Research Article

Community Knowledge and Behavior About COVID-19 and Their Attitude Toward Public Policies Implemented Against This Pandemic in the Northwest of Iran

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Abstract

Background: The awareness of people's health knowledge and behavior on COVID-19 has helped education and health promotion policies, and examination of people's opinions on governance measures against this disease will guide policymakers in making more decisions and responsiveness.

Objectives: This study aimed to investigate people's knowledge and behaviors toward COVID-19 and their views on adopted public policies against this disease in Maragheh, a city in the Northwest of Iran.

Methods: This study was a cross-sectional, analytical study that was done in urban areas of Maragheh from 13 November to 20 December 2020. The sample size was estimated at 672 participants, and the sampling method was stratified random. The data collection instrument was a researcher-made questionnaire that consisted of four sections: demographic information, health behaviors, respondent's knowledge of COVID-19, and their viewpoints on adopted public policies against this disease and was shared online. The one-way ANOVA, Pearson correlation, and multiple regression were used to analyze data with SPSS version 23.

Results: The mean scores of people's knowledge (6.42 ± 1.2) out of 9 and health behaviors (34.8 ± 3.9) of 36 were moderate. The majority of respondents had high levels of knowledge and also behavior about keeping the physical distance (98.5%) and proper handwashing (97.9%). Knowledge ($\beta = 0.23$) and male ($\beta = -0.27$) were the predictors of health behaviors (P < 0.001, F = 12.47). The investigation of myths on COVID-19 indicated that 17% and 41.1% of the respondents believed that alcohol consumption and using garlic and herbal drinks are effective in the prevention and 57.7% of them believed that holding the breath for 10 seconds is a sign of being healthy. People's views on the COVID-19 control policies were assessed to be at the medium level (48.2 ± 7.5) of 65. The most effective policies against COVID-19 from the people's opinions consisted of lockdown policies (96.4%), schools' closure (95.9%), and constraints on intercity trips (91.3%).

Conclusions: It seems necessary to strengthen measures on health knowledge promotion and implementation of health education interventions on protective behaviors of COVID-19 in such a way that right beliefs are replaced with wrong ones. Based on positive public opinions on Lockdown interventions, re-applying these policies is recommended to get the cities out of the high-risk situation.

Keywords: Health Behavior, Health Knowledge, COVID-19, Health Governance

1. Background

With the rapid spread of COVID-19, on 30 January 2020, the world health organization declared the outbreak of novel coronavirus as a public health emergency of international concern (1). Given that vaccine is now available but is not enough for all populations, the best way is the implementation of preventive and protective behaviors on a personal level, which include hand hygiene, avoiding touching the face, covering the mouth and nose, keeping a physical distance from others, wearing mask, healthy lifestyle, etc. (2). The method of hygienic responses to the risk of this epidemic and people's health behaviors are definitely helpful in the reduction of disease spread (3).

Health behaviors are affected by health knowledge,

people's understanding of factors that affect health, and exchanging health knowledge to correct preventive behaviors (4, 5). Awareness of health behaviors and knowledge of a population can provide useful information to public health policymakers to guide health-promoting decisions and strategies in the community (6).

In Iran, the first cases of COVID-19 were seen and reported since the beginning of February 2020. Following the corona epidemic in the country, the headquarters of the national task force against coronavirus began working on designing and implementing strategies to combat this disease (7).

In Maragheh, a city in the Northwest of Iran, health public policies against COVID-19 were implemented following the national strategies. Some policies, including closures at the beginning of the outbreak in the city, which was accompanied by the Iranian national holiday, led to a decrease in the number of cases until mid-May, but with the lifting of restrictions and reopenings, an increase in morbidity and mortality happened to the extent that Maragheh has been introduced as one of the most dangerous cities in the country in terms of the spread of the disease. So, it seems important for policymakers and managers to be aware of people's opinions on the public policies against COVID-19 because it will be helpful for responsiveness of governance to the public and implementing more effective policies.

2. Objectives

Also, investigating people's knowledge and behaviors toward COVID-19 could be useful in designing and implementing health promotion interventions by community health policymakers.

