ORIGINAL ARTICLES

Level of knowledge concerning prevention and control actions for COVID-19 in medicine students

Conocimientos sobre prevención y control de la COVID-19 en estudiantes

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ABSTRACT

Introduction: the World Health Organization declares a pandemic because as a novel disease named COVID-19, knowledge students have concerning this disease is significant to its prevention and control actions.
Objective: to describe the level of knowledge with respect to the prevention and control actions for COVID-19 in fifth-academic-year medicine students belonging to a health area of Pinar del Río municipality.
Methods: a descriptive and cross-sectional study was carried out at Raul Sanchez Rodriguez University Polyclinic between March 27 and April 27, 2020. The target group coincided with the sample, consisting of 94 students assigned to the institution who completed a questionnaire designed for the purposes of the study and evaluated on 100 points, with qualitative variables that were summarized using Descriptive Statistics.
Results: few deficiencies were identified on the prevention and control actions for COVID-19 in medicine students, the general evaluation from 90 to 100 points prevailed in 93,6 % of the participants, with a predominant evaluation of Very Well level of knowledge in the topics related to this novel disease.
Conclusions: mastery of knowledge concerning the prevention and control actions for COVID-19 was confirmed.

Keywords: Pandemic; Students, Medical; Knowledge; Covid-19; Sars-Cov-2.

RESUMEN

Introducción: la Organización Mundial de la Salud declara pandemia a la enfermedad provocada por el nuevo coronavirus SARS-CoV-2, el conocimiento que posean los estudiantes de esta enfermedad es significativo para su prevención y control.
Objetivo: describir el nivel de conocimientos sobre prevención y control de la COVID-19 en estudiantes de quinto año de la carrera de Medicina pertenecientes a un área de salud del municipio Pinar del Río.
Métodos: se realizó un estudio descriptivo y transversal en el Policlínico Universitario Raúl Sánchez Rodríguez entre el 27 de marzo al 27 de abril del 2020. El universo coincidió con la muestra, constituido por 94 estudiantes asignados a la institución a los cuales se les aplicó un cuestionario diseñado a los efectos del estudio y evaluada sobre 100 puntos, con variables cualitativas que se resumieron mediante la Estadística Descriptiva.
Resultados: se identificaron escasas deficiencias sobre la prevención y control de la COVID-19 en los estudiantes, prevaleció la evaluación general de 90 a 100 puntos en el 93,6 % de los sujetos participantes con predominio del nivel Muy Bien de conocimientos en los temas relacionados con la enfermedad.
Conclusiones: se comprobó el dominio en los conocimientos sobre la prevención y control de la COVID-19.

Palabras clave: Pandemia; Estudiantes De Medicina; Conocimientos; Covid-19; Sars-Cov-2.

INTRODUCTION

Emerging and re-emerging infectious diseases are ongoing challenges to public healthcare around the world.[1] These threats and challenges require the global healthcare system to maintain strong, contingency-based surveillance systems to enable rapid action in healthcare emergencies.[1,2]

At the end of December 2019,[1,3,4] the existence of a new disease was reported, a novel virus discovered in Wuhan, Hubei, China; a disease currently spread all over the world, the great number of confirmed people with this disease, compelled the World Health Organization (WHO) to declare as pandemic this health emergency.[2,5,6,7]

Precisely on March 11, 2020, the WHO declared the pandemic for a new disease caused by coronavirus, named COVID-19, caused by the coronavirus 2 of the severe acute respiratory syndrome or SARS-CoV-2. This term COVID-19, derives from the English name of the disease, *coronavirus disease* and the year *2019*.

SARS-CoV-2, which caused the largest pandemic in the last 100 years, known as COVID-19, uses the angiotensin converting enzyme type 2 (ACE2) as its main cellular receptor. This functional receptor is found in tissues including alveolar epithelium of the lung, arterial and venous endothelium, smooth muscle, renal tubular epithelium, and small bowel epithelium, which largely explains the clinical findings of patients.[7]

Coronaviruses are the seventh member of the *Coronaviridae family*, divided into two groups *Coronavirinae and Torovirinae*,[3,5] currently known to infect humans; they are positive-sense, non-segmented single-stranded RNA viruses and are named for the characteristic spike-shaped surface protein projections that give their envelope the appearance of a crown.

