Original

Factors related to preventive attitudes and measures against COVID-19 pandemic

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ABSTRACT

Objective. This research aims to analyze the relation between biological, social and cultural factors regarding the attitudes and preventive measures against COVID-19 among citizens of Trujillo-Peru. **Material and Methods.** This is a descriptive research, with a quantitative approach and a correlational, prospective and design. A previously validated questionnaire was used to collect certain biological, social and cultural data, as well as attitudes and preventive measures against COVID-19 among 185 citizens of Trujillo. Due to the quarantine and the Sanitary National Emergency, the collection of data was done by virtual means. **Results.** Citizens between 18 and 29 years old have inappropriate attitudes (12.4%) and inappropriate preventive measures (8.6%). Also, males have inappropriate attitudes and inappropriate preventive measures. Moreover, single citizens or unmarried couples without children have inappropriate attitudes (14.1%) and inappropriate practices (13%). **Conclusions.** Among biological factors, age and gender are related to attitudes and preventive measures regarding the pandemic. Among social factors, marital status and parenthood are related to attitudes and preventive measures regarding the pandemic. And among the cultural factor, knowledge of this disease and the measures to be taken are related to the preventive measures against COVID-19.

Keywords: Pandemic; COVID-19; attitudes; preventive measures (*Source: MeSH*)

RESUMEN

Objetivo. La presente investigación tuvo como objetivo analizar si existe relación entre los factores biológicos, sociales y culturales con las actitudes y prácticas preventivas frente a la pandemia del COVID-19 en ciudadanos de Trujillo- Perú. **Material y Métodos.** Tipo de estudio descriptivo, de enfoque cuantitativo y diseño correlacional, prospectivo, de corte transversal. Mediante un cuestionario

previamente validado se tomaron datos de ciertos factores biológicos, sociales y culturales, así como de las actitudes y prácticas preventivas frente al COVID-19 en 185 ciudadanos de Trujillo. Por encontrarnos en cuarentena debido a la emergencia sanitaria, la recolección de datos se realizó de manera virtual. **Resultados.** Los resultados muestran que ciudadanos de 18 a 29 años tienen actitudes inadecuas (12.4%), con prácticas preventivas inadecuadas (8.6%) y también que ser de sexo masculino constituye un riesgo para tener actitud y practica inadecuada. También existen ciudadanos que son solteros o convivientes, no tienen hijos y tienen actitudes inadecuadas (14.1%) y prácticas inadecuadas (13%). **Conclusiónes.** De los factores biológicos la edad y el sexo se asocian a las actitudes y prácticas preventivas frente a la pandemia, de los sociales, el estado civil y la tenencia de hijos se asocian a las actitudes y prácticas preventivas frente a la pandemia, y del cultural el tener conocimiento de la enfermedad y de las acciones a tomar se asocia con las prácticas preventivas frente a la pandemia del COVID-19.

Palabras clave: Pandemia; COVID-19; actitudes; prácticas (*Fuente: MeSH*).

INTRODUCTION

Since the first known cases of pneumonia in Wuhan citizens resulting from SARS-CoV2, probably caused by a zoonosis, this disease has extended over countries across all continents between February and March. And as a result, Spain and Italy are the most strongly affected countries in Europe; United States in North America; and Brazil in South America. Furthermore, many governments have taken unfavorable policy decisions in response to the pandemic (1).

The population is generally susceptible to this virus. The percentage of death cases is higher in elderly people and also in people with chronic diseases, such as diabetes, hypertension, obesity and cardiovascular diseases. The symptoms in most children are relatively minor (2,3). The average number of new patients varies between 2.24 (95 % CI 1.96-2.55) and 3.58 (95 % CI 2.89-4.39), which means that approximately from 2 to 4 people can be infected by one person (4).

Besides, the Coronavirus can remain infectious on different types of surfaces from two hours to 9 days, this causes a high probability of infection for those who are in contact with these surfaces (5). Any contact with an infected person with symptoms represents a risk of infection (6).

