in teaching a unit of the fifth grade science curriculum for developing preventive and health awareness among students?” The following was completed:
- (١) Building a preventive health awareness measure for fifth grade primary students in the content of the selected unit of the fifth elementary sciences in light of the dimensions of preventive and health education.
 - (٢) Presenting the scale to the jury committee to amend and amend any errors that may exist in it, in order to reach its final form.
- 7- Selecting a group of fifth grade primary students in Tarbat Al-Taif Governorate, Makkah Al-Mukarramah, the headquarters of the research team, and dividing them into two control and experimental groups.
- 8- Applying the three evaluation tools to the two research groups in a prior application.
- 9- Teaching the study unit of the experimental group using the preventive and health strategy organization by their teachers and using the educational activities and preventive skills included, while the students of the control group study the same unit with the normal organization and without the preventive health strategy.
- 10- After teaching the unit, the research tools are applied after the students of the two groups.
- 11- Data monitoring and statistical processing.
- 12- Monitoring, analyzing and interpreting results.

13- Submitting recommendations and proposals.

Defining search terms:

A healthy Protective strategy:

It is procedurally defined in the current research As: “A combination of the enhanced and supported stimulus pattern to achieve the objectives of preventive and health education in teaching science at the elementary level in the Kingdom of Saudi Arabia, and it is organized within the framework of specific foundations, designed and targeted steps and procedures, for the learning environment of primary school students, prevention of students from infection with such devastating health dangers by using the content of preventive health educational activities.

The Philosophy of Protective education:

It is procedurally defined in the current research As: “One of the entrances to the education system, which is based on identifying the types of preventive frameworks and warning indicative measures to confront the emerging epidemic Corona virus infections, needs, goals, requirements, plans, procedures, regulations, skills, and innovative preventive health and treatment educational activities that must be learned and implemented through science curricula including It is in line with the procedures and capabilities of the primary stage in the Kingdom of Saudi Arabia.

Infusion Approach:

Procedurally known As: “Grafting and implementing the content of science curricula at the elementary stage in the Kingdom of Saudi Arabia the requirements, procedures and skills of preventive health education necessary to avoid the dangers of infection with the emerging epidemic Corona virus, through the use of the experiences, training, skills, behaviors and preventive health guidelines necessary for elementary school students in a system of elements.

Epidemic diseases :

Procedurally known As: “Diseases affecting the respiratory, digestive, circulatory and nervous systems, and the attachments of the vital organs of the body, through viruses including: (C) and (P) C and B and cause damage and dangers to the general health of the human being and affect the vitality of these Devices and their physiological performance, which negatively affects the general immunity of the human body, and the emerging corona virus is one of the epidemic diseases that have swept the globe at this time,

and it is one of the diseases that spread rapidly within society, And soon it takes the epidemiological characteristic that causes direct death after clots in the capillaries in the lungs in the respiratory system, clotting in the blood, failure in respiratory functions and soon leads to death.

Healthy Protective awareness:

It is procedurally known As: “Correct understanding and taking appropriate action of the nature and type of infection with the emerging epidemic Corona virus, the dangers of infection with it, methods of prevention of these dangers, the ability to predict how to act before, during and after infection with the Coronavirus, and acquire the first aid skills necessary to save The life of the person infected with the virus until the arrival of basic medical aid" .

This preventive health awareness has three aspects: “The knowledge related to the nature of infection with the Coronavirus, its causes, and how to prevent it, preventive and health behaviors, and first aid necessary to save the person infected with the Coronavirus, emotional aspect, which includes the formation and development of positive attended and appropriate values towards the methods and entrances of health prevention.

Theoretical framework and research literature:

Requirements for preventive and health education necessary to avoid the dangers of infection with the new epidemic COVID-19 virus among primary school students in the Kingdom of Saudi Arabia:

The new epidemic Corona virus infections increased and are still in continuous communication until it swept the globe without discrimination between the inhabitants of the East or the West, and its dangers became threatening most of the world's population, which requires searching for the necessary preventive and health education requirements to avoid the dangers of the emerging corona virus.

Where the study (Harvey, 2014) provided some of the requirements of preventive and health education for elementary education students in the state of California in America, represented in: skills to protect students from epidemic diseases, skills to recognize the manifestations and signs of infectious diseases among students, preventive and health materials necessary for first aid skills for students.

Human societies discovered early on that resorting to preventive measures is a very important step in addressing many problems, including facing the Corona pandemic.

Hence, education and the role it plays in society can be viewed in two main directions, the first is the Protective Role of Education and the second is the Remedial Role of Education, as the preventive role here is a tribal role that is completely different from the therapeutic role that comes after the problem occurred (Koupe, 2014).

As for the study (Ayed Al-Rashidi, 2018), it is considered that the elements of preventive education requirements include: nutritional education, health education, and preventive education, including: physical, moral, behavioral prevention, prevention, family, social, first aid, environmental health, and health. Personality, and dimensions of protective awareness associated with these protective aspects.

The study (Majed Abdul Rahman, 2020) dealt with some health prevention requirements from the emerging epidemic Corona virus, such as: adherence to precautionary health measures, conducting health blood analyzes, periodic examination of suspected cases, and wearing protective masks and other preventive tools necessary to preserve human health from infection. With virus.

The study (The Kingdom of Saudi Arabia, 2020) presented the preventive health requirements to limit the spread of the new epidemic Corona virus by introducing an initiative we return with caution, and numerous preventive and health protocols, and applying appropriate preventive precautions, which dealt in its entirety: physical distancing, preventing crowding, and adhering to preventive guidelines, Distribute hand sanitizers (60-80%) alcohol and in accordance with the requirements of the Food and Drug General Authority) and place them in prominent places and fix them on the wall, and wash hands with soap and water.

The study (Muhammad Shaalan, 2020) showed many challenges caused by the Coronavirus in the educational community, which urges researchers to search for preventive and health education requirements and procedures in order to maintain the health and safety of students.

The study (Muhammad Taha, 2020) resulted in the requirements of preventive education in light of the invasion of the world with this epidemic, COVID-19, which includes positive use by students of educational

technology innovations in preventive knowledge and preventive skills, through the contents of preventive and curative education to prevent the spread of this virus in society and among students.

As for the study (Jolie, A. & Azoulay, A., 2020), it aimed to determine the preventive requirements for children and how they could be helped to continue education in light of the global Corona pandemic, and to develop preventive measures while teaching children, and the study resulted in progress in the level of preventive information for students.

The study (Manfuso, L., 2020) set standards for teaching online in the context of the Corona pandemic, moving to the state of emergency in teaching students, these standards included some preventive education items to prevent students from contracting the virus, and the study concluded that there was an improvement in the level of students' information about the pandemic Corona.

The study of: (Milman, M., 2020 - Nilson, B., 2020) found some items and indicators of preventive and health education necessary for students while teaching curricula to them during the outbreak of the new Corona virus, as a state of emergency in teaching, and reached The two studies aim to develop students' level of information about obtaining health and preventive crises information.

The current research deals with the following dimensions of preventive education:

- 1- The necessary preventive requirements before infection with the emerging epidemic Corona virus.
- 2- The necessary health measures and preventive precautions when infected with the Coronavirus.
- 3- First aid and necessary health care for a person infected with Coronavirus.

In light of these main dimensions, the requirements for preventive and health education necessary to avoid the dangers of the emerging corona virus have been determined, and in light of the study of Stephen, J. E. 2014 - Weiler, RM 2012- Poche, CR; Kith, WA & Carlton, MT 2014 - Muhammad Shaalan, 2020- Fatima Al-Fifi, 2020- Manal Al-Juaid, 2020 - Kingdom of Saudi Arabia, 2020 with emergency preventive requirements, which aimed to:

- 1- Preserving students 'lives from epidemic diseases, including the emerging corona virus.
- 2- Providing the necessary preventive measures regarding injuries and infection with this virus to prevent the transmission of devastating infection.
- 3- Stopping the occurrence of harm or damage, such as removing the person infected with the virus and isolating him from the source of infection and the rest of the healthy.
- 4- Stopping the source of infection and preventing transmission of the virus to others.
- 5- Isolating the affected cases in a sterile, safe place until treatment aid or transportation to the hospital arrives.
- 6- Promote healing by providing initial treatment of injury with first aid skills.

As for the study (Saudi Preventive Guidelines, 2020), it presented a list of the preventive and health requirements needed in dealing with the Corona virus, in each of: workplaces, homes, gatherings, mosques, how it spreads, its danger and symptoms of infection, and the types of preventive measures to prevent infection with the virus. The new Corona COVID-19.

The current research dealt with the following preventive and health skills of first aid:

- 1- The skill of wearing a preventive medical mask on the nose and mouth.
- 2- The skill of wearing protective medical gloves on the hands.
- 3- The skill of measuring the temperature of a student suspected of being infected with the virus.
- 4- The skill of sterilizing the classroom with medical disinfectants.
- 5- The skill of recognizing the signs and manifestations of infection with the Coronavirus on a student.
- 6- The preventive and sanitary skill of isolating a student infected with Coronavirus.
- 7- A healthy first aid skill for a student infected with Coronavirus inside the school.

In light of what has been presented above, the requirements of preventive education are defined in the current research as: "One of the approaches to the education system, which is based on identifying the types of preventive frameworks and warning indicative measures to confront the

emerging epidemic Corona virus infections, needs, goals, requirements, plans, procedures, regulations, skills, and innovative preventive health and treatment educational activities. Learn and implement them through science curricula in line with the procedures and capabilities of the primary stage in the Kingdom of Saudi Arabia, before, during and after infection with the Coronavirus, (Precautionary measures, isolation, prohibition, prevention of gatherings, and treatment) in order to activate the role and objectives of preventive education in curricula and methods of teaching science to avoid the dangers of infection with epidemic viruses within the framework of the changes and developments that we see daily in the developments of the Corona pandemic in the vicinity of the regional and global environment.

The requirements for preventive education in this sense include the following:

- 1- A healthy and preventive concern for human ecological life and its biosphere.
- 2- Preventing infection with infectious epidemic viruses that are dangerous to human health and life.
- 3- Avoid infection with the dangers of the emerging corona virus, through preventive skills and precautionary health measures.
- 4- Development of the preventive and health awareness among students through a preventive and health strategy.
- 5- Focusing on three basic dimensions of preventive and health education, which are connected and linked together:

A- The dimension - before: Pre - dimension, which accompanies the occurrence of infection with the virus and its main goal is to prevent and avoid the occurrence of infection with the new epidemic Corona virus through many preventive and pre-health measures that are: preventive preparation, preventive preparation, health equipment, early awareness Before injury, early diagnosis.

B- The dimension - during: During –dimension, which is during the occurrence of infection with the emerging epidemic Corona virus, and includes measures that aim to prevent the occurrence of dangers or exacerbation of the virus's damage to human life, namely: expectation, prediction, ability to confront, and to prevent the occurrence of danger Good

focus, act during surprise, adaptive adaptation to injury, health isolation, preventive continuity, curative organization, disaster and crisis management.