Coronaviruses generally multiply in the epithelial cells of the respiratory tract,[5] commonly found in humans, other mammals and birds, and capable of causing respiratory, enteric, hepatic and neurological diseases.[1]

As of July 15, 2020, 185 countries had reported cases of COVID-19, with 13,299,163 confirmed positive cases and 578,319 deaths for a mortality rate of 4,34 %.[8]

In the region of the Americas, 7, 28,445 confirmed positive cases have been reported, 52,84 % of the total number of cases reported worldwide, with 294,659 deaths for a mortality rate of 4,19 %; an additional 1, 3700 cases and 3,627 deaths have been reported in the last 24 hours, representing a relative increase in cases of 1.93% and a relative increase in deaths of 1,25 % compared to previous days.[8]

The United States of America accounts for 48,5 % of all cases and 46,1 % of all deaths in the Region of the Americas and Brazil accounts for 27,5 % of all cases and 25,2 % of all deaths. Combined, these two countries account for 76 % of all cases and 71,3 % of all deaths currently reported in the Region.[8]

In Cuba, at the close of July 14th, 2020, there are 263 patients hospitalized for clinical epidemiological care. Another 149 people are being monitored from the Primary Health Care. For the COVID-19, 3 372 samples were studied, resulting in six positive confirmed people.[8]

Given the emergence of this pandemic in the middle of 21st century, which has been extremely difficult to control, primary health care plays a key role, where the cycle of monitoring emerging and re-emerging diseases begins;[5] for this purpose, various treatment protocols have been established at the international level,[9] which in the case of COVID-19 have been adopted and standardized by the WHO.[5,9]

The most important pillar to battle this virus is prevention, taking the necessary measures to stop transmission,[1] since neither a vaccine nor a specific antiviral treatment for the treatment of COVID-19 is available yet in the world.[1,10,11,12]

Various groups of scientists and laboratory companies around the world are involved in researching projects which are already in progress for an effective vaccine to eliminate this disease.[12]

It will be possible to advance in the prevention and control of the disease, with coherence, union, application of science and intelligence. This battle must be won and for this it is necessary to continue with the implementation of measures to deal with this situation.

The Cuban public healthcare system is designed to address any health problem related to both communicable and non-communicable diseases. Today, active researches are carried out as an innovative element to cope with COVID-19, an important work instrument to early detect and diagnose patients with possible conditions, who after being identified, receive the necessary follow-up.[3,5]

From the epistemological point of view, the active survey is the set of diagnostic actions, with the purpose of establishing the existing risk factors and early discovering of hidden morbidity.[3]

In Cuba, the active survey that starts from the primary health care have contributed to control and reduce the adversity of the epidemiological events that affect the world; where students, professionals and healthcare workers participate with voluntariness and training of medicine students.[5]

The rapid spread of this disease, the high morbidity, severity of complications and mortality rate has forced us to establish preparedness strategies at every moment, according to the identification of learning needs.

In all this work, nowadays students of medical science major play an important role, and they are continuously prepared and updated for the successful performance of research actions; there are information resources on the subject that allow to update and make comparisons and conclusions.

The continuous interest observed, through the active surveys, the high incidence and the number of deaths in constant increase, motivated the researchers to carry out this study, with the objective of describing the level of knowledge on the prevention and control actions for COVID-19 in fifth-academic-year students of Medicine major belonging to a health area of Pinar del Río municipality.

METHODS

A descriptive and cross-sectional study was carried out at Raul Sanchez Rodriguez University Polyclinic between March 27 and April 27, 2020. The target group coincided with the sample, constituted by 94 students from fifth-academic year of Medicine major assigned to the institution which gave their consent to participate in the study.

Theoretical methods such as analysis-synthesis and induction-deduction were applied for the basics and concepts related to the research, the interpretation of the data found and the search of updated literature on COVID -19; as well as historical-logical, which guaranteed the appreciation of knowledge on the subject according to the progress of the disease. Among the empirical studies, the authors designed a questionnaire for the purposes of the study (Annex) that was applied to each of the participants and was the evaluation instrument for the students to determine the level of knowledge in relation to COVID-19.

The questionnaire was applied directly and individually. The students were quantified according to the scores obtained on the questionnaire in: less than 70 points, from 70 to 79, from 80 to 89 and from 90 and more. The variables studied in the research were: general qualification, the questions with greater difficulties in the questionnaire and the level of knowledge.

Definition of the level of knowledge

Poor: overall rating <70 points.
Fair: overall score in the range of 70 to 79 points.
Good: overall rating in the range of 80 to 89 points.
Very good: overall score in the range of 90 points and more.

