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The Comparison of Health-Related Behaviors in Individuals with and Without COVID-19

Zeinab Sharifipour Chokami[1*], Arefeh Hamideh Moghadam[2], Abbas Abolghasemi[3]

Abstract

Objective: According to the importance of health precautions and preventive behaviors against COVID-19, the present study aimed to compare health-related behaviors in individuals with and without COVID-19.

Method: This study was causal-comparative and descriptive. The sample of the study was 30 persons with a history of COVID-19 infection and 61 normal individuals who were selected from men and women in Rasht through convenience sampling in 2021. To collect data, the Clark et al.'s Compliance Behaviors Against COVID-19 Questionnaire (2020) was used.

Results: The results of multivariate analysis of variance showed that there were differences in health-related behaviors among individuals with and without COVID-19. In other words, the mean score of Perceived Invulnerability was higher in individuals with COVID-19 and Health Precautions and Health Importance in them were less than normal individuals.

Conclusion: These findings indicate that there are gaps in health behaviors related to the COVID-19 area and awareness in this area can have a positive effect on the quality of health-related behaviors.

Keywords: COVID-19, Compliance behaviors, Coping, Health behaviors, Pandemic.

Introduction

The coronavirus disease is transmitted between animals and humans. The dangerous feature of COVID-19 is the high speed of transmission that can occur by close contacts, respiratory droplets, and touching contaminated surfaces. The incubation period of this virus is unclear and is estimated at 1-14 days with an average of 5 days before symptoms appearance (Carter & Notter, 2020). During the outbreak of Covid-19, the number of people infected with the Coronavirus and the resulting deaths in Iran, per one million population, was significantly higher than the global average, which is influenced by several factors, including lifestyle and behavior (Afrooz, 2021). Since preventive behaviors were known as the best way to control the outbreak, there is great value in identifying ways that might exacerbate compliance which could contribute greatly to the development of more effective health planning (Alizadehfard & Alipor, 2021).

Adapting the lifestyle to the quarantine conditions was a difficult obstacle for citizens, for example, the stress caused by this outbreak negatively affected family and social communications. Families with an infected member experience more difficult and stressful situations (Ma, Li, Deng, Wang, Wang, et al, 2020; Guan, Ni, Hu, Liang, Ou et al, 2020). The physical and social effects of the COVID-19 outbreak are associated with psychological conditions that obviously cause damages in this context and more than 55 percent of survivors have symptoms of depression, anxiety, and post-traumatic

1.Master student of general psychology, University of Guilan, Rasht, Iran.
2. Master student of general psychology, University of Guilan, Rasht, Iran.
3. Professor of psychology, University of Guilan, Rasht, Iran.
*Corresponding Author: Zeinab Sharifipour Chokami, Email: vsharifi8878 @ gmail.com.

stress disorders (Mazza, Lorenzo, Conte, Poletti, Vai, et al, 2020). The experiences of patients during the disease are prominent reasons for a high level of depression in them. The prevalence of depression in these patients is estimated about 50 percent higher than the normal population (Ma et al., 2020). Also, more than 90 percent of the infected group confirm that they were anxious and worried during the disease (Sahoo, Mehra, Suri, Malhotra, Yaddanapudi, et al, 2020).