C- The dimension - a dimension: Post-dimension, which is after the occurrence of infection, and this dimension includes preventive, health and first aid measures aimed at preventing the dangers of infection with the emerging epidemic Corona virus from deteriorating, represented in: Reconsidering what happened, attention to treating the causes, accurate and continuous treatment, behavior Correct, not to leave the seeds of death in the guts, permanent isolation until general recovery, periodic examination and blood analysis.

6- It is an interdisciplinary education in the fields of study, meaning that it is not specific to a specific field of study, but rather that all academic subjects participate in it, each according to his nature.

The term Protective Education and Preventive Education indicate that they are two synonymous concepts, the first refers to education for prevention - preventive - and the second refers to education for prevention, and both confirm the same purpose and goals, as they are related to health education, and the dimensions of preventive education are products Dimensions of human health education.

As for the term Remedial Education, it depends on dealing with the problem after its occurrence and the emergence of its results, and begins with laying the foundations for treating the disaster or danger.

The term health education is education directed towards providing the knowledge, skills and attitudes necessary to maintain or advance health, or both, through the desired health behaviors regarding the emerging epidemic Corona virus to avoid its dangers and damages (World Health Organization, 2020, 91).

And preventive health education in this way is concerned primarily with the awareness of preventive and healthy behaviors and habits and the solution to health problems that occur as a result of widespread epidemic diseases, this type of education depends on dealing with the event, problem or injury before it occurs, during its occurrence and after its occurrence, through health prevention measures Effective.

The study (Muhammad Taha, 2020) addressed the importance of preventive education in the study plan for school curriculum topics to avoid the dangers resulting from infection with the Coronavirus through

preventive practical skills by using appropriate educational technology means and mechanisms.

The study (Turner, C. & Adam, D., 2020) revealed the importance of preventive and health education fields in science education during the outbreak of the emerging corona virus, and the form and specifications of teaching skills in order to develop students' preventive health knowledge and awareness, in order to preserve their health and safety.

Local and international programs and experiences in confronting the Corona pandemic within the framework of preventive and health education:

Many studies, programs, and local and international projects have dealt with the preventive education requirements necessary to confront the COVID-19 virus, including: The study (Muhammad Shaalan, 2020) that dealt with the pioneering experiments in fighting this epidemic that the Republic of China is leading, and whose success in reducing and stopping the spread of the virus depends Dated 3/21/2020 with the Report of the World Health Organization (WHO), This is due to the institutional, administrative and societal awareness resulting from an organized and high-quality educational and institutional system that relies on the latest preventive methods in confronting the virus.

And in the study (Fatima Al-Fifi, 2020), many preventive measures were presented in a list of health and therapeutic measures necessary for students while practicing education with self-learning methods, in order to prevent the spread of the new Corona virus and its fatal health dangers to humans.

As for the study (Manal Al-Juaid, 2020), it found the various preventive practices necessary for students in education in light of the health crisis, represented in the preventive and health skills and first aid needed when a person is infected with the Coronavirus.

In a UNESCO study (2020) according to UNESCO, under the title "Education Disruption Due to the New Coronavirus and Responding to It," the spread of the virus reached a record number among children and youth who were cut off from school or university. As of March 12, 2020, nearly 61 countries in Africa, Asia, Europe, the Middle East, North America and South America announced the closure of schools and universities, This

affected more than 421.4 million children and youth, and an additional 14 countries closed schools in some areas to prevent the spread of the virus or to contain it, according to the organization's statistics, which helped to search for the necessary preventive, health and treatment requirements to prevent the spread of this pandemic.

The recommendations of the International Conference on Distance Education in the Time of the Corona Pandemic (2020) indicated that precautions and preventive measures must be adhered to, health precautionary guidelines, and health preventive skills necessary to prevent the transmission of the new epidemic Corona virus infection to many numbers of people and to prevent the exacerbation of its devastating disease dangers to humans, And society.

As for the study (Ladyshewsky, RK, 2020), it revealed the importance of using modern and innovative teaching strategies to overcome the effects of the Corona pandemic on COVID-19 education, through the use of the best educational resources in achieving the goals of science education, as the study emphasized the importance of the preventive role of education to avoid The dangers of the virus to students.

The study (Halima Youssef, Fatima Youssef, 2020) revealed that the Kingdom of Saudi Arabia is successfully managing the Corona crisis, as the Saudi Ministry of Education announced the closure of various educational institutions since the eighth of March 2020 in accordance with the Noble Royal Order No. (42874), and a specialized committee was formed in the Ministry Education to follow the developments of the spread of the Corona epidemic, and the Ministry took the initiative to identify a variety of distance education options for more than six million students in the Kingdom, and e-learning platforms have been activated for public education, government and private education, And the virtual school building was completed in one week, satellite broadcasting, the supply and installation of 20 smart boards, and the training of educational staff to photograph educational sections, and daily lessons were prepared to explain the curriculum, with the participation of 276 teachers, and 73 supervisors, and 3368 lessons were explained, and the number of teaching hours reached 1684 hours, in addition to lessons for reviewing the curriculum, with the participation of 123 teachers and 73 supervisors, and 1107 lessons were reviewed, the number of teaching hours reached 554 hours, and platforms,

gates and channels for educational communication with students were opened, to deal with the Corona epidemic and the threat it posed to the educational process, in Light of the Kingdom's previous experience in managing educational crises.

The study (Hamilton, L., 2020) dealt with the educational effects of the Corona virus on international schools and the educational process, as the study presented a set of practical areas for preventive and health education necessary to maintain the health and safety of students, and the study suggested searching for modern teaching strategies in science education to develop aspects of awareness. Preventive.

The study (Jones, T., 2020) revealed the Italian experience in confronting the emerging epidemic Corona virus, and while the state of Italy benefited from it in education after the Coronavirus invaded it and closed all educational institutions in it, and provided home teaching strategies based on some preventive and health skills to continue education Students of all levels of education, developing their preventive awareness, and without contracting the virus.

As for the study (Speak, C., 2020), which showed the procedures and dealings of teachers in Italy with their students in teaching curricula to them during the spread of the virus and in the quarantine period, where teachers provided their students with some preventive measures and training to prevent infection with the virus and to maintain the health and safety of students.

Whereas the study (Winter, L., 2020) found that e-learning in Italy is not a substitute for real education inside the classroom, as there are some practical skills and experiences that students must be trained on inside the school's science laboratory, which are required for real education, as well as Preventive skills are on top of these exercises.

As for the study (Snelling, J. & Fingal, D., 2020), it developed some preventive measures necessary to teach science in Oklahoma state schools, in the time of the spread of the new epidemic Corona virus to prevent students from contracting it, through a group of areas of preventive education within the framework of Online teaching methods and strategies during virus outbreaks.

First: Building a questionnaire to determine the requirements for preventive and health education necessary to avoid the dangers of infection with the Coronavirus COVID-19 for fifth grade students: through the following steps:

- 1- **The aim of the questionnaire:** The questionnaire aimed to determine the requirements of preventive and health education necessary to avoid the dangers of infection with the Coronavirus COVID-19 among fifth grade students in the Kingdom of Saudi Arabia.
- 2- **Contents of the questionnaire:** The research team sought help in building the questionnaire with: some books and references, educational literature related to methods of confronting the Coronavirus globally and locally, the results of previous Arab and foreign studies and research that focused on preventive and health education from the Corona virus, and the experience of the research team in the educational field Where the main Aspects or components of the questionnaire were identified as in the following table:

Table (1) the content of the questionnaire for determining the preventive and health education requirements necessary to avoid the dangers of infection with the Coronavirus COVID-19 for fifth grade students in the Kingdom of Saudi Arabia

M	components	Topic
1	The first components	Signs of infection with the new Coronavirus (COVID-19)
2	The second components	Methods of preventing the dangers of infection with the emerging epidemic coronavirus COVID-19.
3	The third components	The dangers of infection with the emerging epidemic corona virus COVID-19
4	The fourth components	Preventive and health instructions for students to prevent infection with the emerging epidemic coronavirus COVID-19 at home and at school.
5	The fifth components	Types of healthy food and drinks that should be consumed to develop and strengthen the immune system of students to prevent health from the emerging epidemic Corona virus COVID-19.
6	The Sixth components	The necessary preventive and health first aid for a person with signs of infection with the emerging epidemic Coronavirus (COVID
7	The seventh components	Sanitary isolation measures for a person infected with the emerging epidemic coronavirus COVID-19.
8	The eighth components	Proposals to be added about the requirements for the prevention of the novel Coronavirus (COVID-19).

Each Theme included an open question to give the teacher or doctor the freedom to express his opinion and his own motives towards the dangers of the emerging epidemic Corona virus and the precautionary requirements of it, and other preventive and health proposals that the Islamic sees to add.

- 3- Questionnaire of the questionnaire: calculating the validity and reliability of the questionnaire, where the validity of the questionnaire content was calculated by presenting it to the jury committee in order to ensure the accuracy of the formulation of the eight Aspects or components and their suitability to achieve the objectives of the research. Amendments were made to the questionnaire in light of the opinions and suggestions of the jury committee, and the reliability was calculated by applying The questionnaire was based on an exploratory group of primary school teachers at Salman Al-Farsi Primary School in Turbah governorate, whose strength reached (11) teachers, and doctors from Turbah Hospital in Turbah Al-Taif Governorate reached (4) doctors, and the same questionnaire was applied to the same survey group members after two weeks, The reliability coefficient was calculated by the ratio of agreement between the two applications according to the Cooper formula (Cooper, 1981), where the agreement between the two applications reached 88%, which is a high stability ratio for the resolution, after which the questionnaire took its final applicable form (Appendix 2).
- 4- Application of the questionnaire: The questionnaire was applied, with the help of some colleagues and teachers in schools, on a group of teachers and supervisors of science teaching and doctors amounting to (25) primary teachers in the governorate of Taif Turbah, and on (7) doctors from the workers of Turbah Taif Hospital, From Tuesday 9/1/2020 corresponding to 1/13/1442 until Thursday 9/10/2020 corresponding to 1/22/1442, as in the following table:

Table (2) Applying the questionnaire to a group of elementary school teachers in Turbah governorate, and a group of doctors at Turbah Hospital in the Taif educational area

M	School / hospital	Number of teachers / doctors	percentage
1	Salman Al Farsi Primary School	6	18,75%
2	Al Qasim Bin Salam Primary School	6	18,75%
3	Primary school of Quran memorization	4	12, 50%
4	Mansouriya Primary School	9	28,13%
5	Turbah General Hospital	7	21,87%
	Total	32	100,00%

5- The results of the questionnaire: The process of applying the questionnaire resulted in defining the list of preventive and health education requirements necessary to avoid the dangers of infection with the new epidemic COVID-19 virus among primary school students in the Kingdom of Saudi Arabia that included the following Aspects or components:

(١) Signs of infection with the emerging corona virus, COVID-19.

(٢) Methods of prevention of the dangers of infection with the emerging epidemic coronavirus COVID-19.