3. Methods

This cross-sectional, analytical study aimed to assess people's health knowledge and behaviors as well as their viewpoints on the public policies toward COVID-19 containment in urban areas of Maragheh. Maragheh is a city in the south of East Azerbaijan province with an urban population of 177,079 in the time span of one month (November 13-December 20). The sample size was estimated at 672 participants by Cochran formula (z = 1.96, d = 0.02). The stratified random sampling method was used based on regional postal codes. First, 15 out of 31 postal districts were selected randomly from suburbs (low income) and other areas. Then it was examined that these 15 districts include approximately 50% of the total urban area population, and

this 50% included the population of suburbs and other areas. Since this study was online and there was a low probability of answering the questionnaire, the link of the questionnaire was sent to a larger number of people so that the response rate to the questionnaire would be at the desired level.

Then the questionnaire link was sent to 10% of the mobile numbers of each postal district via short message services. For this purpose, the dedicated short message services of the Maragheh County Governor's Office were used along with social networks (WhatsApp and Telegram). The main inclusion criterion was being above 16 years old and informed consent was obtained via a web-based question before a response to the questionnaire.

The data collection instrument was a researcher-made questionnaire, which was designed by reviewing valid scientific references of health behaviors toward COVID-19 prevention and considering the policies and strategies formulated by the National and County Headquarters for COVID-19 control. The questionnaire consisted of four sections, the first of which includes a respondent's demographic information (nine items). The second and third sections address a respondent's knowledge of COVID-19 (Nine items) and health behaviors (Nine items), respectively. Finally, the fourth section includes some items on the public viewpoints of the policies adopted by the state to control COVID-19 (Thirteen items). The knowledge items were on a three-point scale ("yes", "no", and "I do not know"), and a multiple-choice item was designed to question COVID-19 symptoms. The health behaviors items were designed on a five-point Likert scale ("always", "often", "sometimes", "rarely", and "never"), whereas the items were designed on another five-point Likert scale ("totally agree", "agree", "no idea", "disagree", and "totally disagree") in the fourth section to assess opinions of the public on the state policies toward COVID-19 control. Since the questionnaire is a researcher-made, scoring the various dimensions of the questionnaire was conducted based on the decision of the research team. Also, the opinion of experts involved in determining the validity of the questionnaire was considered in this regard. The minimum mean score of eight shows a high level of knowledge, whereas scores between six and seven indicate a medium level of knowledge, and scores below six demonstrate poor levels of knowledge. Regarding the health behaviors items, scores above 36 show favorable, whereas scores between 27 and 36 indicate medium levels of behavior, and scores below 27 demonstrate unfavorable behavior.

According to the method of scoring people's opinions on the policies adopted by the state, scores between 52 and 65 indicate favorable viewpoints, whereas scores between 39 and 52 show medium viewpoints, and scores be-

low 39 demonstrate poor viewpoints on COVID-19 control policies. The validity of the questionnaire was confirmed with an experts' panel of 10 health professionals. The reliability of the questionnaire about questions with Likert scale was estimated at 0.72 through Cronbach's alpha (attitude about policies: 0.82 and behavior: 0.71), and about yes/no questions such as knowledge was estimated 0.70 through Kuder-Richardson. The descriptive data of health knowledge and behavior and moreover, the viewpoints of the study population were presented on tables and diagrams of descriptive statistics, frequency, and percentage frequency at a confidence interval of 95%. The one-way ANOVA and the independent T-test were conducted to determine the relationship of each variable (i.e., knowledge, behavior, and viewpoint) with the demographic and socioeconomic characteristics of the participants. Furthermore, the Pearson correlation coefficient was employed to determine the correlation between the health behavior and knowledge score, and the stepwise multiple regression method was used to determine the predictors of behavior. There are three methods in Multiple Linear regression, including forward selection, backward elimination, and stepwise regression. In fact, stepwise regression is a combination of the backward and forward selection (8).