Disinfectants such as formaldehyde, hydrogen peroxide and alcohol have been selected (7). The use of sodium hypochlorite at a concentration of 0.1 % is efficient against the virus within 1 minute of risk. The WHO also recommends a concentration of ethyl alcohol at 70 % to disinfect small surfaces (5).

In Latin America, the compromise of the health systems with other epidemic infectious diseases that cause fever such as dengue and measles makes this situation more serious. Respiratory hygiene is now a mandatory ritual; however, overcrowding and various social events have become a risk (8).

At the moment, no specific treatment has been developed for this virus. Only under clinical situations, when patients may be at risk of infection, antibiotics are used. Moreover, patients in the early phase of the virus have been subjected to antivirals such as lopinavir/ritonavir (9).

News generates anxiety and fear in the population. Misinformation generates rumors and people infected by this disease have become victims of social rejection and discrimination (10).

In Peru, on March 6, 2020, the first case of coronavirus was reported. On March 16, the government declared the country in a National State of Emergency. The situation is concerning since cases have been increasing daily and many hospitals in different departments of the country have collapsed. On May 21st, more than 100,000 cases of infected people were reported, reaching a mortality rate of 2.91 %.

The city of La Libertad is one of the most affected regions reaching 2500 infected people, with a mortality rate of 3.8 %, have been reported in this city. Trujillo district presents the most cases and many medical professionals, policemen and people from the armed forces have been affected by this decease. (11,12).

Thus, based on a social and cultural context, we posed the following research question: Is there any relation between biological, social and cultural factors regarding the attitudes and preventive measures against COVID-19 among citizens of Trujillo district? As a research hypothesis, we stated that there does exist a relation between biological, social and cultural factors regarding the attitudes and preventive measures against COVID-19 pandemic among citizens of Trujillo district. The general objective of this study is to analyze if there does exist a relation between biological, social and cultural factors regarding attitudes and preventive measures against COVID-19 pandemic. The specific objectives are: To determine if there does exist a relation between biological factors such as age and sex regarding attitudes and preventive measures against COVID-19 pandemic. To determine if there does exist a relation between social factors such as marital status, schooling, parenthood and employment stability regarding attitudes and preventive measures against a COVID-19 pandemic. And, to determine if there does exist a relation between the cultural factor as level of knowledge and its dimensions regarding the attitudes and preventive measures against COVID-19 pandemic.

MATERIAL AND METHODS

Type and design of research. This is a descriptive research, with a quantitative approach and a correlational, prospective and cross-sectional design (13).

Population of research. Population was formed by all citizens of Trujillo district (18 to 70 years old), who have access to internet. Between March 16 and April 12, questionnaires were filled out virtually due to the quarantine period decreed by the Peruvian Government. The questionnaires were administered using a non-probabilistic sampling technique for convenience. A sample of 185 citizens residing in Trujillo district was selected. This sample was calculated with the formula for infinite population. A confidence sampling level of 95% was used, and an error of 7% was adjusted (14).

Data collection techniques and instruments. A survey was the technique and a questionnaire was the instrument used to collect data. This questionnaire was validated by five consultants: three medical surgeons, an infectious disease specialist and a methodologist. An Aiken's V was obtained: 99% for the knowledge instrument; 100% for the attitude instrument; and 100% for the practice instrument. The confidence level of the knowledge test instrument with 34 items was obtained by applying Kuder Richardson's formula obtaining a value of 0.85; this indicates a good level of confidence. Regarding the dimensions, for knowledge of symptoms (10 items) a value of 0.94 with a high reliability was obtained; for knowledge of ways of transmission (8 items), a value of 0.90 with a high confidence was obtained; for knowledge of the disease (8 items) a value of 0.72 was obtained, indicating an appropriate confidence; and finally, for knowledge of preventive measures to be taken (8 items), a value of 0.76 was obtained, indicating an appropriate level of confidence. The second part analyzes preventive attitudes toward COVID-19. This questionnaire consisted of 9 questions, which were submitted to the Cronbach's Alpha confidence analysis. A value of 0.71 was obtained indicating a positive confidence level. Finally, the third part tested the preventive measures toward COVID-19. The confidence of these items was estimated by applying the formula of the Cronbach's Alpha. A value of 0.78 was obtained indicating a good confidence level (13.15).

