



# The COVID-19 Pandemic: Public Knowledge, Attitudes and Practices in a central of Iran

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## ABSTRACT

**Aims** There is a rapid increase in the number of people infected with COVID-19 throughout the world. The present study aimed to determine people's knowledge, attitudes, and practices (KAP) regarding COVID-19 in an Iranian sample.

**Instruments & Methods** This was a population-based cross-sectional study conducted on people over 18 years of age in Saveh city, of Iran, in 2020. A multiple-stage sampling method was used. Participants (N=471) completed an anonymous and self-report questionnaire assessing socio-demographic variables and KAP. Data were analyzed using ANOVA and independent t-tests by SPSS 21. The significance level was considered to be  $\leq 0.05$ .

**Findings** Of participants, 74.5% did not have accurate knowledge of how the coronavirus is spread. In terms of attitudes, more than 63.2% considered COVID-19 to be a dangerous disease. About 59.6% of participants reported regular use of a mask in the past week. As compared to men, women reported attitudes and practices more aligned with recommended safety standards. Higher education level was significantly related to the mean KAP score ( $p < 0.05$ ).

**Conclusions** Although the sample evidenced appropriate attitudes and some safety practices in general, a significant percentage of individuals did not engage in protective behaviors.

**Keywords** COVID-19; Knowledge; Attitude; General Practice; Behavior

## CITATION LINKS

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## Introduction

Corona Virus Disease-2019 (COVID-19), caused by a new beta-coronavirus called SARS-CoV-2, started in China in late December 2019 and spread worldwide in less than four months [1, 2]. The World Health Organization (WHO) referred to COVID-19 as a pandemic on March 11, 2020, emphasizing the widespread prevalence of the disease [3]. Unlike patients with typical coronavirus infections, upper respiratory symptoms such as the runny nose and sore throat are less common in patients with this new coronavirus. Infection with the new coronavirus is accompanied by non-specific and general symptoms such as boredom, fatigue, body aches, fever, and dry cough at the preliminary stage [4]. The incubation period has been reported to be 2-10 days [3] and 2-14 days (Centers for Disease Control and Prevention) [5]. Around 81% of patients with new coronavirus show mild symptoms and recover at home; however, in 40% of cases, the sufferer shows severe symptoms, including pneumonia and shortness of breath, and in 5% of cases, the patient's condition worsens, leading to respiratory failure, infectious shock, and failure in other organs [5, 6]. Most patients who died had previous underlying diseases, such as tumors, cirrhosis, hypertension, coronary heart disease, diabetes, and human immunodeficiency virus [7, 8]. The mortality rate for COVID-19 is reported to be between 0.8-4.3% [6, 9].

The COVID-19 pandemic is considered by many to be the greatest challenge of the century to public health and the international economy, affecting oil markets as well as national and international policies [1, 10]. The greatest cost is in human life [11]. It appears that delays in diagnosis and lack of infection control methods at least in part led to the virus becoming a pandemic in a matter of months [12].

Governments, media outlets, doctors, researchers, celebrities, police, and other stakeholders in society have emphasized prevention methods such as avoiding travel and public gatherings (e.g., sports, religious ceremonies, family gatherings, school) [13, 14]. Despite these efforts, infection rates have grown, suggesting these messages have not been followed as needed to control infection [14]. Therefore, it is hypothesized that the public knowledge, attitudes, and practices (KAP) about methods of preventing COVID-19 are inappropriate and need to be improved [7, 15].

Currently, there is no cure or vaccine for COVID-19; hence, the best way to cope with COVID-19 is to prevent it. Several frameworks for health behavior exist, including but not limited to the Health Believe Model, Theories of Reasoned Action and Planned Behavior, Social Cognitive Theory, and Trans-Theoretical Model [16]. In many of these, knowledge and attitudes figure prominently in behavior change. Since public knowledge, attitudes, and safety practices (i.e., social distancing, proper hand-

washing, and face masks) are key elements in controlling the pandemic, the present study aimed to determine the knowledge, attitudes, and practices regarding COVID-19 in central of Iran.

