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ORIGINAL ARTICLE

Moral Decision-Making in Healthcare and Medical Professions During the COVID-19 Pandemic

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Abstract

With the coronavirus disease 2019 (COVID-19) outbreak, healthcare and medical professions face challenging situations. The high number of COVID-19 infected patients, scarce resources, and being vulnerable to the infection are among the reasons that may influence clinicians' moral decision-making. Furthermore, healthcare workers may be carriers of coronavirus, resulting in their social interactions to involve moral decision-making. This study aimed to investigate the effect of working in the frontline on psychological and cognitive factors and how these factors influence moral decision-making in clinicians during the pandemic. Further, we evaluated the impact of these factors on compliance with social distancing. Clinicians who worked in hospitals allocated to coronavirus disease patients participated in our study. We designed an online survey containing eight dilemmas to test moral decision-making in clinicians. Information on clinicians' behavior and psychological state during the COVID-19 pandemic including the degree of respect to social distancing, sources of stress, and dead cases of COVID-19 they confronted with were collected. First, the relation between these measures and moral decision-making was assessed. Next, we used multiple regression analysis to evaluate the degree to which these factors can predict variances in morality. Based on our results, clinicians' most important source of stress was the infection of their families. Stress, estimated chance of self-infection, job satisfaction, and age predicted utilitarian behavior among them. Moreover, age, number of death cases of COVID-19 they confronted, perceived risk of infection, and stress were positively correlated to compliance with social distancing. Our results have critical implications in implementing policies for healthcare principals.

Keywords Moral decision-making · Compliance with social distancing · COVID-19 · Healthcare workers · Infection · Stress

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On March 11, 2020, the World Health Organization (WHO) announced the coronavirus disease 2019 (COVID-19) outbreak a pandemic (WHO, 2020). By the end of April 2020, 94,640 COVID-19 cases with more than 6000 deaths have been reported in Iran. The spread of COVID-19 has globally posed crucial challenges for healthcare providers, including clinicians who work in hospitals (Shao et al., 2020). Since medical institutes are faced with many patients, clinicians are challenging with scarce resources, including a shortage in Intensive Care Unit (ICU) beds, ventilators, and medicines for treatment (Mannelli & Mannelli, 2020). This puts many patients at risk of not receiving prompt and sufficient health services in countries such as Italy (Remuzzi & Remuzzi, 2020), Brazil (Castro et al., 2020), South Korea (NPR, 2020), and Iran (Takian et al., 2020). Therefore, healthcare providers face a challenging situation in making decisions on how to allocate key equipment to care for the admitted patients. Clinicians and policy-makers might find themselves in a situation that they have to categorically exclude patients from access to critical care resources (White & Lo, 2020). Many critical moral decisions should be made by the clinical staff during the pandemic period, either in their workplace or daily social life. In the medical context, the moral dilemma appears when the unknown feature of coronavirus disease plus the numerous infected patients lead medical staff to act challengingly for patients' lives, while they are at high risk of infection (Gao et al., 2020; Lan et al., 2020). On the other hand, their social interactions with their family members bring up the concern of carrying infection home to their families. Therefore, interacting with others is also a hard moral decision for clinicians (Jeffrey, 2020; McConnell, 2020; Parsons & Johal, 2020).

Moral decision-making is a procedure in which we evaluate our own or other peoples' actions based on norms and values (Heekeren et al., 2005; Kohlberg, 1974). Moral decisions are challenging and conflicting because they contain choosing between two undesirable alternatives with aversive outcomes (Mazza et al., 2020; Sinnott-Armstrong, 1987; Tasso et al., 2017). To study moral decision-making, moral dilemmas are widely used in cognitive science. Moral dilemma is a situation in which one must choose between two values or principles that conflict. For instance, in response to a moral dilemma scenario, one could sacrifice the life of a human to save the lives of four or five other people (utilitarian response) or not taking any action, resulting in the death of all (deontological response). According to the deontology principle, a harmful action is forbidden and immoral regardless of its result, while on the other hand, the utilitarian principle determines the morality of action regarding its result (Conway and Gawronski 2013). Several theories have been presented to explain the individual differences in moral decision-making. The dual-process model of decision-making indicates that affective and cognitive processes both contribute to moral judgments (Greene, 2007, 2009; Greene et al., 2001). If the automatic affective processes and emotional responses become dominant in the procedure of the decision-making, deontological judgment would probably take place. However, if the more controlled cognitive processes lead the decider to choose for greater goods, utilitarian moral judgment would occur. Cushman (Cushman, 2013) proposed an alternative characterization of this system, in which allocating value to the consequence of an action or to the action itself are the two processes of the dual system.