Statistical analysis. In order to perform the information analysis, a database in Excel was elaborated. The SPSS program (version 26) was used for the analysis. The level of knowledge was analyzed at a general level and per dimension. The bivariate analysis was performed through the Chi-square and OR hypothesis test in order to identify if biological, social and cultural factors are related and if it represents a risk factor for attitudes and preventive measures regarding COVID-19 (14).

RESULTS

After analyzing biological factors with preventive attitudes and measures against COVID-19 pandemic, we can observe that the majority of citizens surveyed aged 30 to 59 years old have appropriate preventive attitudes and measures (43.2 and 60.5% respectively). Also, we observed that masculine people have appropriate attitudes and preventive measures (23.2 and 25.4% respectively). We confirmed a significant relation between age and sex with attitudes and preventive measures against COVID-19 ($p<0.05$). In addition, we can affirm that there is a 2.61 times likelihood that a male person has inappropriate preventive attitudes, and a 2.74 times likelihood that he adopts inadequate preventive measures against COVID-19 pandemic (Table 1)

Table 1. Relation among Biological Factors and preventive attitudes and measures against COVID-19 in citizens of Trujillo-La Libertad, Peru. 2020.

Biological factor	Attitudes				Sig.	OR (IC)	Measures				Sig.	OR (IC)
	Appropriate	%	Inappropriate	%			Appropriate	%	Inappropriate	%		
Age												
From 18 to 29 years old	23	12.4	63	34.1			16	8.6	70	37.8		
From 30 to 59 years old	7	3.8	80	43.2	0.00	-	5	2.7	82	44.3	0.01	-
From 60 years old to more	0	0.0	12	6.5			0	0.0	12	6.5		
Sex												
Male	15	8.1	43	23.2		2.61 (1.17-5.78)	11	5.9	47	25.4		2.74 (1.09-6.88)
Female	15	8.1	112	60.5	0.02		10	5.4	117	63.2	0.03	
TOTAL	30	16.2	155	83.8			21	11.4	164	88.6		

Source: Questionnaire applied to citizens of Trujillo

Upon analyzing the social factors, we observed that the majority of citizens surveyed who have appropriate attitudes and preventive measures are single and unmarried couples (48.6 and 53% respectively); without children (42.2 and 45.4% respectively), with higher education (51.9 and 54.6% respectively), and with employment stability (52.4 and 56.8% respectively). However, a significant percentage of citizens with inadequate preventive attitudes and measures are single or unmarried couples (14.1 and 18% respectively) and without children (13 and 9.7% respectively).

We observed that there is a relation among marital status and parenthood with attitudes and preventive measures against COVID-19 (p<0.05). A single person is 4.69 times more probable to have inappropriate preventive attitudes, and 4 times more probable to have inappropriate preventive measures. Also, we observed that a person without children is 3.94 times more probable to have inappropriate preventive attitudes and 5.71 times more probable to have inappropriate preventive measures against COVID-19. (Table 2).

Table 2. Relation among Social Factors and preventive attitudes and measures against COVID-19 in citizens of Trujillo-La Libertad, Peru. 2020.