(٣) The dangers of infection with the emerging epidemic corona virus COVID-19.

(٤) Preventive and health instructions for students to prevent infection with the emerging epidemic Coronavirus COVID-19 at home and at school.

(٥) The types of healthy food and drinks that should be consumed to develop and strengthen the immune system of students to prevent health from the emerging epidemic Corona virus COVID-19.

(٦) The necessary preventive and health first aid for a person with signs of infection with the emerging epidemic Coronavirus (COVID-19).

(٧) Sanitary isolation measures for a person infected with the emerging epidemic Coronavirus, COVID-19.

(٨) Suggestions to be added on the requirements for the prevention of the emerging pandemic Coronavirus (COVID-19).

These results are consistent with the results of the study of: UNESCO, 2020- Manal Al-Juaid, 2020- Fatima Al-Fifi, 2020- Muhammad Shaalan, 2020- Kingdom of Saudi Arabia, 2020- Majed Abdul-Rahman, 2020 - Saudi Preventive Guide, 2020- International Conference on Education Remotely in the time of the Coronavirus pandemic, 2020 -Snelling, J. & Fingal, D., 2020- Speak, C., 2020 - Hamilton, L., 2020-Ladyshevsy, RK, 2020.

Thus, the first question of the research questions has been answered, which states: “What are the requirements of preventive and health education necessary to avoid the dangers of infection with the new epidemic COVID-19 virus among primary school students in the Kingdom of Saudi Arabia”?

Second: Preparing the list of preventive and health education standards necessary to avoid the dangers of infection with the new epidemic Coronavirus among primary school students in the Kingdom of Saudi Arabia:

A list of the standards and dimensions of preventive and health education necessary to avoid the dangers of infection with the emerging epidemic Coronavirus among primary school students has been prepared, through the following steps:

A- Determining the goal of the list: determines the goal of the list of requirements and dimensions of preventive and health education in: evaluating the content of science books at the primary stage in light of the prevention of the emerging epidemic Corona virus.

B- Sources of derivation of the list: The list of requirements and dimensions of preventive and health education was derived in light of several sources:

- (١)The theoretical framework and research literature.
- (٢)Previous studies and research and their findings.
- (٣)Recommendations of scientific conferences and seminars and global and local experiences related to preventive and health education to prevent the dangers of infection with the emerging epidemic Coronavirus.
- (٤)Survey the opinions of some experts and specialists in the field of curricula and methods of teaching sciences and doctors about preventive and health education, its fields, and the characteristics of primary school students.

C- The initial form of the list: The initial form of the list included (3) main dimensions that include sub dimensions as follows:

- 1- **Prevention of the dangers of infection with the emerging epidemic Coronavirus, which means:** “The necessary preventive measures and requirements before, during and after suspected infection of a person with the emerging epidemic Corona virus to prevent the transmission of infection inside and outside the primary school or at home, through the surroundings of the environment that cause dangers And the devastating effects on the health and safety of students, to ensure the implementation of procedures, methods, methods and skills that prevent injury to elementary school students. ”This dimension included (48 items).
- 2- **Health preventive measures to confront infection with the emerging epidemic Corona virus, and it means:** “The preventive health measures and requirements necessary for a person if he appears to be infected with the emerging epidemic Corona virus, and the health preventive skills in taking vitamin injections, or medicinal health ampoules for public health, or methods of caring for the injured In the first moments of the injury, such as health medical analyzes, and others, which help prevent further complications of the injury and reduce serious damage whenever possible, in the school or home environment, "and this dimension included (41 items).
- 3- **First aid and health care necessary to isolate the person infected with the emerging epidemic Corona virus, and it means:** “Those requirements, preventive and health measures, and first aid necessary for a person before, during and after infection with the emerging epidemic Corona virus to save and relieve the infected person from the dangers of infection, and reach the infected person to the best possible health condition with tools Or simple ambulance skills, in a way that ensures preserving his health from the ferocity of the dangers of injury. ”This dimension included (47 items).

D - Controlling the list: The list was presented in its initial form to a group of experts and jurey committe in order to express an opinion on the formulation and Taxonomy of the preventive and health education dimensions included in the list. The arbitration process resulted in deleting, adding and modifying the formulation of some sub-dimensions and preventive requirements.

E - The final form of the list: After making the amendments referred to by the jury committee, the list includes (3) main dimensions and (136) a sub-dimension (Appendix 3) as follows:

Table (3) the final form of the list of standards and requirements for preventive and health education necessary to avoid the dangers of infection with the new epidemic Corona virus among primary school students in the Kingdom Of Saudi Arabia

M	The raw form of the criteria list	Sub-dimensions	Adjustments	M	Final form of the criteria list	Sub-dimensions
1	Prevention of the dangers of infection with the emerging corona virus	(45) a sub-dimension	Modify two sub-dimensions and add (3) sub-dimensions.	1	Prevention of the dangers of infection with the emerging corona virus COVID-19	48
2	Health preventive measures to confront infection with the emerging epidemic Corona virus	(48) a sub-dimension	Deleting (7) sub-dimensions and modifying the wording of two sub-dimensions	2	Health preventive measures to confront infection with the emerging epidemic Corona virus COVID-19	41
3	First aid to isolate the injured person	(45) a sub-dimension	Modifying the wording of the main dimension, deleting (2) two sub-dimensions, modifying the wording of three sub-dimensions, and adding (4) sub-dimensions	3	First aid and the necessary health care to isolate the person infected with the emerging epidemic Corona virus COVID-19	47
	Total	138			Total	136

The following table also shows the specifications of the dimensions and items of the list of preventive and health education standards and the three

aspects of learning (knowledge - skills - affective) necessary to evaluate the content of science curricula at the primary stage in the Kingdom of Saudi Arabia necessary to avoid the dangers of infection with the emerging epidemic Corona virus:

Table (4) specifications of the dimensions and items of a list of standards and requirements for preventive and health education necessary to avoid the dangers of infection with the emerging epidemic Corona virus among primary school students in the Kingdom of Saudi Arabia

M	Main dimensions of the standards list	Knowledge aspect items	Skilled side items	Affective side items	Total	percentage
1	Prevention of the dangers of infection with the emerging corona virus COVID-19	15	17	16	48	35,3%
2	Health preventive measures to confront infection with the emerging epidemic Corona virus COVID-19	11	13	17	41	30,1%
3	First aid and the necessary health care to isolate the person infected with the emerging epidemic Corona virus COVID-19	15	16	16	47	34,6%
4	Total	41	46	49	136	--
5	percentage	30.1%	33.8%	360.1%	--	100%

Thus, the second question of the research questions has been answered, which states: What is the list of preventive and health education standards necessary to avoid the dangers of infection with the new epidemic Corona virus among primary school students in the Kingdom of Saudi Arabia, which should be included in the content of science curricula at the primary stage?

Third: Evaluating the content of science books at the primary level in light of the previously prepared list of standards:

The content of science books (Appendix 4) prescribed for elementary school students in the Kingdom of Saudi Arabia was analyzed to determine the “extent - form - and level” of this content to address the preventive and health education requirements and procedures that were identified in the list of previously prepared standards according to the following steps:

1- **Preparing the analysis tool:** The elementary science curriculum content analysis tool was prepared according to the following:

(١)**Determining the purpose of the analysis tool:** The analysis tool aimed to judge the "extent, shape and level" of the content of science curricula in primary education, the requirements, dimensions and standards of preventive and health education previously identified in the list.

(٢)**The initial form of the analysis tool:** The initial form of the analysis tool consisted of the analysis categories represented in the requirements and dimensions of preventive education as presented in the final form of the list of criteria, where he placed in front of those requirements and dimensions (analysis categories) a graduated scale - for analysis - consisting of three parts: Part The first specifies the extent to which the content topics include the requirements and dimensions of preventive education in two levels (there - none), and the second part: Specifies the form of inclusion in two levels (explicit - implicit), And the third part: Determine the level of inclusion in two levels (in detail - briefly), thus the number of categories of analysis in the analysis tool in its initial form is equal to the number of requirements for the dimensions of preventive education in the list of criteria (136) multiplied by the levels of the graded scale of analysis (two levels in three parts) that is equal to) 816) class.

(٣)**Set the analysis tool:** The raw form of the analysis tool has been adjusted through:

A - Validity of the analysis tool: where the analysis tool was presented to a group of experts and jury committee (Appendix 1) to express an opinion about the possibility of analysis using that tool, and the jury committee indicated the validity of this tool for use in the analysis process.

B - Reliability of the analysis tool: Reliability. The analysis tool was used in analyzing the content of a group of subjects in elementary school science books, the subject of the research twice in succession with a time difference of five weeks. The reliability coefficient was calculated by the ratio of agreement between the two analysis times using the Holste equation (Rushdi Taima, 1987, 178), It was found that the reliability coefficient of the analysis tool = 0.86, where the categories agreed upon during the two analysis periods = 405 categories, and the total number of categories (500) categories and the value of the reliability coefficient of the computed

analysis tool indicates a high coefficient of stability of the analysis process, and then the high stability factor of the analysis tool, and by applying The equation, "Coper, 1974" to calculate the percentage of agreement was found to be 93%. These results indicate the validity of the tool and its usability.

- 2- The final form of the analysis tool: The process of controlling the analysis tool did not result in any modifications to the tool's categories. Therefore, the final form of the instrument includes the same analysis categories in the initial form, which are (816) categories.
- 3- Analysis procedures: After setting the analysis tool, the content of science books in primary education was analyzed using the analysis tool, previously set, according to the following procedures:

(¹) **Determining the analysis sample:** The analysis sample was determined in all the topics mentioned in science books in primary education as follows:

Table (5) sample content analysis of science books at the elementary stage in the Kingdom of Saudi Arabia

M	The grade	First semester	Second Semester	Total
1	first Primary	Science book + activity brochure	Science book + activity brochure	4books
2	second primary	Science book + activity brochure	Science book + activity brochure	4books
3	third primary	Science book + activity brochure	Science book + activity brochure	4books
4	Fourth primary	Science book + activity brochure	Science book + activity brochure	4books
5	Fifth primary	Science book + activity brochure	Science book + activity brochure	4books
6	sixth grade	Science book + activity brochure	Science book + activity brochure	4books
Total		12books	12books	24books

The total of these books reached (24) books, all of them edition 1441/1442 AH, 2020/2021 (Appendix 4).

(٢)**Determine the categories of analysis:** The categories of content analysis for the current research were determined in the requirements and dimensions of preventive education contained in the analysis tool (list of criteria). The number of which reached (136) requirements or dimensions, and the number of their own categories included in the analysis tool was (816) categories.

(٣)**Determining the units of analysis:** The analysis was carried out in light of the concepts mentioned in the topics of each science book subject of analysis, which dealt in some way with any of the issues and problems contained in the analysis tool prepared by the research team, and the content was analyzed with the "paragraph - components" system.

4-Analysis Controls: The following controls have been adhered to:

(١)Analysis within the framework of procedural definitions of the requirements and dimensions of preventive and health education (categories of analysis).