## Instrument and Methods

The present cross-sectional study conducted on people over 18-years who were referring to the Health Care Center of Saveh city in 2020. The sample size needed to obtain effects was estimated at N=460 with the precision of 5%, confidence level of 95%, knowledge level of 56.5% based on a previous study [12]. To increase the study power and given the probable leaves, the sample size was increased by 10% so that 500 individuals were selected totally. Multi-stage sampling was performed, wherein Saveh city was divided into north, center, and south of the city to cover the population's cultural and social characteristics in these three different regions. Then, a Health Care Center was selected from each region using simple random sampling. From each Health Care Center file, 167 individuals were randomly selected for the invitation to participate in the study. Inclusion criteria included residence in Saveh city, being 18 years and older, and written informed consent. Exclusion criteria were the absence of written informed agreement in the study.

The questionnaire comprised the following sections: 1) Socio-demographic characteristics such as age, gender, education, marital status. 2) Knowledge questions with five items such as, "Only the elderly are at risk of contracting the COVID-19 disease". Each item was scored as Correct=2, I do not know=1, and Incorrect=0, with a total score ranging from 0 to 10 that higher scores indicated correct knowledge. 3) Attitude questions with seven items such as, "I do not believe in wearing a mask to protect against COVID-19". Each item was scored as I disagree=3, I have no idea=2, and I agree=1, with total attitude score ranging from 7 to 21. Some attitude items are reverse coding so that higher scores indicate attitudes more aligned with reducing the viral spread. 4) Practice questions assessed for the past week included seven items: "After touching surfaces, I wash my hands with soap and water for 20 seconds". Each item was scored on a 5-point Likert scale from Always=4 to Never=0. Scores ranged from 0 to 28, with higher scores indicating practices reducing the risk of viral spread. These questionnaires (KAP) are derived from the previous literature [7, 11, 12, 14]. KAP was validated using the content validity method with the assistance of 10 experts in health education, internal medicine, and infectious disease. The content validity indicator (CVI) and content validity ratio (CVR) were used to examine the content validity using quantitative methods. Experts were asked about each item's necessity or non-necessity to determine the CVI; any value greater than 0.62 was accepted according to the Lawshe Table [17]. Each item's relevance, clarity, and

simplicity were examined to determine the CVR and values greater than 0.79 were accepted [17]. The questionnaire's reliability was also measured by Cronbach's alpha method on 15 participants that were not later included in the main study. Cronbach alphas were 0.85, 0.82, and 0.78 for KAP questionnaires, respectively.

The Saveh University approved the ethical code of Medical Science. A researcher contacted individuals, the study purpose was explained, invited to participate, and then consented as relevant. Following consent, questionnaires were completed in person with a trained researcher. Data were collected using written anonymous and self-administered questionnaires for the literate and by interviews with trained teachers for the low-literate.

Data were analyzed by SPSS 21. The descriptive analysis was carried out for socio-demographics and KAP variables. One-way analysis of variance (ANOVA) and independent sample t-tests were used to compare differences in KAP scores by socio-demographic factors. A p-value under 0.05 was considered to indicate statistical significance.

### Findings

A total of 500 consented, and 471 participants completed the questionnaires. About one-third of

participants (31%) reported that one of their relatives had COVID-19, and N=23 reported that a relative had died of COVID-19. The majority of participants were male (52%). The mean±SD of age was 35.2±13.6 in men and 31.2±11.9 in women (Table 1). Women had attitudes and practice more aligned with reducing COVID-19 spread than men (p<0.05). Education had a significant relationship with KAP (p<0.05), with those graduating from a university having the highest scores. Married individuals had more knowledge and reported engaging in safer practices more frequently than single and divorced respondents (p<0.05). No differences were found for KAP by age (p>0.05).

More than 63.2% considered COVID-19 to be dangerous in terms of attitudes, 66% believed they might contract coronavirus if they were not careful, 69% were worried about their families and friends, 38.5% thought that disease and health are God-given (Table 3).

In terms of safety practices over the past week (Table 4), more than 70% of participants regularly washed hands, and 80.2% avoided shaking hands and kissing others. Rates were 63.9% and 59.6% for regular disinfectant use and regular use of a mask, respectively.