Social factor	Attitudes				Sig.	Or	Measures				Sig.	OR (IC)
	Appropriate	%	Inappropriate	%			Appropriate	%	Inappropriate	%		
Marital status												
Single or unmarried couples	26	14.1	90	48.6	0.00	4.69 (1.56-14.10)	18	9.7	98	53.0	0.02	4 (1.14-14.26)
married	4	2.2	65	35.1			3	1.6	66	35.7		
Parenthood												
With Children	24	13.0	78	42.2	0.00	3.94 (1.53-10.19)	18	9,7	84	45.4	0.00	5.71 (1.62-20.15)
Without Children	6	3.2	77	41.6			3	1,6	80	43,2		
Level of education												
Elementary or high school	15	8.1	59	31.9	0.22	1.63 (0.74-3.57)	11	5.9	63	34.1	0.22	1.76 (0.71-4.39)
Higher education	15	8.1	96	51.9			10	5.4	101	54.6		
Employment stability												
No	12	6.5	58	31.4	0.79	1.12 (0.50-2.48)	11	5.9	59	31.9	0.14	1.96 (0.79-4.89)
Yes	18	9.7	97	52.4			10	5.4	105	56.8		
TOTAL	30	16.2	155	83.8			21	11.4	164	88.6		

Source: Questionnaire applied to citizens of Trujillo

In Table 3, upon analyzing the cultural factor, we observe that the majority of citizens demonstrate high general knowledge about this disease and an appropriate level of attitudes and preventive measures. However, there is no evidence of a relation among the knowledge variable and preventive attitudes and measures variable against COVID-19. Nevertheless, upon analyzing knowledge by dimensions, we observe that there is a significant relation ($p<0.05$) among knowledge about the disease regarding attitudes and preventive measures, and knowledge of preventive measures to be taken regarding inappropriate preventive measures against COVID-19 pandemic.

Table 3. Relation among Cultural Factors (knowledge and its dimensions) and preventive attitudes and measures against COVID-19 in citizens of Trujillo-La Libertad, Peru. 2020.

Cultural factor	Attitudes				Sig.	Measures				Sig.
	Appropriate	%	Inappropriate	%		Appropriate	%	Inappropriate	%	
Knowledge of disease symptoms										
Poor	0	0.0	17	9.2		2	1.1	15	8.1	
Average	15	8.1	76	41.1	0.14	10	5.4	81	43.8	0.99
Good	15	8.10	62	33.5		9	4.9	68	36.8	
Knowledge of ways of transmission										
Poor	0	0.0	7	3.8		0	0.0	7	3.8	
Average	28	15.1	122	65.9	0.16	20	10.8	130	70.3	0.21
Good	2	1.1	26	14.1		1	0.5	27	14.6	
Knowledge of COVID-19										
Poor	0	0.0	4	2.2		1	0.5	3	1.6	
Average	12	6.5	13	7.0	0.00	10	5.4	15	8.1	0.00
Good	18	9.7	138	74.6		10	5.4	146	78.9	
Knowledge of preventive measures to be taken										
Poor	0	0.0	1	0.5		1	0.5	0	0.0	
Average	9	4.9	27	14.6	0.26	9	4.9	27	14.6	0.00
Good	21	11.4	127	68.6		0	0.0	0	0.0	
General knowledge										
Average	6	3.2	43	23.2	0.38	4	2.2	45	24.3	0.41
Good	24	13.0	112	60.5		17	9.2	119	64.3	
TOTAL	21	11.4	164	88.6		21	11.4	164	88.6	

Source: Questionnaire applied to citizens of Trujillo

In Figure 1, preventive measures against COVID-19 pandemic among citizens of Trujillo-Peru are shown. The following results were obtained: washing hands frequently during food preparation (88%), after using the toilet (87%), avoiding leaving home (86%), eating homemade food (83%). It is important to note that 42% of people reported that they never separate utensils for eating, 14% never clean the soles of their shoes when they return home, and 11% do not wear masks when outside.