Using health-related behaviors is one of the most important ways to prevent infection. A significant barrier to ineffective medical treatment is patient failure to follow the recommendations which can often be misunderstood, forgotten, or even completely ignored (DiMatteo, 2004, as cited in Martin, Williams, Haskard & Dimatteo, 2005). The assessment of disease severity would be determined by its medical consequences (eg, death, disability, and pain) and possible social consequences (eg., losing job, family life, and social relationships), which can predict patient action toward the disease (Janz & Becker, 1984). Failure to follow health recommendations has a negative impact on health and often exacerbates the need for more health care (Carmody & et al., 2019, McGrady & Hommel, 2013). The Health Belief Model hypothesizes that six constructs predict health behavior: risk susceptibility, risk severity, benefits to action, barriers to action, self-efficacy, and cues to action (Rosenstock, 1974, Jones, Jensen, Scherr, Brown, Christy & Weaver, 2015). During the outbreak of COVID-19, Clark & et al (2020) presented a set of health-related behaviors against the virus based on this Model, which includes rule-following behavior, engagement in protective health behaviors, tendencies to give others health recommendations, perceived invulnerability to COVID-19, disruptive of infecting by COVID-19, personal Health Importance, beliefs about whether behavioral Health Precautions are effective & trust in government regarding COVID-19. Fear of COVID-19 may cause individuals to behave inappropriately (lin, 2020). When a serious threat, like an illness, occurs, people get scared. Fear makes them take any action to reduce it. If they believe that they can respond effectively to a threat, they remain motivated to control the risk and consciously think about ways to eliminate or reduce the threat. But when they doubt whether the recommended answer is effective or whether they are able to do it, they are just motivated to control the fear, because they believe that trying to control the risk is useless, so they eliminate their fear through denial (for example, “It will not happen to me”), avoidance defense (for example, “This is too scary, I can’t think about it”) or reactance (for example, “they are just trying to control me, I ignore them”), therefore, when individuals are unable to control their fears, they defensively resist against preventive behaviors (Witte & Allen, 2000). Patients with COVID-19 are treated in incomplete quarantine, loneliness and social isolation provoke depression (Li, Yang, Liu, Zhao, Zhang & et al, 2020), which is a bad prognosis for patients (Leonard, 2001). Patients with depression may have a negative attitude toward treatment, so their adherence to treatment and their recovery, both during and after treatment get affected, also evidence indicated that patients can experience persistent depression even after recovering from an infectious disease (Wu, Chan & Ma, 2005).

Yang et al (2020), examined the health-seeking behaviors of patients with acute respiratory infections during the outbreak of COVID-19 and found that there is no significant difference in health search behaviors between men and women but children sought medical help more than others. Tian et al (2020) analyzed the health-seeking behavior of discharged patients with COVID-19 infection and found that health-seeking behavior can significantly affect the duration between the first hospital visit and

confirmed diagnosis and between symptoms onset and confirmed diagnosis or hospitalization. Meng et al (2016) found that women, adults with diabetes, and those with symptoms of cough, shortness of breath, and runny nose were more likely to seek medical advice and healthcare-seeking behavior. Lau et al (2005) found in a study, those who were concerned about having SARS also had better health-seeking behaviors. Lu et al (2003) found that preventive and caring behaviors such as wearing a mask, washing hands, and disinfecting the living space increased sharply during the SARS outbreak in Hong Kong. Naghizadeh et al (2019) in their study aiming to compare health-promoting lifestyles in females with and without primary dysmenorrhea found that the total score of health-promoting lifestyle in females with dysmenorrhea was lower than those without dysmenorrhea.

Overall, given the high prevalence of COVID-19 and the importance of health-related behaviors in controlling the disease, in order to save human lives in the first place and secondly to avoid increasing financial, there is a need to examine the quality of preventive and health-related behaviors among individuals. Also, research records in comparing individuals who have experienced the disease with the ones without it are very few and have contradictory results, also it hasn't been studied in Iran. So, this study aimed to compare health-related behaviors in individuals with and without COVID-19.

Method

This research was causal-comparative. Infection of COVID-19 is considered an independent variable and precaution behaviors are considered as the dependent variables. According to the continuous red condition in Guilan, we asked Rasht citizens through online invitations in Rasht public Instagram pages to participate in our research and answer the questions truly and carefully. The questions were uploaded in a research link. The sample consisted of 30 individuals with a history of COVID-19 infection and 61 individuals without it that were chosen by convenience sampling from 530 adults who live in Rasht in 2021. Data were analyzed by multivariate analysis of variance. Entrance conditions were being in the research population and satisfaction of participation to participate in the study, and exclusion criteria were lack of cooperation, answering imperfectly, and answering by chance.

Ethical statement

Ethical considerations were completely considered in this research and participants were assured that their information will be confidential. Voluntary participation and anonymity were emphasized. No identity information was requested and they completed the online questionnaire by satisfaction.