(٢)Analyzing the topics of each book, the analysis sample, including texts, form, illustrations, activities, exercises, figures and tables.

(٣)Assigning an analysis form for each book, the analysis sample, to record the occurrences of the requirements and dimensions of preventive and health education included in the content.

Fourth: Results of analyzing the content of science books at the elementary level in the Kingdom of Saudi Arabia:

The validity test of the first hypothesis: which states that “the content of science curricula in primary education in the Kingdom of Saudi Arabia does not include some of the requirements and measures of preventive education necessary to avoid the dangers of infection with the Coronavirus.” Preventive and sanitary for the following results:

A - The results of Macro Analysis for content of science books:

The general analysis of the results of analyzing the content of science books at the elementary stage is evident from Tables (6) and (7):

Table (6) sets out the results of the general analysis of the content of science books at the primary stage in the Kingdom of Saudi Arabia in light of their handling of the requirements and procedures of preventive and health education to avoid the dangers of infection with the Coronavirus

M	Science courses subject to analysis	Number of course pages	Number of pages of preventive and health education topics	The percentage of preventive and health education topics
1	Science book and activity brochure, first grade, primary	315	22	6,98%
2	Science book and activity brochure, second grade, primary	436	34	9,82%
3	Science book and activity brochure, third grade, primary	503	29	5,76%
4	Science book and activity brochure, Fourth grade, primary	453	9	1,98%
5	Science book and activity brochure, Fifth grade, primary	548	16	2,92%
6	Science book and activity brochure, sixth grade, primary	564	10	1,77%
Total = 6 courses (24 books)		2819 pages	120 pages	4,25%

Noting that the pages that deal with some areas of preventive and health education are parts of the pages in the book under analysis.

Table (7) the number and percentage of paragraphs related to preventive and health education

M	Science courses subject to analysis	Number of paragraphs of the book	Number of preventive and health education items	The percentage of preventive and health education items
1	Science book and activity brochure, first grade, primary	1115	52	4,66%
2	Science book and activity brochure, second grade, primary	1444	65	4,51 %
3	Science book and activity brochure, third grade, primary	2489	68	2,37%
4	Science book and activity brochure, Fourth grade, primary	2227	30	1,34%
5	Science book and activity brochure, Fifth grade, primary	2652	33	1,24%
6	Science book and activity brochure, sixth grade, primary	2942	26	0,88%
Total = 6 courses (24 books)		12851 paragraph	274 paragraph	2,13%

From Tables (6) and (7) it is clear that:

١) The number of paragraphs of science books at the primary level is (12851) paragraphs, and that the number of paragraphs related to preventive and health education necessary to avoid infection with the dangers of the emerging corona virus is (264) paragraphs, at a rate of (2.13%).

٢) The number of pages for the six courses at the primary stage is (2819) pages, and the number of pages related to preventive and health education needed to avoid infection with the dangers of the new epidemic Corona virus in science books at the primary stage combined is (120) pages, at a rate of (4.25%).

٣) These percentages are very small in the extent of incidental treatment of the dimensions and standards of preventive and health education necessary to avoid infection with the dangers of the Corona virus emerging epidemic in science books at the primary stage.

٤) How to prevent the dangers of the emerging epidemic Corona virus has not been addressed, and the necessary preventive skills and precautionary measures have not been addressed, and the first aid skills needed to isolate the person infected with the Coronavirus have not been addressed in the objectives and content of science books at the primary stage.

٥) These results generally indicate the lack of paragraphs that included the requirements, standards and procedures of preventive and health education necessary to avoid the dangers of infection with the Coronavirus in all science books in relation to the total paragraphs of the books as a whole.

٦) From the foregoing, it is clear that the content of science books at the primary stage in the Kingdom of Saudi Arabia does not include the requirements, standards and procedures of preventive and health education necessary to prevent the dangers of infection with the emerging epidemic Corona virus, although there are many topics that could have included a number of these requirements and preventive and health measures.

B- The results of Micro Analysis for content of science books:

The content analysis of science books was performed twice with an interval of (35) thirty-five days and by using the same analysis tool and according to the bases specified in advance, the correlation coefficient between the first and second analysis was calculated using the Holsti

equation "Rushdi Taima, 1987, 178" and the results of the analysis and the value of the correlation coefficient were As shown in Table (8) following:

Table (8) correlation coefficients for the first and second analysis of science books at the primary stage in the Kingdom of Saudi Arabia

M	Grade	Science books for elementary school in the Kingdom of Saudi Arabia	Correlation coefficient
1	1 st grade	Science book and activity brochure, first grade, primary	0,61
2	2 nd grade	Science book and activity brochure, second grade, primary	0,63
3	3 rd grade	Science book and activity brochure, third grade, primary	0.65
4	4 th grade	Science book and activity brochure, Fourth grade, primary	0.69
5	5 th grade	Science book and activity brochure, Fifth grade, primary	0.70
6	6 th grade	Science book and activity brochure, sixth grade, primary	0.68

These values are significant at the 0.01 level, which confirms the stability of the analysis to a large extent.

And with regard to calculating the number of paragraphs and items that applied to the preventive and health education dimensions in each dimension separately and their percentage in science books combined in the primary stage:

The following table shows:

Table (9) the distribution of the paragraphs and items that applied to each dimension of preventive, health education, and the percentage of each dimension

M	Dimensions of preventive and health education	The number of paragraphs that applied to each dimension	The percentage of paragraphs	The number of items achieved in each dimension	The percentage of items
1	Prevention of the dangers of infection with the emerging corona virus COVID-19	107	0,83%	68	2.08%
2	Health preventive measures to confront infection with the emerging epidemic Corona virus COVID-19	93	0,73%	51	1.56%
3	First aid and the necessary health care to isolate the person infected with the emerging epidemic Corona virus COVID-19	74	0,57%	43	1.31%
Total		274	2,13%	162	4.96%

From the above it is clear that:

-^١The largest percentage of the paragraphs that were applied to the preventive and health education dimensions in science books combined was in the first dimension, reaching (107) paragraphs, with a ratio of (0.83%).

-^٢The lowest percentage of the paragraphs that were applied to the preventive and health education dimensions in science textbooks combined was in the third dimension, as it reached (74) paragraphs with a ratio of (0.57%).

-^٣This indicates that the topics related to the first dimension occupied a large space in the content, while we find that the content of the books subject of analysis did not refer except in passing to the third dimension.

-^٤This confirms that the science books the subject of the analysis dealt with the preventive and health education requirements and procedures to prevent the dangers of Coronavirus in a slight way, and the form of treatment was explicit and at a brief level.

-^٥The number of preventive education paragraphs (274) in the books under analysis is (2.13%), which is a very weak percentage, indicating that the science curricula at the primary stage did not pay attention to preventive and health education except in a casual way.

-^٦And the number of the remaining paragraphs (12577), with a percentage of (97.87%), did not include any paragraph or reference to the requirements and procedures of preventive and health education to prevent Corona virus.

-^٧Total items that were achieved in the books combined are (162) items, a ratio of (4.96%) (Appendix 5)

-^٨The number of pages of science books subject of study reached (2819) pages, and the number of preventive and health education pages was (120) pages, at a rate of (4.52%), a percentage indicating that the content does not pay proper attention to the requirements of preventive and health education necessary to avoid the dangers of infection with the Coronavirus in the curricula Science at the primary stage in the Kingdom of Saudi Arabia.

-^٩Which indicates that the content of science books at the primary stage did not pay attention to the dimensions of preventive and health education necessary to avoid the dangers of infection with the emerging epidemic Corona virus, first aid and the necessary health care.

Based on the above, it can be said:

- 1- The dimensions of preventive and health education necessary to avoid infection with the emerging epidemic Corona virus are not represented in science books at the primary stage as defined by the current research. Yet to an acceptable degree in order to impose itself as a way of life inside the classroom and while performing the preventive practical skills to confront that virus, in a way that prompts students to develop their protective awareness, in the science classroom and in the performance of educational activities.
- 2- It can also be said that the dimensions of preventive and health education were not directly addressed in most of the science books on which the content analysis process was conducted, in addition to some passing references in the books that appeared to be unintended in most cases.
- 3- From the above, we conclude that the science books at the primary stage included some of the requirements and procedures of preventive and health education, which are not of the required level, as they were explicitly and at a brief level, and this is due to the attention to scientific concepts and principles away from the role of science in preventive education and healthy culture for students.
- 4- In light of these results, the first zero hypothesis of the research hypotheses is accepted, which states: "The content of science curricula in primary education in the Kingdom of Saudi Arabia does not include some of the requirements and measures of preventive and health education necessary to avoid the dangers of infection with the Coronavirus.
- 5- Which calls for the search for innovative teaching strategies in light of the philosophy of preventive and health education and its requirements, and these results impose themselves to search for the design and construction of a preventive health strategy based on the philosophy of preventive education and the entrance to Infusion to avoid the dangers of infection with the Coronavirus COVID-19.

Fifth: The A suggested framework of building and designing an innovative preventive, health and educational strategy based on the philosophy of protective education and the introduction of Infusion to avoid the dangers of infection with the emerging epidemic Coronavirus (COVID-19) among primary school students in the Kingdom of Saudi Arabia:

In light of the previous presentation, the research presented the procedural definition of an innovative protective health education strategy based on the protective education philosophy and the proposed Infusion approach.

As for the Infusion Approach, the current research is defined as: "Grafting and impregnating the content of science curricula at the elementary stage in the Kingdom of Saudi Arabia The requirements, procedures and skills of preventive health education necessary to avoid the dangers of infection with the emerging epidemic Corona virus, through the use of experiences, training, skills, behaviors and preventive health guidelines necessary for elementary school students In the system of curriculum elements, which are: objectives, content, teaching methods and strategies, means and sources of learning, field educational activities and practical exercises, assessment tools and means, to develop preventive scientific knowledge, preventive health skills and first aid, and health preventive awareness.

Preventive health awareness is defined in the current research as: "Correct understanding and taking appropriate action of the nature and type of infection with the emerging epidemic Coronavirus, the dangers of infection with it, methods and methods of prevention of these dangers, the ability to predict how to act before, during and after infection with the Coronavirus, and acquire first aid skills. Necessary to save the life of the person infected with the virus until the arrival of basic medical aid" .

It is meant by preventive health awareness in front of people with health information and facts, as well as their sense of responsibility towards their health and the health of others, and in this breakfast, health awareness is considered to be the practice intentionally as a result of understanding and persuasion. It is achieved by not only remaining health information as a healthy culture, but also in daily practices (Jihad Kadhim, 2015, 125).

Health preventive awareness is the process of motivating students and convincing them that preventive health practices against the Coronavirus through practical procedures and training practices on wearing protective masks and wearing protective gloves, isolation procedures and first aid, in the form of behavioral patterns that lead to raising the level of preventive health awareness inside the school or home.