These two processes lead to utilitarian and deontological moral judgments, consequently. Finally, moral dilemmas have been classified based on different characteristics in cognitive neuroscience. The directness of the harm that would lead to the death of an individual distinguishes dilemmas in terms of being personal or impersonal (Christensen & Gomila, 2012; Greene et al., 2001; Moore et al. 2008). In personal moral dilemmas, serious harm is implemented directly by the agent's personal force to the body of a person or a group of persons. Importantly, the harm does not result from deflection of an existing threat from one person or group to another. On the other hand, dilemmas that do not meet these criteria (e.g., involving indirect harm) are categorized as impersonal. More emotional processes are triggered in personal dilemmas, compared to impersonal dilemmas (Greene, 2009; Greene et al., 2001; Moore et al., 2011).

Clinicians' decision-making during the COVID-19 pandemic is similar to judgment in a conflicting moral dilemma, where the probability of costs and benefits of the decision is also important (Wynne et al., 2020). For instance, it might be difficult to allocate critical care aids to an old patient, while due to shortage, five other young patients will remain on the waiting list. In this case, the old patient may have a 50% probability of survival, while the other five patients have a higher survival chance with the same need. Besides, a shorter hospital stay is expected for younger patients infected with COVID-19, which increases the chance to provide resources for a greater population and saving more lives.

Deciding in moral situations is stressful, and stress itself alters moral judgment (Singer et al., 2017; Starcke et al., 2012; Youssef et al., 2012; Zhang et al., 2018). Stress and concerns related to the ethical aspects of practice and professional duties among healthcare and medical workers are defined as moral distress (Epstein and Hamric, 2009; Varcoe et al., 2012). Moral distress is caused by a discrepancy between moral values and one's actions that occurred due to conditional constraints (Epstein & Hamric, 2009). COVID-19 challenges have led clinicians to experience moral distress to a great degree, mainly due to important practice changes during this period (Cacchione, 2020; Dunham et al., 2020; Kok et al., 2020). Given the importance of decision-making in morally distressing circumstances like the COVID-19 pandemic, one study found more utilitarian behavior for solving incidental dilemmas among healthcare providers (Mazza et al., 2020). Results in non-healthcare workers approved greater utilitarian decisions during the COVID-19 pandemic as well (Schiffer et al. 2021). Moreover, the importance of moral decision-making in the COVID-19 crisis has become so necessary that the Australian and New Zealand Intensive Care Society (ANZICS) established guiding principles for clinicians (Warrillow et al., 2020).

In addition to moral distress, clinicians experience many other stressors during the COVID-19 pandemic (Adams & Walls, 2020; Zhang et al., 2020). Working in the frontline of a completely new condition, witnessing the death of several patients, lack of personal protective equipment, high risk of being infected by the coronavirus, and therefore infecting close others (Chen et al., 2020; Liu et al., 2020; Mukhtar, 2020) affect clinicians' mental health and influence the affective and cognitive processes, important for the decision-making. Previous studies during the SARS outbreaks have also shown the high level of psychological distress, job stress,

burnout, or even feeling scrutinized and stigmatization among the frontline workers (Koh et al., 2005; Maunder, 2004).

Making moral decisions in the context of healthcare is not the only challenging situation that healthcare workers deal with during COVID-19 pandemic. Many social behaviors are affected during the pandemic (Bavel et al., 2020), and therefore, making decisions that were simple in the past becomes very hard. For instance, deciding whether to visit the family members is a tough decision for a physician who has spent a shift last night in the coronavirus ICU. The utilitarian or deontological attitude toward moral dilemmas that medical staff deal with on a daily basis could potentially affect their daily social behaviors. The costs of moral decisions for someone's life might influence clinicians' considerations in social moral decisions, such as respecting the social distance. Moreover, previous studies have shown that factors such as empathy (Pfattheicher et al., 2020), mood (Marot et al., 2021), self-construal style (Galang et al., 2021), and rationality (Zirenko et al. 2021) may influence the level of compliance with social distancing. On the other hand, excessive exposure to death, stressful situations, burnout, and sleep disorders may affect these factors in healthcare workers (Barello et al., 2020; Kannampallil et al., 2020; Seo et al., 2020). Hence, the challenging situation caused by COVID-19 pandemic may affect the level of compliance with social distancing in frontline workers.