Ethical Approval: This study was approved by the Ethics Committee of Maragheh University of Medical Sciences (ethics code: IR.MARAGHEHPHC.REC.1399.005).

4. Results

In this study, 584 people answered the questionnaire, and the response rate was at the desired level (86.9%). The mean scores of people's health knowledge (6.42 ± 1.2) of 9, health behavior (34.8 ± 3.9) of 36, and viewpoints on COVID-19 control policies (48.2 ± 7.5) of 65 were assessed at a medium level. Moreover, 53.9% of the respondents were female, and 77.1% were married. The majority of the respondents aged 35 - 45 (33.4%) and 25 - 35 (32.9%) years old, respectively. Most of the participants had bachelor of science degrees (39.4%), master of science degrees (20.4%), and high-school degrees (19.3%). Considering job position; 20.9% were laborers, 16.3% were employed in the public sector, and 24.7% stated nothing about their job position.

The monthly household expenditures of half of the participants (50.3%) were estimated at 10 - 30 million Rials, whereas the household size included three members (36.5%) and four members (28.4%) mostly. The majority of the respondents had high levels of knowledge, especially about keeping the physical distance (98.5%), washing the hands correctly (97.9%), and cooking animal products well (96.6%). Knowledge about wearing the mask and gloves was indicated in 89% of respondents (Table 1). Also, 17% of

the respondents believed that alcoholic drinks could affect the prevention of COVID-19. Moreover, 41.1% of the respondents believed that the use of garlic and herbal drinks affects the prevention of this disease. More than half of the respondents (57.7%) believed that the ability to hold breath for 10 seconds was a sign of being healthy.

The most important symptoms, based on participants' views, were fever (93.3%), cough (93%), and dyspnea (80.7%) (Figure 1). More than 80% of the participants reported that they always kept some protective behaviors, including avoidance of suspicious people (86.1%), proper washing of hands (81.5%). Wearing masks and gloves and washing the hands repeatedly were always undertaken by 46.2% and 44.7% of respondents, respectively (Table 2).

Based on the results, 96.4%, 95.9%, 91.3%, and 81.6% of the respondents believed that lockdown policies, schools' closure, constraints on intercity trips, and teleworking policies were effective in the prevention of COVID-19 (Table 3). During this study, half of the respondents (50.6%) believed that protective equipment was unavailable and not purchasable. There was no significant relationship between people's knowledge and their demographic characteristics, except educational level that was the only socioeconomic variable having a significant relationship with health knowledge, and the participants with PhD and higher degrees had significantly higher scores of knowledge (P = 0.02). Moreover, women's health behavior scores were significantly higher than men's scores (P < 0.001); however, health behavior had no significant association with marital status, age, and socioeconomic variables.

The results demonstrated that women's viewpoint scores on COVID-19 containment policies (P < 0.001) were higher than men's scores. Moreover, the viewpoints of married participants (P < 0.001) were higher than single individuals. The age group 55 - 65 had more favorable viewpoints than the age group 16 - 25 (P = 0.04). The participants with PhD and bachelor of science degrees had significantly lower scores than the participants with associate's degrees (P = 0.02). In addition, laborers had significantly better viewpoints about policies than public employees (P = 0.04). There was a direct correlation between knowledge and health behavior toward COVID-19 (r = 0.27, P < 0.001). As we presented in Table 4, knowledge (β = 0.23) and male gender (β = -0.27) were the predictors of health behavior toward COVID-19 (P < 0.001, F = 12.47).

5. Discussion

The study indicated medium levels of health knowledge and health behaviors among people. Furthermore, from their perspective, the public policies on COVID-19 control were assessed at the medium level. Although the

Table 1. Frequency Distribution of Items on Participants' Knowledge About COVID-19 [a]

Items	Yes	No/I Do Not Know
Is it essential to keep a physical distance from others?	575 (98.5)	9 (1.5)
Does wearing a face mask or gloves affect the protection from the coronavirus?	520 (89.0)	64 (11.0)
Can touching the face before washing the hands make you contract the virus?	548 (93.8)	36 (6.2)
Is it advisable to cook animal products well to prevent the COVID-19?	564 (96.6)	20 (3.4)
Is it essential to wash the hands completely with soap accurately for 20 seconds?	572 (97.9)	12 (2.1)