The foundations of building and designing an innovative preventive and health educational strategy based on the philosophy of preventive education and the proposed Infusion approach, Infusion, to avoid the dangers of infection with the emerging epidemic Coronavirus (COVID-19) among primary school students in the Kingdom of Saudi Arabia:

- 1- Primary school goals in the Kingdom of Saudi Arabia.
- 2- The growth characteristics of primary school children.
- 3- Aims of teaching science curricula at the primary level in the Kingdom of Saudi Arabia.
- 4- Precautionary measures and preventive requirements issued by the government of the Custodian of the Two Holy Mosques as a preventive and health guide in educational institutions.
- 5- Appropriate preventive and healthy learning methods and activities in order to protect primary school students to prevent infection with the emerging epidemic Coronavirus.
- 6- The dimensions of preventive and health education previously identified in the list of standards necessary for primary school children.
- 7- Preventive, health and first aid skills needed to prevent the dangers of Corona virus.
- 8- Dimensions of preventive and health awareness necessary to maintain the health and safety of primary school children.
- 9- Saudi environment data in the education system, curricula, teaching methods, means and sources of learning, characteristics and skills of the teacher, preventive and health educational activities, methods of evaluating preventive and health education for children.
- 10- Using artificial learning situations (representative situations) for ways to transmit Coronavirus infection, methods of prevention of its dangers, methods of sanitary isolation, necessary preventive and health skills, methods of treatment and first aid.

- 11- Direct communication with children about interesting and attractive activities for them while teaching science.
- 12- The use of a set of accompanying activities that attract the attention and interest of children, with the use of protective tools such as the protective mask and protective gloves, during the implementation of preventive and health education activities.
- 13- Training children in preventive skills, and repeating training in case of making a mistake (in artificial, representative learning situations).
- 14- Continuous encouragement for children in learning situations, in order to develop preventive, health and first aid skills.
- 15- Using preventive and health experiences to prevent epidemic diseases and the emerging epidemic Corona virus during the implementation of preventive activities with students, and in preventive awareness sessions for students.
- 16- Children's sharing of personal experiences with interesting stories from Saudi reality and life, revolving around preventive education from diseases and viruses and methods of prevention and recovery from them.
- 17- Urging children to choose appropriate health prevention methods, and to use preventive examples from within the Kingdom of Saudi Arabia that have achieved recovery from the Corona virus.
- 18- The participation of children in Saudi preventive health and emergency activities about the emerging epidemic Corona virus, methods of infection and transmission using educational films and photographs.
- 19- Problem-solving and students' inquiries and discussions about the virus and its manifestations.
- 20- Reward the creative, creative child in the activities room for talking about home isolation methods for a person infected with the emerging epidemic Coronavirus.
- 21- Using appropriate methodological activities to develop preventive and health scientific knowledge and the dimensions of preventive health awareness necessary for children in teaching science subjects.
- 22- Taking into account that the evaluation is constructive, formative: during teaching, and final: at the end of teaching the unit of study, in order to know the effectiveness of the preventive strategy on developing

preventive health scientific knowledge, preventive skills, and preventive awareness among primary school children.

Steps of the preventive and health strategy based on the philosophy of preventive education and the introduction to Infusion to avoid the dangers of infection with the emerging epidemic Coronavirus (COVID-19):

- 1- Attention phase (preparation) about the importance of preventive and healthy education in our life.
- 2- The suspense stage and demonstrating the importance of healthy culture to avoid the dangers of the emerging corona virus.
- 3- The stage of presenting the educational activity content integrated with the preventive and health education requirements and procedures.
- 4- The stage of providing children with adequate opportunity to participate in preventive educational activities through the introduction of infusion and the use of precautionary measures.
- 5- The stage of training children in preventive health skills and first aid skills.
- 6- The stage of presenting new ideas and various alternatives by children towards medical isolation and spreading preventive health awareness in the environment.
- 7- The stage of evaluating ideas, educational activities, content and teaching results.

Sixth: Educational materials for research:

- 1- **Preparing the Student Book:** (Student Handbook) the steps for preparing the student book went through the following stages:

A- Defining the unit's goals: Within the framework of the preventive and health education dimensions of the dangers of infection with the Coronavirus, the general objectives of the study unit were prepared, and included cognitive, skill and emotional goals, and were presented at the beginning of the unit.

B- Defining and organizing preventive and health experiences: In light of the general objectives previously defined for the unit, and in light of the concepts, knowledge, preventive and health skills related to the dangers of infection with the Coronavirus, the unit content was formulated and organized and this content was integrated with the necessary preventive and health experiences and activities, as it relied on many sources and references

In organizing the content of the academic unit, the following considerations were taken into account when preparing the unit:

- 1) Using simple, clear, specific and accurate language in organizing preventive and health information in proportion to the level of the fifth grade students.
- 2) Linking the information provided to the fifth elementary science curriculum to serve the needs of the primary stage.
- 3) Presenting some illustrations, concept maps, photographs, or tables to achieve coherence and integration in the scientific system of the content with preventive and health experiences in a manner that is commensurate with the level of the fifth grade primary students, while providing preventive and health skills and first aid.
- 4) Paying attention to providing preventive and health instructions and directives directly to direct students' behaviors while dealing with the Coronavirus, and to prevent its dangers in a conscious and adult manner within the school, and in the form of preventive and health education activities, and the unit included the following topics:
- 5) **The study unit:** "The diversity of life and the kingdoms of living things in the context of the requirements of preventive and healthy education" and included the following lessons:

Lesson one: Taxonomy of living creatures.

Lesson two: Procedures and methods to prevent the dangers of infection with the COVID-19 virus and signs of infection (educational activities and preventive skills).

Lesson three: Health preventive measures to confront infection with the emerging epidemic coronavirus COVID-19 (educational activities and health skills).

Lesson four: First aid and the necessary health care to isolate the person infected with the emerging epidemic coronavirus COVID-19 (educational activities and ambulance skills).

Lesson five: plants.

C- Defining the unit's educational activities: The educational activities and aids that can be used in teaching the unit's topics, such as introductory activities to arouse students' interest and increase their motivation towards studying the unit's topics, and constructive educational

activities through which students acquire knowledge and practical skills, preventive, health and first aid, And the appropriate tendencies and trends, and the development of preventive and health awareness, and some of them can be used as closing activities at the end of the unit aiming to show the results achieved from teaching the unit, The activities of the unit consisted in designing some artificial, representative situations within the primary school that include preventive and health skills and activities necessary to avoid the dangers of infection with the Coronavirus, educational activities that include isolation skills for those infected, educational activities that include manifestations of infection with the Coronavirus, and educational activities that include first aid skills for those infected with the Coronavirus, All of them are saturated with preventive and health activities necessary to prevent the dangers of the Corona virus through artificial situations, preparing reports on each activity, and watching educational films that include prevention methods, preventive and health precautions, methods of medical isolation and first aid skills, And preventive and health educational activities necessary to implement some practical skills during the school day to isolate the injured or help them during the injury until the doctor arrives.

D- Unit evaluation: A continuous formative evaluation was conducted after each of the unit lessons, which consisted of questions and training activities related to the topic of each lesson. Measurement tools were also prepared in the current research, Summative Evaluation, which is a test of preventive and health scientific knowledge necessary to avoid the dangers of injury Coronavirus, COVID-19, and a performance note card for preventive and health skills, first aid kits, and a preventive and health awareness scale, were applied to the two research groups before and after completing the study unit.

E- Controlling the unit and ensuring its validity:

The unit was presented in its initial form to a group of jurey committe (Appendix 1) to ensure:

- 1- The extent of consistency of the scientific material in the content of the unit with its objectives and the extent of the scientific validity of the content.
- 2- The suitability of organizing and formulating the content for the level of the fifth grade students.

- 3- The appropriateness of preventive, health, and first aid educational activities for students on the one hand, and the achievement of unit objectives on the other hand.
- 4- The suitability of the formative and final evaluation methods and their ability to achieve the unit's objectives.

In light of what the jury committee referred to, the necessary adjustments were made to the unit's content to take its final form in the student's book (Student's Handbook) (Appendix 6).

2- Preparing the teacher's guide for teaching the unit:

The teacher's guide has been prepared to be a source that guides the fifth grade primary science teacher in planning and implementing the unit lessons and achieving their desired goals. The following took into account when preparing the teacher's guide:

- 1) Formulating the objectives at the beginning of each lesson in a procedural and behavioral manner so as to include the three basic aspects of learning: cognitive, skill, and emotional, and they can be measured and evaluated, with an introduction, directions and general instructions for the teacher.
- 2) The ease and clarity of the manual method, with showing the time plan for teaching the unit within the framework of the preventive and health strategy.
- 3) Choosing appropriate teaching methods for the unit's topics: the method of displaying educational films, the method of demonstration (demonstration), the method of dialogue and discussion, the method of form and drawings), the method of maps of mental concepts.
- 4) Choosing preventive and healthy educational means and activities within the school that are suitable for students.
- 5) Determine some scientific references that the teacher can use in teaching the unit.

Setting the teacher's guide: The teacher's guide was presented to a group of jury committee to ensure:

(¹) The scientific validity of the evidence.

(²) The suitability of the components of the guide to the teaching of the unit.

(³) Amending any errors that may exist in the paragraphs of the guide.

In light of what the jury committee referred to, some parts of the guide were amended to take its final form (Appendix 7).

Seventh: Evaluation Tools:

1- Preparing a test in the preventive and health scientific knowledge necessary to avoid the dangers of infection with the COVID-19 virus, in the subjects of the study unit:

A - The objective of the test: To measure the preventive and health scientific knowledge of fifth grade students, which includes the unit "The diversity of life and the kingdoms of living creatures within the framework of the requirements of preventive and health education".

B- Formulating the test items: it was formulated from the multiple choice type with four alternatives in order to reduce the impact of guessing, as each question includes an introduction (the stem), most of which are expressive form of Coronavirus infections, prevention methods, health precautionary measures, and first aid, followed by four responses (Alternative alternatives were proposed to solve the problem. These vocabularies was formulated in the three cognitive levels of Bloom's Taxonomy of the cognitive domain "remembering - understanding - application," and the number of vocabulary reached 33 in its initial form.

C-Reviewing the test and presenting it to the jury committee: The test was presented to a group of jury committee to get acquainted with their opinions regarding the suitability of the test to the level of the fifth grade primary students, the scientific accuracy and the level of measurement, and the researcher was keen to conduct a personal interview with the jury committee during and after the arbitration to discuss what might arise. From questions, and in light of their opinions, the wording of some of the test items has been modified, whether by deleting, adding or modifying some vocabulary to make it easier for students to understand, and the test consists of (29) items.

D- Preparing the specifications table: The specifications table included in its construction:

- ١ The relative weights of the subjects included in the test.
- ٢ The relative weights of the set of goals to be achieved.