**Table 1)** Differences in KAP scores by socio-demographic group

Variable	N (%)	Subgroup mean score±SD		
		Knowledge	Attitudes	Practices
<b>Age</b>				
18-29	112 (23.7)	8.2±1.5	15.1±6.5	16.4±1.8
30-49	151 (32)	8.3±1.7	15.6±4.3	17.0±5.2
50-69	132 (28)	7.8±1.4	14.8±5.5	15.3±2.2
70≥	76 (16.1)	7.8±1.4	12.9±3.6	14.9±2.7
p-value	-	0.439	0.401	0.260
<b>Sex</b>				
Male	245 (52)	7.3±1.4	14.3±4.4	15.4±3.1
Female	226 (48)	7.5±1.5	15.6±4.3	16.4±2.6
p-value	-	0.378	0.051*	0.050*
<b>Education</b>				
Uneducated/Primary	50 (10.5)	6.5±1.8	12.5±2.8	13.8±5.2
Secondary	106 (22.5)	7.1±1.6	14.2±3.1	15.0±5.1
High school/diploma	230 (49)	7.3±1.2	15.2±2.8	17.5±3.6
University	85 (18)	8.7±1.5	16.1±4.2	18.7±3.1
p-value	-	0.040**	0.039**	0.006**
<b>Marital Status</b>				
Married	274 (58.2)	8.7±1.2	15.2±4.5	18.5±6.6
Divorced/Widow	18 (3.8)	7.5±1.2	14.2±2.5	13.5±4.2
Single	179 (38)	7.8±1.4	14.1±2.6	15.4±5.0
p-value	-	0.034**	0.745	0.050**

\* Independent t-tests; \*\* ANOVA

**Table 2)** Response of study participants to Covid-19 knowledge questions

Question (Correct Answer)	N (%)
1 Coronavirus can be lethal (yes)	410 (87)
2 Only the elderly are at risk of contracting the COVID-19 disease (no)	306 (65)
3 Some people with coronavirus have no specific symptoms (yes)	167 (35.5)
4 Washing hands with soap and water can be effective in preventing the COVID-19 disease transmission (yes)	386 (82)
5 Wearing a mask can be effective in preventing the COVID-19 disease transmission (yes)	387 (82.1)

Table 3) Response of study participants to COVID-19 attitude items

Statement	Number of Participants (%)		
	Agree	Uncertain	Disagree
I do not believe in wearing a mask to protect against COVID-19.	70 (15)	30 (6.5)	371 (78.8)
COVID-19 is a serious and dangerous disease.	298 (63.2)	97 (20.5)	76 (16.1)
I do not believe in washing hands to protect against COVID-19.	42 (8.9)	19 (4)	410 (87)
Health and disease are in God's hands. We cannot do much	181 (38.5)	80 (17)	210 (44.5)
If I do not pay attention to my behavior, I may get COVID-19 disease	310 (66)	63 (13.5)	98 (20.8)
I am worried about my family and friends getting COVID-19 disease	325 (69)	54 (11.4)	92 (19.5)
I do not need to wash my hands because I drink herbal teas	84 (17.8)	77 (16.5)	310 (65.8)

Table 4) Response of study participants to COVID-19 preventative practice questions

Question	Number of Participants (%)			
	Never	Rarely	Sometimes	Always
After touching surfaces, I wash my hands with soap and water for 20 seconds.	11 (2.3)	42 (8.9)	81 (17.0)	337 (71.5)
I cover my nose and mouth with a tissue during sneezing or coughing.	14 (3.0)	16 (3.5)	70 (14.8)	371 (78.7)
My family and I have stayed at home since the onset of the disease, and we only leave if necessary.	36 (7.6)	68 (14.4)	80 (17.0)	287 (61)
I avoided shaking hands/ or kissing others.	5 (1.0)	12 (2.5)	71 (15.2)	378 (80.2)
I use a face mask in crowds and public places.	55 (11.7)	58 (12.3)	77 (16.3)	281 (59.6)
I avoided eating non-homemade foods.	17 (3.6)	30 (6.3)	67 (14.2)	357 (75.7)
After surfaces were touched, I disinfected them.	21 (4.4)	65 (13.8)	84 (17.8)	301 (63.9)

Of participants, 74.5% did not have accurate knowledge about healthy coronavirus vectors. As shown in Table 2, most participants (82%) understood that wearing a mask and hand-washing effectively prevents coronavirus.