The current study aimed to investigate moral decision-making in clinical staff during the COVID-19 pandemic. We were interested to see how the unusual experiences caused by working in the frontline of health services against COVID-19 (i.e., infection of self and family members to COVID-19 and confronting excessive deaths of COVID-19 patients), psychological (i.e., stress and job satisfaction), and cognitive (i.e., perceived risk of infection) factors interact with each other and then influence the utilitarian behavior in clinicians. Next, we aimed to evaluate whether these factors could also affect compliance with social distancing which is another type of moral decision that is taking place in social context. To this end, we asked medical and healthcare staff to fill in a questionnaire in which eight moral dilemmas were described to examine their moral decision-making. Besides, they were asked to report the extent to which they adhere to social distancing rules. We also assessed several factors, such as the number of death cases of COVID-19 they have encountered, degree of stress, infection of the self or family members, perceived risk of infection, and job satisfaction. We examined the correlation between these factors and then used them to predict moral decision-making and compliance with social distancing in frontline workers.

Materials and Methods

Participants

Participants were healthcare and medical staff working in the main educational hospitals of Tehran, exclusively allocated to COVID-19 patients. A total of 100 healthcare workers were invited to participate in this study through an online snowball sampling procedure. Ninety-eight participants completely filled the questionnaires.

Among the total number of participants, 20 of them who reported not to be currently involved in the treatment of COVID-19 patients were excluded. The final sample included 49 females, with age range of 23 to 50 (M = 29.96, SD = 6.13). Among them, 28 (35.9%) were married, and 50 (64.1%) were single, 11 (14.1%) lived alone, 36 (46.2%) lived with parents, 23 (29.5%) with spouse, and 8 (10.3%) others with roommate. Comprehensive information is presented in Table 1.

Procedure and Survey Questionnaire

Data collection was carried out using an online platform in 2020 from April 5 to 7, during the COVID-19 pandemic, nationwide outbreak, and one month after the New Year's holidays in Iran. Each participant received a link to the platform. It is worth noting that the total number of COVID-19 deaths in Iran was 92 at the start of data collection, which rose to 145 on the final day of data collection. (New cases of COVID-19 at April 5 = 2483; COVID-19 deaths at April 5 = 151; new cases of COVID-19 at April 6 = 2274; COVID-19 deaths at April 6 = 136; new cases of COVID-19 at April 7 = 2089; COVID-19 deaths at April 7 = 133; Worldometer [2020]). The official advice was to stay at home; use face masks in public places; maintain a 2-m distance from others at all times; avoid touching eyes, mouse, and nose; and wash hands immediately after arriving home.

The questionnaire comprised of (a) consent form; (b) demographic information (age, sex, marriage status, education, who they live with, and their job); (c) work-related questions (whether they are directly involved in the treatment of COVID-19 patients, the number of death cases of COVID-19 they confronted with, and job satisfaction); (d) respecting social distancing (the extent to which they maintain 2-m social distance rule); (e) infection (self-infection, infection of a family member, estimated chance of infection within a month, estimated chance of infection of a family member within a month); (f) level of stress during the COVID-19 pandemic; and (g) moral decision-making.

Job satisfaction was assessed with a single item ("Overall how satisfied are you with your job during the pandemic?"), and participants responded to the question on an 11-point scale (0 = extremely dissatisfied to 10 = extremely satisfied). Similarly, participants reported the level of stress they have experienced during the COVID-19 pandemic on an 11-point scale (0 = extremely low to 10 = extremely high). Further, participants were asked to estimate the probability that they/one of their family members would get infected by COVID-19 within the next month. They answered the question on an 11-point scale ranging from 0 to 100 with steps of 10. Items are presented in Table 1.

Moral Dilemma Scenarios

Among the scenarios used in previous studies (Christensen et al., 2014), four scenarios were extracted. The background of studying medical ethics courses in educated healthcare workers may affect their response to scenarios taking place in hospitals. These led us to discard hospital scenarios. Finally, four scenarios of "helicopter,"