The following table shows the test specifications:

Table (10) specifications for the examination of preventive and health scientific knowledge necessary to avoid the dangers of infection with the COVID-19 virus, in the topics of the unit "The diversity of life and the kingdoms of living creatures within the framework of the requirements of preventive and health education" for fifth grade students in Saudi Arabia

M	Scale levels unit topics	Recall Knowledge	Understanding	Application	The relative weights of the subjects	The number of questions
1	Procedures and methods to prevent the dangers of infection with the COVID-19 virus	1-13-19	3-7-22-25	5-15-24	38,46%	10
2	Health preventive measures to confront infection with the emerging epidemic Corona virus COVID-19	8-18-20	6-10	9-11	26,92%	7
3	First aid and the necessary health care to isolate the person infected with the emerging epidemic Corona virus COVID-19	2-14-21-26	12-17-23	4-16	34,61%	9
The relative weight of educational goal levels		38,46%	34,61%	26,92%	100%	—
The number of questions		10	9	7	—	26

E - The exploratory experience of the test: The exploratory experience of the test was applied to a group of fifth grade primary students, in Tarbah Primary School, whose strength was (48) students, After correcting the answer sheets, fourteen students who left vocabulary without answering them were excluded. The number of survey respondents is (34) students. The pilot experiment aimed to control the test by obtaining statistical data related to the following:

(١)**Determination of the coefficient of internal consistency of the vocabulary:** This was calculated using the Point Biserial Correlation equation (Fouad Al-Bahi Al-Sayed, 1979, 350), and the non-significant vocabulary was modified statistically.

(٢)**Calculating the ease and difficulty coefficient for each item:** The modified standardized ease, difficulty and ease factor for each item was calculated from the achievement test items (Fouad Al-Bahi, 1979, 623-628),

where the wording of the vocabulary was modified (5, 7, 9, 14, 15, 22, 24) and (3) a word was deleted, so that the test (26) became a word.

(٣) Validity of the test: To ensure the validity of the content of the test, it was presented to a group of jurey committe, and the amendments that they referred to were made, and in addition, the validity of the test was calculated by the peripheral comparison method (discriminatory validity) by monitoring the overall scores of the pilot sample students and their boxes. And arranging them in ascending order, then choosing the upper and lower mezzanine levels of degrees (the top quadrant and the lower quadrant), each of which represents 27%, and the arithmetic mean and the standard deviation were calculated for each of them, Then choosing the upper and lower mezzanine levels for degrees (the upper and lower quartile), each of which represents 27%, and the arithmetic mean and the standard deviation were calculated for each of them, then the critical ratio was calculated (Fouad Al-Bahi Al-Sayed, 1979, 562) and found that it is (14.4), and since the critical value At which the resulting value is compared is (2.58) a standard score, then this critical ratio is statistically significant in the sense that this test distinguishes between the upper scale level, which represents the strong, and the lower balance level, which represents the weak, and the test is honest from this point of view.

(٤) Calculation of test reliability: The test reliability was calculated using the Kuder-Richardson formula (20) Kuder-Richardson Formula 20 (KR-20). This equation is used to calculate the reliability of the tests and measures if the individual scores are binary (1, zero) (Salah El-Din Allam, 2000, 162-164) and the reliability coefficient was (0.83). This indicates that the achievement test has a high degree of reliability.

(٥) Calculating the appropriate time to answer the test: using the appropriate equation (Fouad Al-Bahi, 1979, 654) and it was found that the appropriate time to answer the test is (30) minutes, and after that the achievement test took its final form (Appendix 7.)

2- Preparing a health preventive skills performance note card to avoid the dangers of infection with the COVID-19:

A - The purpose of the card: This card aims to measure the performance level of fifth grade primary students in the preventive and practical health skills necessary to avoid the dangers of infection with the Coronavirus

COVID-19 among fifth grade primary children in the Kingdom of Saudi Arabia.

B- The initial form of the card: The initial form of the observation card was determined in light of the dimensions of preventive health education in the current research, and the results of previous studies and research that dealt with measuring preventive health practical skills. The observation card was built and consisted of the following basic preventive skills:

1. The skill of wearing a preventive medical mask on the nose and mouth.
2. The skill of wearing the protective medical glove on the hands.
3. Students' temperature measurement skill.
4. The skill of sterilizing the semester.
5. The skill of identifying signs of corona infection on a student.
6. The skill of preventive and healthy isolation of the student with corona.
7. First aid health skill for a student inside the school.

Thus, the card consisted in its initial form of (7) basic skills, and these basic skills were analyzed into behavioral sub-skills that can be observed while the student performed preventive and health behaviors to avoid the dangers of infection with the Coronavirus COVID-19 among fifth grade primary children in the Kingdom of Saudi Arabia, and the estimate was determined For the level of performance [Good performance: performs quickly, accurately and in the shortest possible time (3 marks) - Average performance: performs slowly and in a long time (two steps) - Poor performance: performs underperformance and does not reach the end of the skill (1 grade) - and if not Perform (zero.)

C- Presenting the card to the jurey committe: It was presented to a group of jurey committe to verify the ease of use and application of the card, the verbal and linguistic accuracy of each skill, the suitability of each sub-skill for the basic skill that falls under it, the extent to which the performance can be observed, and the clarity of the skill performances. The judges reported modifying some skills by adding or omitting, and the modifications indicated by the judges were made.

D - Exploratory experimentation of the card: The observation card was applied to an exploratory group of fifth grade primary students at Turbah Primary School, whose strength reached (17) students, and each student's

grades were monitored for each skill in preparation for controlling the note card through the following procedures:

(١) **Calculating the validity of the note card:** by the method of terminal comparison (discriminatory honesty) and calculating the critical ratio (Fouad Al-Bahi Al-Sayed, 1979, 562) and found that the critical ratio = 6.48, which is a statistically significant, meaning that the note card of preventive health skills is honest and distinguishes between the strong in the trait And the weak in it.

(٢) **Calculating the stability of the note card:** using the alpha formula for Cronbach (α) Cronbach, where the note card is a graded scale of degrees and for each skill performance a matrix of degrees (Salah El-Din Allam, 2000, 165-167). 0.92) which indicates that the card has a high degree of stability.

(٣) **Calculating the appropriate time to perform preventive skills:** using the appropriate equation (Fouad Al-Bahi Al-Sayed, 1979, 654), and the appropriate average time to perform preventive practical skills is (13) minutes.

(٤) **Calculating the internal consistency coefficient of the note card:** using the Carl Pearson correlation coefficient equation (Salah El-Din Allam, 2000, 118) where the correlation coefficients of basic practical skills were calculated for the card as a whole, then the behavioral sub-skills correlation coefficient with the basic skills related to it were calculated. Card internal consistency is high and statistically significant.

E - The final form of the note card: After making adjustments to the sub-skills by canceling and adding some skills, and amending some formulations, the preventive and health practical skills performance note card () to avoid the dangers of infection with the COVID-19 virus was formed from (7) basic skills containing (73) A behavioral sub-skill, with a total of 219 grades, as shown in the following table:

Table (11) specifications of a note card of preventive health skills performance among fifth grade students in the Kingdom of Saudi Arabia

M	Preventive and healthy skills	Number of sub-skills	Maximum score	Minimum score
1	The skill of wearing a preventive medical mask on the nose and mouth.	9	27	9
2	The skill of wearing a protective medical glove on the hands.	9	27	9
3	The skill of measuring the temperature of a student suspected of being infected with the virus	9	27	9
4	The skill of sterilizing the classroom with medical disinfectants.	13	39	13
5	The skill of recognizing the signs and manifestations of infection with the Coronavirus on a student.	9	24	9
6	The skill of isolating a student infected with Coronavirus, in a preventive and healthy way.	12	30	12
7	A health first aid skill for a student with a virus Corona inside the school.	12	33	12
Total		73	219	73

3- Preparing the preventive health awareness measure about the dangers of the emerging corona virus:

The preventive health awareness scale was prepared according to the following steps:

1- Determining the goal of the scale: The scale aimed to determine the level of preventive health awareness of the dangers of the emerging epidemic Corona virus among fifth grade primary students in the Kingdom of Saudi Arabia.

2- Building the scale in its initial form: The initial form of the scale was formulated according to the following:

(١) **Survey and study of measures of awareness in general** and preventive awareness in particular, which have been applied in the educational stages in general and which have been applied in the elementary education stage in particular.

(٢) **Formulating the scale vocabulary:** The scale's vocabulary was formulated in its initial form, reaching (32) vocabulary distributed under (5) main Aspects or components, and each vocabulary included a behavioral

stance that represents an artificial statement about which individuals differ, followed by three representative alternatives to include the student's responses to the situation.

(٣)**The initial form of the scale:** The scale included in its initial form a brochure containing the cover page, the instructions page that includes the purpose of the scale and how to answer it, the student's data page, and then the scale situation.

(٤)**The scoring:** Three graded levels were assigned to the student's responses to each situation, where the highest response was estimated at three degrees, the next response was two degrees, and the last response was one degree.) Degree.

3- Experimenting with the scale on the exploratory sample: After confirming the validity of the scientific and linguistic content of the scale by presenting the scale to the jury committee, the research team applied it to an exploratory sample of the fifth grade primary school students of Tarbah Elementary School consisting of (24) students with the aim of:

(١)**Determining the appropriate time for the scale:** It was found to be (30) minutes.

(٢)**Verifying the validity of the scale:** The apparent validity of the scale was ascertained, represented by: the clarity of the scale instructions, the scientific validity of the scale vocabulary, the appropriateness of the scale for the dimension that was set for its measurement, and the time that was set for answering the scale.

(٣)**The validity of the content of the scale:** It was ascertained by presenting the scale to the jury committee, and this resulted in some linguistic, scientific and technical adjustments to some situations.

(٤)**Calculating the scale stability:** It was calculated by re-applying the scale to the students of the exploratory sample with an interval of (21) days, then calculating the correlation coefficients between the total score of the two applications, and the results showed that the stability coefficient of the control sample (the correlation coefficient between the two applications) is (0, 90).

4- Modification of the scale in light of what has been achieved: In light of the results of the exploratory experimentation of the scale on the pilot study sample, modifications were made to some situations, and the

situations were deleted (25, 22, 18, 14, 9 and 28), which is the vocabulary that is not Good.

5- The final form of the scale: The scale included in its final form (26) situations, and the following table shows the specifications of the preventive health awareness scale in its final form:

Table (12) specifications of the preventive health awareness scale towards the dangers of the emerging epidemic corona virus among fifth grade students in the Kingdom of Saudi Arabia

M	The main dimensions of the Preventive Awareness Scale	Situations numbers	Maximum score	Minimum score	Number of Situations	percentage
1	The skill of wearing a preventive medical mask on the nose and mouth.	1-3-14-18-21-25	18	6	6	23,08%
2	The skill of wearing a protective medical glove on the hands.	2-7-10-17-22	15	5	5	19,23%
3	The skill of measuring the temperature of a student suspected of being infected with the virus	4-9- 16-20-24	15	5	5	19,23%
4	The skill of sterilizing the classroom with medical disinfectants.	5-8-12-13-23	15	5	5	19,23%
5	The skill of recognizing the signs and manifestations of infection with the Coronavirus on a student.	96-11-15-19-26	15	5	5	19,23%
Total			78	26	26	100,00%

Eighth: Research experiment procedures:

1- Selection of the study group and the experimental design of the research: A group of fifth grade primary students was selected at the Mansouriya Primary School and Hassan Bin Thabit Primary School in Turbat Al-Taif Governorate, Makkah Al-Mukarramah, and each school includes two of the school's classes, and the following table shows the experimental design of the research:

Table (13) the experimental design of the two research groups

M	Educational administration	the group	The school	The number of students
1	Turbah Governorate	Control group	Abdul Rahman bin Sakher Elementary in soil	38
2		Experimental group	Mansouriya Elementary in Turbah	36
Total				74

It is evident from the previous table (13) that the research group consisted of (74) students.