The ethical principles for this type of study were met, and the deficiencies detected were taken into account for improvement activities with undergraduate students. The study was approved by the scientific and research ethics committee of the institution.

RESULTS

In relation to the general qualification of the students with reference to COVID- 19 prevailed the evaluation from 90 to 100 points with 93,6 %, the rest were located in the range of 80 to 89 points for 6,4 %.

Table 1 describes the level of knowledge of the students according to questions about the prevention and control actions for COVID-19, where very good score of level of knowledge predominated in most of the questions; only in three questions there were some deficiencies, attributed to the lack of knowledge of the serious symptoms and signs of the disease.

Table 1- Level of knowledge of medicine students with respect to the prevention and control actions for COVID-19

Questions	Level of knowledge			
	Good		Muy bien	
	No	%	No	%
Name of the disease and causative agent	0	0	94	100
Types of transmission	0	0	94	100
Incubation and transmission periods	0	0	94	100
Criteria of clinical cases	5	5,31	89	94,68
Clinical signs	7	7,44	87	92,55
Clinical forms recognized by World Health Organization	5	5,31	89	94,68
Most vulnerable ages and associated diseases to contract the disease	0	0	94	100
Standard safety measures	0	0	94	100
Means of protection	0	0	94	100
How to confirm a COVID-19 patient	0	0	94	100

DISCUSSION

The results of the questionnaire applied show a predominance of knowledge in the sample of students, these favorable results are largely due to the efforts made to battle COVID -19, and thanks to the training courses given to students and healthcare professionals to deal with the disease, health and hygiene regulations taken and practiced, as well as health education broadcasted by the media, the press and information technologies.

However, it should be pointed out that although the results are favorable, there were deficiencies related to some questions specifically about clinical findings where most of the students answered the most frequent ones such as fever, cough, respiratory distress, headache and digestive symptoms; obviating the findings that can arise in severe cases, only mentioning acute respiratory distress syndrome, where the septic shock, irreversible metabolic acidosis and coagulation disorders where not stated.

On the other hand, it is important that clinical findings always prevail in the behaviors to be taken at a given time, since the recommendations and indications of any protocol of actions must be interpreted in the most appropriate way and individualized for each patient.[12]

The importance of educating and evaluating knowledge in students, especially those in the ending years of their medical majors, is imperative, since those who are better capable to educate the population in their daily work to successfully face the consequences related to this pandemic.

There is no doubt that the evaluation of the level of knowledge on the prevention and control actions for COVID-19, as well as knowing the lessons learned on these subjects, allow to carry out a preventive work of great value in students of the medical sciences.

Molina, [5] in his research, refers to the survey work oriented to students from the first years of the medicine major; students should be included to the field with basic knowledge of community medicine and epidemiology.

Santos-Velázquez, states in his study, 68,2 % obtained quality results, with scores above 80 points, recognizing the measures adopted by the national healthcare system, together with the government and party leadership; as well as the preparations designed for the improvement of knowledge on how to face this pandemic.[3]

Many are the works consulted that refer as the most frequent symptoms of COVID-19 such as the fever, cough and fatigue; in addition production of secretions, headache, hemoptysis, diarrhea, dyspnea, sore throat,[4,10] general malaise, or muscle pain,[10] that can reach serious forms such as Acute Respiratory Distress Syndrome (ARDS);[4] however, in risk groups it presents a rapid progression to severe pneumonia and multiorgan failure, generally fatal especially in the elderly and with the presence of comorbidities,[1] such as the immune-senescence of the elderly, those suffering from chronic obstructive pulmonary disease, diabetes, heart failure, malnutrition, renal failure, cancer, chemotherapy treatments, etc;[12] however we cannot neglect the young who often when prioritizing entertainment fall into unawareness of the disease; therefore: the measures implemented in the country, will be a priority for all groups, in order to reduce the risk of transmission of the disease.

Similarly Ferrer Castro et al,[6] in their research found as more referred clinical findings, cough followed by fever and shortness of breath.

Riverón and Cruzata, [11] on the other hand, refer that some viruses, such as SARS-Cov-2 and dengue, can trigger a secondary hemophagocytic lymphohistiocytosis, leading patients to present hypovolemic shock, vasoplegia and cardiopulmonary collapse, due to hyper inflammation and over activation of the immune system.