Measures

The following tool was used to collect data:

Compliance behaviors against COVID-19 questionnaire: The compliance behaviors against COVID-19 questionnaire was developed by Clark et al. (2020). The questionnaire has 32 items that report various attitudes, beliefs, and behaviors related to COVID-19 on 1-5 scales from strongly disagree to strongly agree. This questionnaire has 8 subscales which include rule-following behavior, engagement in protective health behaviors, tendencies to give others health recommendations, perceived invulnerability to covid-19, disruptivity of getting covid-19, personal health importance, beliefs about whether behavioral health precautions are effective, and trust in government regarding covid-19. In Clark's et al.'s study, Cronbach's alpha of these subscales were 0.66, 0.65, 0.82, 0.68, 0.85, 0.74, 0.72, and 0.29, respectively (Clark et al., 2020). In the present study, the reliability coefficient of this questionnaire was 0.79. Also, the correlation coefficient between this questionnaire and the life

satisfaction scale of Diner et al. was 0.34 (p<0.001).

Results

The first group consisted of 30 participants infected by COVID-19 and the second group consisted of 61 healthy participants in this study. The average age of both groups was 31. The first group consisted of 24 females and 6 males whose education level was under 10% high school, 30% high school graduation, 50% bachelor, and 10% master. Among them, 46/7% were unemployed and 53/3% were employed. The second group consisted of 47 females and 14 males whose education level was 3/3% under high school, 21/3% high school graduated, 39/3% bachelor, 32/8% master, and 3/3% Ph.D. level. Among them, 50/8% were unemployed and 49/2% were employed. Table 1 shows the mean and standard deviation of health-related behaviors in these groups.

Before using multivariate analysis of variance, Bartlett's Sphericity and Levene's tests were implemented for the statistical assumption. According to the significant output of Bartlett's Test of Sphericity, the associations were enough and this assumption was confirmed (x2= 217/78, df= 35, p= 0/000). Levene's test was not significant, so the assumption of equal intergroup variances was approved for all health-related behaviors.

Table 1. mean and standard deviation of health-related behaviors in individuals with and without COVID-19

variable	With COVID-19		Without COVID-19	
	M	SD	M	SD
Government trust	12/20	2/41	13/34	2/72
Disruptivity	18/43	2/01	17/30	3/17
Health importance	14/27	1/26	15/03	1/83
Invulnerability	11/30	3/82	9/31	2/55
Effectiveness of health procedures	22/60	2/70	23/56	2/01
Rule following	11/70	2/89	13/07	3/29
Health precautions	17/83	1/93	18/75	1/74
Giving health advice	21/37	4/41	21/80	2/97

Table 2. Results of MANOVA significance test for health-related behaviors in individuals with and without COVID 19

Test		value	F	sig	Partial eta squared
group	Pillai's Trace	0/206	2/653	0/012	0/206
	Wilk's Lambda	0/794	2/653	0/012	0/206
	Hotelling's Trace	0/259	2/653	0/012	0/206
	Roy's Largest Root	0/259	2/653	0/012	0/206

According to table 2, linear composition is significant at least for one of health-related behaviors (Wilk's Lambda= 0/794, F= 2/653, p< 0/05) and there is significant difference between groups. Totally, 20/6 percent of health-related behaviors variance is specified by group differences.

According to the results of multivariate analysis of variance of health-related behaviors in table 3, there

Table 3. Results of multivariate analysis of variance of health-related behaviors in individuals with and without COVID 19

variable	SS	Df	MS	F	Sig	Eta	Observed Power
Government trust	26/33	1	26/33	3/83	0/05	0/041	0/490
Disruptivity	26/06	1	26/06	3/21	0/07	0/035	0/426
Health importance	11/80	1	11/80	4/27	0/04	0/046	0/534
Invulnerability	79/52	1	79/52	8/72	0/004	0/089	0/832
Effectiveness of health procedures	18/43	1	18/43	3/61	0/06	0/039	0/468
Rule following	37/50	1	37/50	3/75	0/056	0/040	0/482
Health precautions	17/05	1	17/05	5/24	0/02	0/056	0/620
Giving health advice	3/83	1	3/83	0/31	0/57	0/004	0/086

is a significant difference between groups in health importance, invulnerability, and health precautions. The perceived invulnerability score in individuals with COVID 19 is higher than individuals without it and health precautions and health importance scores in individuals without COVID 19 is higher than individuals with it and they specified 8/9, 5/6, and 4/6 percent of the intergroup difference. The other health-related behaviors do not show a significant difference between groups, but according to the scores, individuals without COVID 19 use health behaviors more than individuals without it.