In Figure 2, we observe the preventive attitudes against COVID-19 among the citizens of Trujillo. We noted that 94% of these citizens agreed with the imposed social isolation considering that it is the best option to avoid spreading this virus; 90% are worried that a relative could be infected with the virus; however, 7% of citizens considered that it is an overstatement, that this disease will eventually be gone and 22% argued that this is simply a strong flu with treatment.
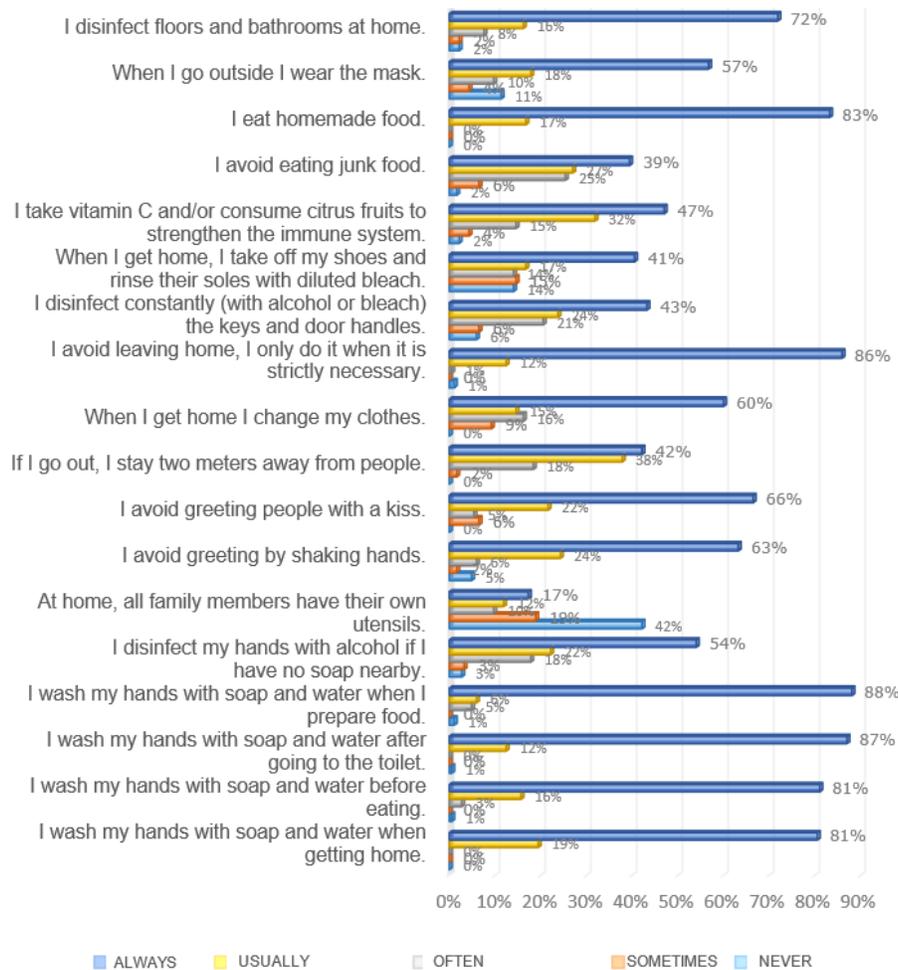
Figure 1. Preventive measures against COVID-19 in citizens of Trujillo-La Libertad, Peru. 2020.
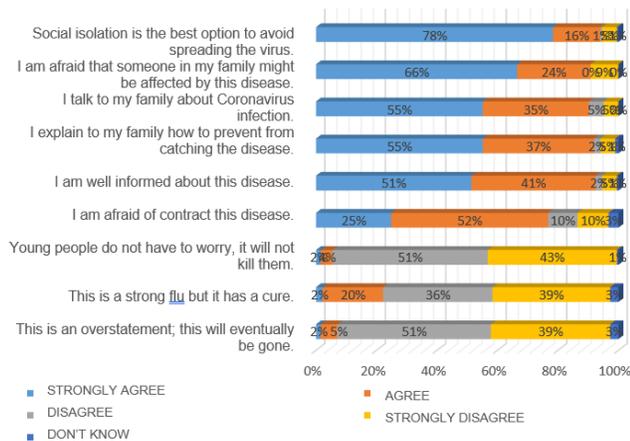