2- **Application of tools beforehand:** The application was carried out at the beginning of the first semester of the year: 1441-1442 corresponding to 2020-2021 Sunday 25/1/1442 corresponding to 9/13/2020 through the Madrasati platform and the Ain educational portal, with the help of the teachers of the two schools, and the test answer sheets were corrected. The observation card, and the preventive health awareness scale, and grades were monitored on the basis of the total score in each tool, and the following table shows the results of the prior application of the research tools:

Table (14): Results of applying research tools to verify parity between students of the control and experimental groups before the start of the experiment

the tool	the group	The number	Maximum score	Average (m)	standard deviation (P)	variance (P2)	Degrees of freedom	Values (T)	Function level (T)
Test the scientific knowledge of preventive health	Control group	38	26	6.65	0.212	0.045	72	0.069	Not significant
	Experimental group	36		6.72	0.255	0.065			
Preventive and health skills performance note card	Control group	38	219	81.66	0.416	0.577	72	0.077	Not significant
	Experimental group	36		78.11	0.155	0.024			
3 Preventive Health Awareness Scale	Control group	38	78	15.40	0.547	0.301	72	0.092	Not significant
	Experimental group	36		14.41	0.816	0.666			

It is clear from Table (14) that the control and experimental research groups are homogeneous, as there are no statistically significant differences in the research variables between them in the pre-application. Thus, the first hypothesis of the research hypothesis is achieved, which states: "There is no statistically significant difference between the mean scores of the two groups. Controlling and experimental test in preventive and health scientific knowledge, preventive and health skills performance observation card, and pre-emptive health awareness measure.

- 3- **Teaching the unit of study:** The unit implementation phase began on Wednesday 1/28/1442 , 16/9/2020 through the Madrasati platform and the Ain Education portal, with the help of the teachers of the two schools, and continued until Thursday 3/12/1442 , 10/29/2020, with two lessons On a weekly basis for each semester, at a rate of 45 minutes per session, and science teachers at Mansouriya Elementary School taught the unit to fifth grade primary students through my school platform and the Ain educational portal. By using the preventive health strategy, the school classrooms, the library, the school's educational activities room, the educational film screening hall, the preventive and health instructional panels, the photographs were used to develop students 'awareness of the dangers of infection with the Coronavirus, personal protective equipment, sterile packages, and some devices and tools for displaying transparencies. While teaching, on a day every week, students come to hand over their homework, while science teachers at Abdul Rahman Bin Sakher Primary School taught the same unit to students through the Madrasati platform and Ain Education portal, with the regular organization of the unit and without using the preventive health strategy.
- 4- **Dimensional application of tools:** After the end of the unit teaching, the research tools were applied to the students of both groups through the My School platform and the Ain educational portal, and then the results were monitored in preparation for the statistical treatment.

Ninth: Research results and their interpretation:

(^١) **Results of the post application of the preventive and health scientific knowledge test in the subjects of the unit of study on students of the two groups:**

To test the validity of the third hypothesis, which states: “There is a statistically significant difference between the mean scores of the students of the control and experimental groups in the preventive and health scientific knowledge test in favor of the students of the experimental group afterwards.” To test the validity of this hypothesis, a test (T) was used to find out the significance of the differences for two unrelated averages. (Fouad Al-Bahi Al-Sayed, 1979, 461) for the total score of the test and the results were as follows:

Table (15). The arithmetic mean, standard deviation, variance, and significance of the differences between the averages of the control and experimental groups in examining preventive and post-health scientific knowledge and the size of the impact of the preventive health strategy on health and preventive scientific knowledge

data the group	Number	Maximum score	Average (m)	Standard deviation (P)	Variance (P ²)	Degrees of freedom	Value (T)	Function level (T)	ETA box (η^2)	Effect size (d)	Amount of effect size
Control group	38	26	13.15	0.873	0.694	72	4.84	0.01	0.8	2.63	Large
Experimental group	36		24.63	5.744	3.189						

It can be seen from Table (15) that the difference between the mean scores for the students in the control and experimental groups in the total score of the health and preventive scientific knowledge test is statistically significant at the 0.01 level to the benefit of the experimental group students, and it is clear that the size of the effect of the preventive health strategy on the acquisition of health and preventive scientific knowledge is large.

This result is consistent with the results of studies by Harvey (2014), Saudi Arabia (2020), Abdul Rahman (2020), Jolie and Azoulay (2020),

Manfuso (2020), Milman (2020), and Nilson (2020). These studies demonstrated the effectiveness of health and preventive education strategies in science curricula for raising the level of the preventive, health, and curative knowledge of primary school students on the prevention of epidemic viruses and other epidemic diseases, including the emerging Corona virus (COVID-19) epidemic.

Harvey's (2014) study reported on the development of students' information about prevention tasks and information about epidemic diseases, and Saudi Arabia (2020) emphasized the importance of preventive and health information for students in preventing their contracting the Coronavirus. The study by Abdul Rahman (2020) demonstrated the importance of prevention tasks and preventive and health information to maintain student health, while Jolie and Azoulay's (2020) study found there was progress in the level of preventive information for students in light of the Corona pandemic. The studies by Manfuso (2020), Milman (2020), and Nilson (2020) looked at improving preventive and health information about the Coronavirus.

It is also clear that the effect of the preventive and health strategy was large, which indicates the high level of students' understanding of preventive and health scientific knowledge; this may be due to the variety of ways in which preventive and health information and knowledge were presented to them and to the effective preventive educational activities that were used in teaching the unit of study, as well as the method of continuous evaluation that was used in teaching the unit.

These results may also be due to the health prevention tools that teachers used with students in teaching the unit by means of educational activities in representative and artificial situations, which contributed to the high level of achievement of students of the experimental group in the preventive and health scientific knowledge included in this unit.

Further, these results may be due to the preventive activities and measures carried out by the students in the experimental group, including the use of educational films on methods of prevention of the emerging Corona virus epidemic, which helped to increase students' interest in learning about the subjects in the unit of study, which led to the emergence

of differences between students in the control and experimental groups, to the benefit of the experimental group.

To verify the effectiveness of the preventive and health strategy on the obtaining of preventive and health scientific knowledge among the students in the experimental group, the Blake equation was used to measure the effectiveness, and the results were as follow:

Table (16). the average scores of the experimental group students in the preventive and health scientific knowledge test in the pre- and post-application and the modified gain percentage for the Blake equation

Group	Tribal average (M1)	Post average (M2)	Final score for the test	Adjusted Earnings Ratio for Blake	The effectiveness of the preventive and health strategy on preventive knowledge
Experimental group	6.72	24.63	26	3.44	Effective

It is evident from Table 16 that the preventive and health strategy in preventive education had an acceptable degree of effectiveness. Preventive and health scientific knowledge increased in relation to the subjects of the unit of study, giving an indication of the effectiveness of the preventive and health strategy on the cognitive status of the fifth grade students.

In light of the results shown in Tables 15 and 16, the third of the research hypotheses is accepted.

(٢) Results of the post-application measure of health and preventive practical skills for the students in the two groups:

The study tested the validity of the fourth hypothesis, which states: "There is a statistically significant difference between the mean scores of the students of the control and experimental groups in the observation card of the performance of preventive and health skills in favor of the students of the experimental group afterwards." This test was related to the overall score of the preventive practical skills performance note card, and the results were as follows:

Table (17). The arithmetic mean, standard deviation, variance and significance of the differences between the averages of the control and experimental groups in the performance observation card for preventive and health practical skills, and the size of the effect of the preventive and health strategy on the performance of preventive and health practical skills.

Data Group	Number	Maximum score of the Card	Average (m)	Standard deviation (P)	Variance (P ²)	Degrees of freedom	Values (T)	Function level (T)	ETA box (η^2)	Effect size (d)	Amount of effect size
Control group	38	219	101.67	1.656	2.742	72	9.38	0.01	0.71	3.11	Large
Experimental group	36		205.92	5.873	34.492						

It is clear from Table 17 that the difference between the mean scores of the students in the control and experimental groups in the total score of the performance observation card for preventive and health practical skills is statistically significant at the 0.01 level, to the benefit of the experimental group students.

This result is consistent with the results of the studies of Rowell and Dawson (2013), Lyndon (2013), Taha (2020), Hodges et al. (2020), Abdel Rahman (2020), Jones (2020), and Speak (2020), which focused on preparing and developing the performance of preventive and health practical skills related to the prevention of the dangers of epidemic diseases and the Corona pandemic.

The superiority of the experimental group students in the current research in performing preventive and health practical skills may be due to the training by students in preventive and health practical skills on their own inside the school and under artificial situations of infection with the Coronavirus, the use of necessary preventive tools, and the exercise in the necessary first aid tasks and procedures, in cases of HIV infection, as well as the necessary sanitary isolation in the isolation room.

This may be due to students' watching the steps required to perform preventive and health practical skills in educational films that presented the manifestations of infection with the Coronavirus, methods to prevent transmission of infection, first aid procedures and health isolation, after which students performed preventive and health activities and practical exercises within the school by themselves.

The use of preventive instructions and precautionary measures by science teachers while they were teaching the unit through panels and drawings used in the steps of the preventive and health strategy, as well as the use of teaching methods that help to stimulate students and raise their interest in performing preventive and health practical skills, contributed to students' mastering the performance of these skills within the school.

It is also evident that the size of the impact of the preventive and health strategy on the performance of preventive and health practical skills is large, which indicates its effectiveness, and this further indicates the high level of performance of the students in the experimental group in preventive and health skills; this may be due to the students' performance of the skills themselves through various activities during the teaching of the unit, which developed high performance skills in students.

Students' improvement in the performance of the preventive and health practical skills as indicated by the note card may be due to the following:

1. The active role that students played while practicing practical and health skills when conducting prevention operations against the dangers of infection with the emerging the Coronavirus epidemic.
2. The direct, positive, effective experience met with by students while the unit was being taught within the primary school.
3. Allowing every student to perform preventive and health practical skills in their behavioral steps inside the science laboratory and to modify incorrect behaviors during performance.
4. Students' watching the steps involved in each skill in educational films, then watching them in nature with the teacher inside the science laboratory, and their use of the necessary protective devices, machines, and materials while performing the skill.