Discussion and Conclusion

This study investigated the comparison of health-related behaviors in individuals with and without Covid-19. The results showed that perceived invulnerability was higher in people with Covid-19, and health precautions and health importance in them is less than healthy people. So far, no study has compared this behavior between people with and without Covid-19, but in general, the results of this study were not consistent with existing studies such as Meng et al. (2016) and Lou et al. (2005) that examined the behavior of patients or people who were concerned about getting infected during other epidemics, but the research of Naghizadeh et al. (2019) confirms the result of the present study.

When human beings perceive a serious threat such as an epidemic outbreak, the initial reaction to it is fear. While the recommended strategies for avoiding risk are not reassuring or implemented for everyone, individuals focus on eliminating their fear through denial, avoidance defense, or reactance, assuming that controlling the dangerous condition is useless. In fact, when individuals fail to control danger, they defensively resist preventive behaviors by denying the situation (Witte & Allen, 2000). According to the Health Beliefs Model, a person is not expected to take health action in a threatening situation unless he or she thinks it is practical and effective. Individuals with a history of COVID-19 may have got the disease despite using health-related behaviors, so their belief in the effectiveness of these measures has diminished, it means, they concluded that the main factor controlling their health is not their actions and their health is under control of external factors; therefore, they do not feel responsible for their health, so they are not committed to hygiene items.

This model also considers the perceived seriousness of the threat by the individual as another important factor in health-related behaviors. It seems, since individuals with a history of COVID-19 recovered from the illness once, they feel less threatened by the virus, so they might care less about health precautions and preventive measures than others.

A high level of invulnerability in this group can represent the imagination of not getting infected again, which means they think because of the first infection, they become immune, so they take fewer health precautions than others. This can happen because of inadequate health information giving, not seeking health precautions by the patients and misunderstanding about the information.

Another factor that can play a role in lowering health precautions and the importance of health in individuals with a history of COVID-19 is that loneliness and forced social isolation provoke depression in them (Li, Yang, Liu, Zhao, Zhang & et al., 2020), which is a bad prognosis for patients (Leonard, 2001) because patients with depression may have a negative attitude toward treatment, and as a result, their adherence to health precautions during and after treatment will be affected, also after treatment of the disease, they can experience .(persistent depression (Wu, Chan, & Ma, 2005

Infection by COVID-19 usually causes hospitalization, uncertain cure, and physical weaknesses. In addition to these factors, being alone in the treatment period and a sense of guilt about increasing the danger of disease for others can restrict interpersonal relations and it can make the patients more depressed and hopeless to do the hygiene items.

The mean score of the effectiveness of health procedures, rule-following, and government trust in the infected group by COVID-19 was lower than the healthy group but the results of statistical tests do not show a significant difference. The lack of significant difference can represent general distrust inability of controlling this outbreak by utilizing personal and social precautionary activities. The mean of disruptive in individuals with infection experience is more than individuals without it but there is no statistical significance too because the outbreak of COVID-19 is a general experience that involved the whole world; the patients by considering their experience and healthy individuals by seeing the condition of infected ones can understand the disruptive of infection by this virus. The rate of giving health advice is so close in both groups that show everybody has a high motivation of protecting beloved persons.

Some limitations of this research consisted of online performance and the impossibility of using direct methods and not considering control variables like the experience of hospitalization and rate of health behaviors before the COVID-19 outbreak. So we recommend researchers consider control and mediator variables. According to a decrease in health activities after infection, it is necessary that health workers warn individuals about the continuous risk even after infection to prevent misunderstanding in health recommendations.

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