Figure 2. Preventive attitudes toward COVID-19 in citizens of Trujillo-La Libertad, Peru. 2020.
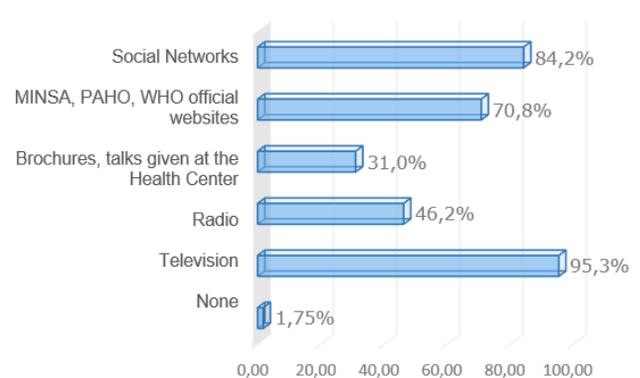

Figure 3. Media that provides information regarding COVID-19 in citizens of Trujillo-La Libertad, Peru. 2020.

In Figure 3, we observe that 95.3 % of citizens of Trujillo stated that the media that provides more information about COVID-19 is television; however, 1.75 % of them argued that they are not interested in being informed by any media.

DISCUSSION

The results of Table 1 indicate that the majority of citizens surveyed have appropriate preventive attitudes and measures; however, a significant percentage of citizens aged 18 to 29 have inappropriate preventive attitudes and measures (12.4 and 8.6% respectively). This result is similar to the study carried out on pilgrims during the annual Hajj journey, where women and older adults demonstrated more appropriate preventive attitudes and measures regarding MERS-CoV (16). We observe that a male person is more probable to have inappropriate preventive measures and attitudes. This confirms MINSA's reports since the greatest number of people infected are males (12), and that elderly people and males represent a population at risk of being infected with COVID 19(17).

The results in Table 2 confirm the relation among marital status and paternity with preventive attitudes and measures against COVID-19, revealing that a single person without children is more probable to have inappropriate preventive attitudes and measures. Furthermore, according to Figure 1, 14% of people never clean their shoes when getting inside their houses and 11% do not wear masks when going out. In Figure 2, we note concerning attitudes, that 7% of citizens stated that it is an overstatement, and this disease will eventually be gone; while 22% reported that this is simply a strong flu with treatment. Such attitudes and behaviors among the population is one of the causes of the high rate of transmission in the city of Trujillo.

A similar study demonstrates that even health professionals reported not wearing masks in crowded places in Saudi Arabia where the Middle East respiratory syndrome (MERS) started (18). Regardless of the situation, poor practices can result in the spreading of the infection within the community and increasing even more mortality and morbidity which could have happened at the beginning of the pandemic in our country. Proper use of masks and respirators are important for adequate protection; however, knowledge, training, and supervision are no less important (19).

The results in Table 3, regarded positively, reveal a similar situation compared to other countries such as India where participants reported a moderate level of knowledge about the transmission of COVID-19 and appropriate knowledge about preventive attitudes and measures; these are reflected in people's disposition to follow government instructions on quarantine and social distancing (20).

Also, in Figure 3 we can observe that 1.75% of citizens declared that they are not interested in being informed of this situation by any media; for this reason, many citizens do not follow government instructions and are unaware about the risk of this disease and as a result the number of infected people has increased, as with the Italian citizens where the lack of seriousness and severity of COVID-19 has caused a higher fatality rate than in China (21).

We can conclude that, among the biological factors, age and sex are related to preventive attitudes and measures against the pandemic, emphasizing that males are more likely to have inappropriate preventive measures.

Among the social factors, the marital status and paternity are related to the preventive attitudes and measures against the pandemic, pointing out that single people without children are the most vulnerable because of their inappropriate attitudes and measures.

Regarding the cultural factor, knowledge of COVID-19 and the preventive measures to be taken are related to the preventive measures against this disease.

Conflict of interest

No conflict of interest has arisen during the preparation of this paper by the authors.

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