[a] Values are expressed as No. (%).
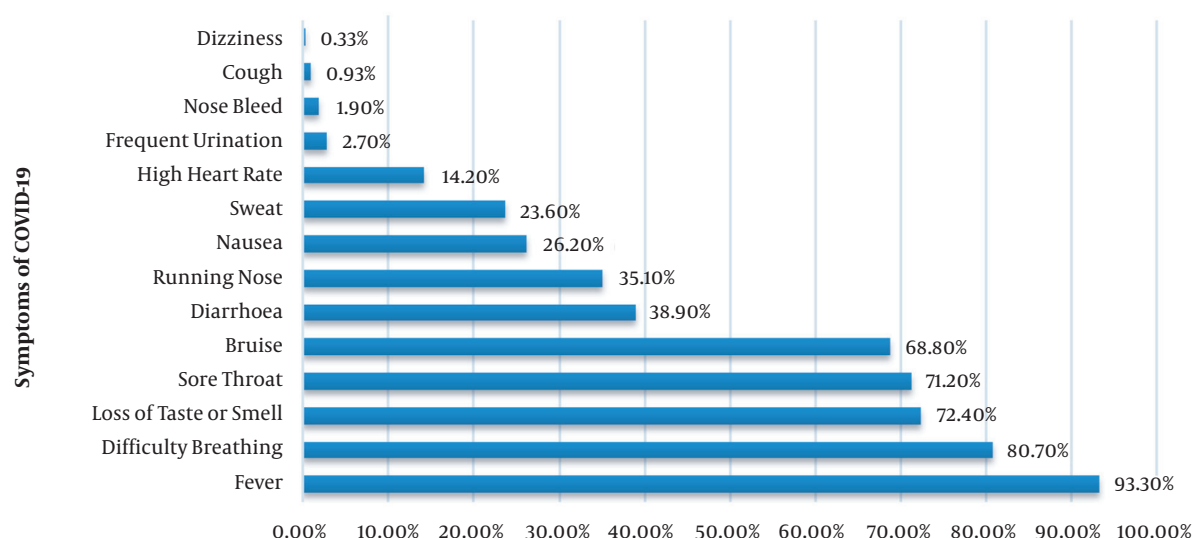
Figure 1. Frequency distribution of participants' responses on the type of symptoms of COVID-19.

Table 2. Frequency of Undertaking Protective Behaviors of COVID-19 by Participants [a]

Items	Always	Often	Sometime	Rarely	Never
Correct handwashing after any contamination	476 (81.5)	94 (16.1)	12 (2.1)	2 (0.3)	0 (0)
Washing the hands repeatedly	261 (44.7)	206 (35.3)	82 (14)	27 (4.6)	8 (1.4)
Leaving home only if necessary	320 (54.8)	188 (32.2)	46 (7.9)	19 (3.3)	11 (1.9)
Keeping physical distance	352 (60.3)	188 (32.2)	31 (5.3)	12 (2.1)	1 (0.2)
Wearing face masks and gloves outdoor	270 (46.2)	137 (23.5)	74 (12.7)	53 (9.1)	50 (8.6)
Not washing the hands after coming home because of using gloves	27 (4.6)	36 (6.2)	47 (8)	104 (17.8)	370 (63.4)
Avoidance of suspicious people	503 (86.1)	63 (10.8)	12 (2.1)	3 (0.5)	3 (0.5)
Less use of public transportation	401 (68.7)	64 (11)	15 (2.6)	24 (4.1)	80 (13.7)
Using tissue or arm while coughing or sneezing	4 (0.7)	499 (85.4)	63 (10.8)	13 (2.2)	5 (0.9)

[a] Values are expressed as No. (%).