It is important to know the symptoms of COVID-19 and it is that this novel coronavirus can be transmitted even before the onset of symptoms and according to the WHO the symptoms referred are unspecific and their presentation may even be lack symptoms (asymptomatic). [12]

The duty is to train professionals, workers and students in the healthcare sector, as well as in other organizations, in order to minimize the risk of introduction and spreading of the novel coronavirus, to achieve the right thing to be done for self-care and prevention among all people.

In relation to primary health care, the Basic Healthcare Team must be prepared with sufficient knowledge, skills and attitudes that allow them to consciously deal with the students, go through the health problems that threaten all of us and to providing them solutions, as well as feeling the need to prevent COVID-19 in their community.

It is at this level of care that the cycle of monitoring an epidemic disease begins. To this end, various protocols have been established at the international level, which in the case of COVID-19 have been implemented and standardized by the WHO.[5]

The most accepted route of human-to-human transmission is from person to person passing through the respiratory tract, through droplets produced when an infected person exhales, coughs or sneezes. It is also transmitted by touching eyes, nose or mouth, after touching contaminated surfaces,[1,4,12] with an incubation period between 4 and 7 days with an average of 5 days, this period depends on the age of the patient and the status of the immune system, WHO recommends isolation for 14 days.[1,4]

The case criteria and the main clinical forms recognized by the WHO are well-defined and everything is achieved with a good anamnesis of the patient and the family, which will be carried out when accomplishing the active survey of the entire population for the identification of cases with acute respiratory infections, as well as contacts and suspects. [1,9]

In Cuba, and unlike most countries in the world, all patients suspected of COVID-19 or contacts are admitted to some isolation center for study and treatment.[11]

It is known that the virus has equal possibilities of transmission between people, regardless of sex or age, although special attention is given to those over 60 years and children, others refer to the susceptibility to the virus respect to sex is unclear and differs between countries. [3,11]

Ferrer Castro evidences that young adults of male sex were the most affected; associating this to genetic and hormonal explanations for the differences in the susceptibility by sex; however, they refer to the lower female susceptibility to the infection, due to the protection of the extra X chromosome that they present in comparison with men.[6]

It is opportune to recommend that the evaluations of the level of knowledge in students about this pandemic can be extended to other academic years of medicine major, (fourth and sixth academic years) and Nursing students (fourth and fifth academic years); as well as to other areas of health and regions of Cuba.

The evaluation of the level of knowledge concerning prevention and control actions for COVID-19 in the study showed, that despite some deficiencies in the theoretical order by the fifth-academic year students of the medical major, the results in general were satisfactory, which allowed to solve these the day after qualifying, making a workshop that generated a strong debate of ideas by all participants where the deficiencies found after the evaluation of the questionnaire were clarified.

Conflict of interests:
The authors declared there's no conflict of interests.

Authors' contribution:
All the authors contributed in equal measure in the conception, design, writing and revision of the final version of the manuscript.

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QUESTIONNAIRE

1. What is the name and causative agent of the current pandemic?
2. List three (3) types of transmission for COVID-19 you know about.
3. Please, fill in the blanks.

a- Recent studies have shown that the incubation period of COVID-19 ranges from _____ to _____ days; however, the transmission period is considered to be up to_____ days after the disappearance of _____.

4. The following case criteria are considered: (close contact, suspected case, confirmed case, confirmed case with intensive care admission requirements).

* Patient who is positive to the virological study for COVID-19, with or without symptoms. _____
* Patient presenting clinical respiratory symptoms with a history of contact of a confirmed positive case in the last 14 days. _____
* Persons who have contact with a confirmed positive or suspected patient with COVID-19 infection. _____
* Severely-ill confirmed positive case. _____

5. The disease usually presents itself with some clinical findings such as _____and_____ _____; being less frequents the _____and the clinical signs _____.

a. In severely-ill cases, the disease can progress rapidly, causing_____, _____, _____, _____and _____

6. What are the main clinical forms recognized by the World Health Organization?
7. What ages and pathologies do you consider more susceptible to contract the disease?
8. List no less than five of some of the standard safety measures you should take with COVID -19.

9. Answer true (V) or false (F) according to the following statements.

_____Gloves replace hand hygiene.

_____The stethoscope, like other essential work instruments, must be properly sanitized to prevent it from transmitting infections.

_____The use of long natural or artificial nails influences the way microbes are housed and transported.

_____Sanitary gowns are vehicles of germs and should be used exclusively in healthcare settings.

_____There are inequalities in the possibilities of transmission of the virus between people, regardless of sex or age.

10. How can you confirm that a patient has COVID-19, if the symptoms are as similar to those of common viruses as a cold?