### Discussion

COVID 19 is a contagious and growing disease. This study aimed to determine people's awareness, attitude, and safety practices to reduce the spread of COVID-19. In brief, higher education level, being married, and being female were related to knowledge, attitudes, and/or practices that reduce the risk of spreading COVID-19; many persons did not have accurate knowledge of how the disease is spread, more than 60% were concerned about dangers of the virus, and about 60% or more practice some safety measures. Findings were consistent with previous studies in this area [12, 18, 19] but inconsistent with a study in Bangladesh, probably because the Bangladesh study was conducted early during the pandemic [20]. Consistent with at least one previous study conducted in the United States [11], better knowledge, practices, and more favorable attitudes were found with higher education levels. However, this was inconsistent with a study in Pakistan, possibly because the Pakistani study included many participants under 20 years of age [18]. Since public health measures are vital to timely control of the epidemic, appropriate KAP among people regarding COVID19 is important.

In the present study, as compared to men, women reported attitudes and practices that consistent with a reduced risk for spreading the disease. This is similar to other studies conducted in Pakistan and China favoring women outcomes [18, 21]. Several reasons may relate to this outcome for women, including women being more concerned with health than men [22] and cultural factors. Most Iranian

women are housewives and have more time to use educational tools and media, such as television, that provide programming related to COVID-19 and ways to prevent it. In the present study, married people had more knowledge and engaged in more safety practices than single and widowed/divorced people. In a study by Zhong *et al.* [21], married people also had better KAP than single people. Previous studies have confirmed a healthier lifestyle in married people [23, 24]. This may be due to married people caring more about their health than single and divorced people [25].

In the present study, respondents in the current study appeared to be more knowledgeable regarding COVID-19 than those in a study conducted in India [26]. That being said, most participants in the current study did not have accurate knowledge of how the virus is spread, which could play a very important role in containing the disease [7]. Therefore, it may be essential to conduct more public education and outreach regarding the transmission of the disease, including transmission by asymptomatic individuals. About 35% of the sample was unaware that persons other than the elderly are at risk of contracting COVID 19; hence, public education and outreach on the risk for all age groups seem necessary.

In terms of attitudes, more than 30% of the sample did not believe COVID-19 is dangerous and felt they did not need to engage in certain risk-reduction behaviors at times (i.e., washing hands because they drink herbal tea). In a study in Bangladesh [20], more than a third of respondents had less than optimal attitudes towards some protection strategies. Furthermore, more than a third of the sample believed that illness and death were in God's hands; in other words, the individuals had an external locus of control [27]. Therefore, outreach and education for the public on strategies they can use and that are effective to reduce this disease may encourage and



facilitate behaviors to reduce the viral spread in the population.

Evaluation of safety practices indicated that 41% of participants did not regularly wear masks in public places in the past week. The relatively poor practice of participants wearing masks, despite their good knowledge and attitude (about 80%) about the importance of masks, may be explained by the lack of masks and lack of access in the market. Consistent with our findings, a study in India [28] showed that half of the participants did not have access to masks. Because masks are particularly important in controlling the pandemic [29], health policymakers may be particularly interested in addressing masks' availability. Only 61% complied with home quarantining, probably because there were few restrictions on leaving home in Iran, and respondents needed to maintain their jobs. About a third of respondents did not properly disinfect hands or surfaces, perhaps due to lack of access to disinfectants. Given that human behavior is a powerful tool in managing the contagious diseases, it is essential to attend to access to masks and disinfectants, and to provide education and outreach on relevant safety practices.

The study used a cross-sectional design; thus, causal relationships cannot be inferred. Not all questionnaires were completed (5.8% were not completed). Despite these limitations, findings can inform the formulation of public education campaigns, and the loss of only 5.8% of respondents is more than acceptable.

Given the lack of knowledge for how the disease is spread, more educational interventions regarding COVID-19 are recommended, including protective practices to implement.

## Conclusion

In particular, key safety practices were not regularly utilized by a relatively large percentage of respondents (i.e., masks, hand-washing). The use of multifaceted educational interventions, legislation, health-promoting policies, and a robust public health campaign is needed to enhance public safety.

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