general knowledge of COVID-19 was assessed at a medium level, there were some false notions among people, and nearly half of the people believed that the use of garlic and herbal drinks is effective in the prevention of COVID-19, while their preventive effects have not been confirmed by scientific evidence (9, 10). Similar to our study, in Jordan and Nigeria, nearly half of the respondents believed that honey, ginger drinks, garlic, and local soups are helpful in

Table 3. Frequency Distribution of Items for People's Opinions on the Policies Adopted by the State Against COVID-19

Items	Totally Agree and Agree	No Idea	Disagree and Totally Disagree
Measures against COVID-19 are based on scientific principles and evidence	360 (61.6)	138 (23.6)	86 (14.7)
Accurate and well-timed implementation of country macro policies	271 (46.4)	172 (29.5)	141 (24.2)
The effectiveness of teleworking policies	477 (81.6)	69 (11.8)	38 (6.5)
The effectiveness of closure of high-risk syndicates	563 (96.4)	11 (1.9)	10 (1.7)
coordination between institutions and organizations at the county level	267 (45.7)	200 (34.2)	117 (20.1)
Implementation of proper strategies to deal with the socioeconomic harms by the responsible institutions	236 (40.4)	152 (26.0)	196 (33.5)
The existence of adequate equipment in healthcare centers	198 (33.9)	220 (37.7)	166 (28.5)
Availability and affordability of personal protective facilities	197 (33.8)	91 (15.6)	296 (50.6)
The positive effect of school's closure	560 (95.9)	13 (2.2)	11 (1.9)
Adopting the essential policies for long-term control of the COVID-19	297 (50.9)	178 (30.5)	109 (18.7)
The positive effect of disinfection of busy public pathway	464 (79.4)	71 (12.2)	49 (8.4)
Correct management of public, voluntary and charitable donations	259 (44.4)	216 (37.0)	109 (18.7)
Positive impacts of travel restrictions	533 (91.3)	36 (6.2)	15 (2.6)

Table 4. The Results of Stepwise Multiple Regression Analysis to Determine the Predictors of Health Behaviors of COVID-19[a]

Predictor Variables	B	SE	Beta	T	P
Constant	36.5	1.43		25.4	< 0.001
Health knowledge	0.757	0.12	0.23	6.02	< 0.001
Gender (ref: Female)	-2.09	0.30	-0.27	-6.8	< 0.001
Marital status (ref: Single)	-0.03	0.40	-0.003	-0.07	0.94
Age	0.256	0.15	0.077	1.69	0.09
Educational level (ref: High school)	0.1	0.12	0.035	0.82	0.41
Employment status (ref: Governmental position)	-0.03	0.04	-0.03	-0.77	0.44
Monthly household expenditures (ref: Less than 1 million)	-0.05	0.19	-0.11	-0.26	0.78
Household size	-0.017	0.28	-0.17	-0.42	0.67

[a] ADJ.R2 = 0.385; R^2 = 0.136; R = 0.148.

the prevention of COVID-19 (11, 12). As well as in the US and England, 10% of the respondents believed that garlic is useful (13).

Our study showed that nearly 20% of the participants believed that alcoholic drinks are effective in the prevention of COVID-19; however, according to the WHO, alcoholic drinks do not act as a preventive factor and can even be dangerous (14). Our results emphasize that health education interventions should focus on the replacement of myths with correct beliefs in Maragheh. In this study, 89% of the respondents had knowledge about the necessity of wearing masks. In another study, 82% of Iranian students stated this necessity (15). The difference in the results of these two studies could be due to the fact that the second study was conducted at the beginning of the COVID-19 epidemic when the emphasis on wearing masks for the public

was low. The necessity of wearing masks was reported by nearly 75% in the US and 70% in England (13).

Regarding people's knowledge of COVID-19 symptoms, this study indicated that cough, fever, and dyspnea were the most prevalent reported symptoms. These results are consistent with other studies (13, 16). More than half of the respondents declared that the ability to hold breath for 10 seconds, as mentioned in some social networks in Iran, is one of the important signs of being healthy. Hence, it is essential to raise people's alertness to the unreliability of inaccurate news and information. According to the results, there was no significant relationship between health knowledge and demographic characteristics, and only respondents with a PhD degree had higher levels of health knowledge. In this regard, the results of similar studies in Egypt, the US, and China were consistent with our study (17-

19).