In order to verify the effectiveness of the preventive and health strategy in the performance of preventive and health practical skills among the

students of the experimental group, the researcher used the Blake equation to measure the effectiveness, and the results were as follows:

Table (18). The average scores of the experimental group students in the performance observation card of preventive and health practical skills in the pre and post application and the adjusted gain percentage for the Blake equation

Group	Tribal average (M1)	Post average (M2)	Final score on the Preventive and Health Skills Card	Adjusted Earnings Ratio for Blake	Effectiveness of the preventive and health strategy on preventive and health skills
Experimental group	78.11	205.92	219	3.417	Effective

It is evident from Table 18 that the preventive and health strategy in teaching the unit was characterized by an acceptable degree of effectiveness in the performance of preventive and health practical skills in the subjects of the unit of study for fifth grade students in the Kingdom of Saudi Arabia, as the adjusted gain rate for the Blake equation was 4.17, which is greater than the 1.2 specified to indicate that the preventive and health strategy is effective.

In light of the results of Tables 17 and 18, the fourth hypothesis of the research hypothesis is accepted.

(*)Results of the post application of the Preventive Health Awareness Scale on the dangers of the emerging corona virus for students of the two groups:

This study tested the validity of the fifth hypothesis, which states: “There is a statistically significant difference between the mean scores of the students of the control and experimental groups in the preventive health awareness scale in favor of the students of the experimental group afterwards.” To test the validity of this hypothesis, a test (T) was used to find the significance of the differences for two averages that are not related with respect to the overall score of the Preventive Health Awareness Scale, and the results were as follows:

Table (19). The arithmetic mean, standard deviation, variance and significance of the differences between the averages of the control and experimental groups in the preventive health awareness scale, and the size of the impact of the preventive health strategy on preventive health awareness towards the dangers of the emerging Corona virus epidemic.

Data Group	Number	Maximum score of the Card	Average (m)	Standard deviation (P)	Variance (P ²)	Degrees of freedom	Values (T)	Function level (T)	ETA box (η^2)	Effect size (d)	Amount of effect size
Control group	38	78	33.75	0.501	0.251	72	6.28	0.01	0.63	2.94	Large
Experimental group	36		71.28	5.575	31.081						

It is clear from Table 19 that the difference between the mean scores of the control and experimental group students in the total score of the Scale of Preventive Health Awareness towards the dangers of the emerging Corona virus epidemic is statistically significant at a 0.01 level in favor of the students of the experimental group.

This result is consistent with those of the studies of Sabry and Khairy (2007), Al-Rashidi (2018), Ladyshevsky (2020), Hodges et al. (2020), Jones (2020) and Turner and Adam (2020) as these studies confirmed the development of preventive and health awareness of primary school students during the spread of epidemic diseases and during the spread of the emerging Corona virus epidemic.

The high level of the experimental group students in the scale of preventive health awareness towards the dangers of the emerging epidemic Corona virus may be due to the students' participation in educational preventive exercises and activities while the unit subjects were being taught, as well as the feeling that the threat of the Corona virus to society and the environment and its various components has become clear and their witness of cases of disease and death caused by the virus in all countries of the world.

The high level of students in the preventive health awareness scale can be explained on the basis of the preventive information that students gained during the teaching of the unit using the preventive health strategy and

through watching preventive educational educational films, and on the basis of the education students received through these educational films about the dangers of the Corona virus to human life as a whole .

The process of student participation in the implementation of some preventive activities and skills, in addition to the awareness sessions that science teachers conducted with students, may be one of the reasons behind the development of the preventive and health awareness of students.

It is also evident that the size of the impact of the preventive health strategy was large, which indicates its effectiveness, and this further indicates that the students of the experimental group acquired preventive and health awareness of the dangers of the emerging Corona virus epidemic; this may be due to their interest in the concepts and topics of preventive and health education and the consolidation of these topics in their minds in a way that was difficult to forget, as well as to a change of direction. This education strengthened their view of the effects of viruses and their deadly toxins on humans and the environment.

In order to verify the effectiveness of the preventive and health strategy on preventive and health awareness of the dangers of the emerging Corona virus epidemic among the students of the experimental group, the Blake equation was used to measure the effectiveness, and the results were as follows:

Table (20). The average scores of the experimental group students in the preventive health awareness scale in the pre- and post-application and the adjusted gain percentage for the Blake equation

Group	Tribal average (M1)	Post average (M2)	Final score on the Preventive and Health Skills Card	Final score on the Preventive and Health Awareness Scale	Effectiveness of the preventive and health strategy on preventive and health awareness
Experimental group	13.41	71.28	78	3.69	Effective

It is evident from Table 20 that the preventive and health strategy was characterized by an acceptable degree of effectiveness, as the rate of adjusted gain for the Blake equation was 3.69, greater than the 1.2 specified by Blake as indicating that the preventive and health strategy is effective in

developing preventive awareness among fifth grade primary students in the Kingdom of Saudi Arabia towards the dangers of the emerging Corona virus epidemic as encouraged by the Health Ministry.

In light of the results in Tables 19 and 20, the fifth hypothesis of the research hypothesis is accepted.

(٤) Results of calculating the correlation between research variables for students in the experimental group in the post application:

This study tested the validity of the sixth of the research hypotheses, which states: “There is a statistically significant correlation between the preventive and health scientific knowledge test, the preventive and health skills observation card, and the preventive and health awareness measure of students in the experimental group in the post application”.

To test the validity of this hypothesis, Karl Pearson's correlation coefficient was used (Salah al-Din Allam, 2000, 118), and the results are illustrated in the following table:

Table (21). Correlation coefficients between research variables among students in the experimental group in the post application

Tool	Test of the scientific knowledge of preventive health	Test of the scientific knowledge of preventive health	Test of the scientific knowledge of preventive health	Critical ratio		Correlational relationship
				0.01	0.05	
Test of the scientific knowledge of preventive health	---	+ 0.69	+ 0.71	0.33	0.25	Positive statistical significance
Preventive and health skills performance note card	---	---	+ 0.64	0.33	0.25	Positive statistical significance
Preventive Health Awareness Scale	---	---	---	0.33	0.25	Positive statistical significance

It is evident from Table 21 that there is a positive correlational relationship with statistical significance at the 0.01 level between the preventive and health scientific knowledge test and the performance observation card for preventive and health practical skills among students in the experimental group.

The link between these two variables may be due to the preventive educational activities carried out by students and the performance of sanitary isolation and first aid skills, which encouraged them to develop

their preventive and health scientific knowledge and then develop their performance in the practical, preventive, and health skills associated with the dangers of the emerging corona virus.

This link may be due to the many inquiries and discussions of students during the teaching of the study unit about the dangers of infection resulting from the Coronavirus and its destructive effects on humans through the efforts of science teachers, which led to an increase in their achievement and their acquisition of preventive and health skills appropriate for dealing with the Coronavirus threat.

The students' watching of preventive and informative educational films, as well as their knowledge of the fatal effects of the Corona virus on members of the entire community, may have contributed to this positive correlation between these two variables.

It is also clear from the table above that there is a positive correlation relationship with statistical significance at the 0.01 level between the preventive and health scientific knowledge test and the measure of health preventive awareness towards the dangers of the emerging Corona virus epidemic among students of the experimental group.

This positive correlation may be explained by the fact that the preventive and health education measures taken by the students during the study of the unit helped them to develop the preventive scientific aspect of knowledge, which is one of the components of preventive health awareness towards the dangers of the emerging epidemic Corona virus. Thus, the learning of the content of the science curriculum has become predominantly integrated into the general cognitive, emotional, and value factors that shape the preventive and health consciousness.

Further, the preventive awareness sessions that science teachers conducted with students, as well as students' inquiries about some health and preventive issues related to Coronavirus infections, may have led to the correlation between these two variables.

The use of illustrative concept maps in the student's book may have helped students make the connection between preventive and health scientific concepts and the preventive awareness measure.

It is also evident from Table 21 that there is a positive correlation relationship with statistical significance at the 0.01 level between the preventive health awareness measure of the dangers of the emerging Corona virus epidemic and the performance of preventive and health practical skills among students in the experimental group.

This positive correlation may be due to the fact that the development of preventive health awareness towards the dangers of the emerging epidemic Corona virus prompted students to perform preventive and healthy practical skills to avoid any infections arising from the Coronavirus.

This may be due to the nature of the content of the science curriculum, which is integrated in the structure of the knowledge and the skills, which helped to develop students' emotional responses, and this approach includes practical preventive skills arising from the practical activities and exercises on which students were trained during the process of their study of the unit and which were associated with the necessary preventive and health measures.

Perhaps the students' viewing of the scientific content of each skill in educational films was a preventive and healthy process, and the students' performance of these skills themselves inside the science laboratory through exercises and activities led to the correlation between the performance and preventive and health awareness.

These results are consistent with the results of the studies of Weiler (2012), Robert (2014), Stephen (2014), Poche, Kith, and Carlton (2014), Eid (2019), Nagy (2020), UNESCO (2020), Ladyshevsky (2020), Hamilton (2020), and Jones (2020).

In light of the results of Table 21, the sixth of the research hypotheses is accepted.

Research recommendations:

In light of the research findings, the following actions can be recommended:

- 1- Training science teachers on how to teach preventive education dimensions of infectious diseases through other teaching strategies to develop certain dimensions and requirements of preventive education.
- 2- Providing health protection supplies and tools during the performance of educational activities related to the development of preventive education among students in schools.
- 3- Training science teachers on how to develop some dimensions of health education on the dangers of seasonal influenza of all kinds to develop health skills and first aid capabilities.
- 4- Directing the attention of those in charge of planning and developing science curricula and their implementers on the need to pay attention to the development of different levels of preventive and health awareness among students by including preventive and health awareness activities in the science curricula.
- 5- Paying attention to programs for preparing science teachers using modern teaching strategies that are closely related to health and important changes in and challenges for social, cognitive, skill and sentimental developments.
- 6- Preparing a guide for science teachers that deals with preventive and health educational activities and with how to implement them in ways that are attractive and interesting to students within the framework of the objectives and content of science curricula.
- 7- Paying attention to developing the level of preventive thinking for students during the teaching of science curricula, especially the levels of thinking related to prevention and to the safety and health of students as a science education goal.

Research proposals:

In order to complete what this research has initiated and in light of its results, the following goals for future research are suggested:

- 1- Conducting a similar study by using the mind mapping strategy to think about other units of the science curriculum to develop other preventive and health dimensions and skills.
- 2- Improving the effectiveness of programs in preventive and curative education to prevent the dangers of infectious diseases prevalent in some societies.
- 3- Developing science curricula in light of Joyce and Weil's teaching models to reorganize content and to achieve the goals of teaching sciences related to preventive and health education among students.
- 4- Creating a training program based on the preventive and health activities strategy to develop prevention and first aid skills relevant to accident emergencies among elementary school students.
- 5- Carrying out a comparative study of the preventive performance strategy and the mind map strategy in thinking about science teaching to develop certain dimensions of preventive education among elementary school students.
- 6- Determining the preventive, health, and emergency needs of science teachers using strategies for identifying educational needs.
- 7- Identifying the training needs of science teachers related to the preventive and health education philosophy, using specific strategies for identifying training needs.

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