This study indicated people's health behavior at an average level. In a study of Iranian medical students, their knowledge and behavior on COVID-19 were evaluated at high levels (15). Apparently, this difference is expected because medical students have more knowledge about the nature of the disease. In this study, washing the hands repeatedly and wearing masks and gloves as permanent behaviors have been reported less than other behaviors. Regarding mask-wearing, a number of studies contradicted our research results (19, 20); however, all or most of the people were not in the habit of wearing masks in Iraqi Kurdistan (6).

Given the fact that the respondents in this study had relatively high levels of knowledge about wearing masks and gloves, health promotion interventions should focus on turning knowledge into protective measures. In our study, more than 10% of the respondents reported that there was no need to wash hands while wearing gloves, a finding that shows the false trust in gloves was considered a protective tool and the necessity of improving the public awareness of the correct use of protective tools.

In this study, women's health behavior was higher than men. Similarly, in Italy women had significantly higher levels of health knowledge and behavior compared to men (20). Previous studies indicated that different factors such as old age, femininity, and higher educations correlated with higher probabilities of adopting protective measures (21). According to our results, people's knowledge predicted health behavior. In the US and China, protective behaviors are directly correlated with health knowledge (19).

In this study the policies were adopted for social and physical distancing, closure of syndicates and schools, constraints on intercity trips, and teleworking were evaluated effective more than other policies. Accordingly, the results of this study were consistent with those of other studies; for instance, policies on quarantining, all of those arriving from other countries, constraints on all air trips, and prohibition of any gatherings were considered effective interventions by the people in England and the US (5, 13, 22).

In the current study, the participants believed that it was essential to improve the coordination between different public institutions to contain COVID-19 and implement systematic strategies to deal with the social harms.

In general, serious challenges to COVID-19 control policies in Iran include the insufficiency of the whole-government and whole-society approach to crisis management and delay in decisive governance (23). By contrast, in a few countries such as Norway where the COVID-19 crisis was managed successfully, the evidence indicated that the crisis management required both governance capacity and policymaking potential (24). A collaborative decision-making style can be beneficial with a background of high social trust among citizens through the involvement of all stakeholders and participation of governmental players and citizens (24). Moreover, Taiwan managed to contain COVID-19 by using a collaborative governance model in comparison with similar countries (25). South Korea succeeded in containing the spread of the coronavirus by identifying, quarantining, and tracing infected and exposed cases actively, transparency in the presentation of up-to-date statistics on death, and voluntary participation of the public and without applying any strict policies (26).

Based on the results of this study, people believe that it is essential to procure adequate equipment for the treatment of patients at healthcare centers and formulate responsive policies on the long-term control of COVID-19. It appears necessary to take the needed governance actions on the procurement and availability of personal protective equipment (27).

5.1. Limitations

This study had potential limitations. First, although we tried to include all individuals from different sociodemographic groups in our sample population, it may not be representative of the whole society. Second, it was possible that participants looked up the answers to some questions online before answering, which might cause bias in the results (28). Third, there was the likelihood of sending a questionnaire to two phone numbers of one person. Forth, we could not check what percentage of responders in each zone have filled the questionnaire. lastly, not all of the population of the city (or the population over 16 years old according to the inclusion criteria) had access to a mobile phone, but due to the need to conduct the online study during the conditions of Coronavirus, there was no better way to collect data.

5.2. Conclusions

During conducting this research, Maragheh was one of the 43 cities in the country with a very dangerous situation; so considering the moderate level of health knowledge and behavior, increasing knowledge level and correcting the wrong opinions of people should be considered in health education interventions in the community. It is also important to strengthen regulatory levers to evaluate the implementation of health protocols by the syndicate. Furthermore, some policies such as the closure of high-risk syndicates and travel restrictions can be re-implemented because they are more effective strategies based on public opinions so will be more acceptable throughout the community.

Acknowledgments

Footnotes

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