Table 1 Descriptive report of the results

Question	Answer	*n* (%)
Age M (SD)	29.96 (6.13)	78 (100)
Sex	Male	29 (37.2)
	Female	49 (62.8)
Marital status	Single	50 (64.1)
	Married	28 (35.9)
Live	Alone	11 (14.1)
	With parents	36 (46.2)
	With spouse	23 (29.5)
	With roommate	8 (10.3)
Job	Doctor	57 (73.1)
	Nurse	21 (26.9)
Have you confronted with the death of COVID-19 patients?	No	26 (33.3)
	Yes, 3 or less	24 (30.8)
	Yes, 4–10 cases	12 (15.4)
	Yes, more than 10 cases	16 (20.5)
When going out, to what extent you do keep the 2-m distancing rule?	Never	1 (1.3)
	Very rare	0 (0)
	Rare	7 (9)
	Often	13 (16.7)
	Very often	38 (48.7)
	Always	19 (24.4)
Self-infected	No	53 (67.9)
	Yes	5 (6.4)
	I think that I have infected by COVID-19, but I did not do testing	20 (25.6)
Family member infected	Yes	9 (11.5)
	No	69 (88.5)
Estimate the probability of being infected to COVID-19 during next month M (SD)	38.85 (30.28)	78 (100)
Estimate the probability that one of your family members would infected with COVID-19 during next month M (SD)	31.92 (22.28)	78 (100)
Stress experienced during the COVID-19 pandemic M (SD)	5.19 (2.84)	78 (100)
The main source of stress	Self-infection	2 (2.6)
	Infection of a family member	68 (87.1)
	Job condition	8 (10.3)
Job satisfaction during the COVID-19 pandemic M (SD)	7.13 (2.76)	78 (100)

"motorcyclist," "iceberg," and "bus driver" were chosen, where both personal and impersonal forms of scenarios were included. Each scenario was presented in three paragraphs. The first paragraph described a situation in which several persons would die if no action is taken (deontological response; e.g., during a bike week, a biker up front you is going to crash, and as a result, a large pile-up would occur and a group of bikers behind you will die). The second paragraph presented an action that the participant can take, which results in the death of one while saving the lives of others (utilitarian response; e.g., "If you force this biker off the road he will crash into the trees, but you will prevent the pile-up. At your current speed, this will kill him, but you will save the group of ten riders."). In the last paragraph, the participant was asked to choose between two choices (e.g., "Do you prevent the large pile-up by forcing this biker off the road, in order to impede that the group of ten bikers crash into him?"). The total sum of utilitarian responses was used as a measure of utilitarian behavior. In addition to the total sum, utilitarian responses to personal and impersonal scenarios were separately summed up to form utilitarian responses in different types of scenarios.

Ethical Aspects

This study was approved by the Ethical Committee of the Shahid Beheshti University. Informed consent was also obtained from individual participants through the online platform used in this study.

Statistical Analysis

Pearson correlation was used to evaluate the relation between continuous variables. Besides, to compare groups based on sex and infection, a *t*-test was used. Then, a multiple regression analysis was performed, with age, sex perceived chance of self-infection and perceived chance of infection of a family member, stress, and job satisfaction as predictors of the utilitarian behavior. A second multiple regression was also done to predict compliance with social distancing. In this case, utilitarian behavior was also added to the regressors. Regressions were done using a backward method. The normality of measures was evaluated using Kolmogorov–Smirnov. The residual scatter plot was checked to ensure Homoscedasticity and linearity. Multicollinearity was checked using variance inflation factor (VIF) and tolerance level, where a score of below one or above four is considered problematic. All statistical analyses were performed using SPSS 25.

Results

Descriptive Statistics

Among 78 participants, 53 (68%) were not infected by COVID-19, 5 (6.4%) were infected, and 20 others (25.6%) thought to be infected but they were not tested.

Besides, 69 (88.5%) reported that no one in their family was infected, and nine others (11.5%) reported that at least one of their family members is infected. Sixty-eight (87.1%) participants reported that infection of a family member is the main source of their stress. Job condition was the main source of stress in eight (10.3%) participants, and only two (2.6%) reported self-infection as the main source of stress (Table 1).

Age and Sex

In comparison to males, females reported more stress during the COVID-19 pandemic ($t(76) = 3.88$, $p < 0.001$), higher respect of 2-m social distancing rule ($t(76) = 2.12$, $p = 0.04$), and less job satisfaction ($t(76) = 2.02$, $p = 0.05$) (Table 2). However, no significant correlation was found between age and other variables (Table 3).

Infection and Effects of Being in the Frontline

Assessing the effect of working at the frontline on social (i.e., compliance with social distancing), psychological (i.e., stress and job satisfaction), and cognitive factors (i.e., perceived risk of infection), we found that confronting more death cases of COVID-19 is positively correlated with a higher estimated chance of infection ($r(76) = 0.225$, $p = 0.048$) and more stress ($r(76) = 0.315$, $p = 0.005$). In addition, those who were infected in the past, or thought to be infected, reported less stress ($t(76) = 2.079$, $p = 0.041$) (Table 4). Not surprisingly, a higher estimation of the probability of infection in the future was positively correlated with more stress, ($r(76) = 0.373$, $p = 0.001$). Results are presented in Table 3.

Moral Decision-Making

Utilitarian response in healthcare and medical staff was positively correlated with the number of dead cases of COVID-19 they confronted with ($r(76) = 0.269$, $p = 0.017$), the estimated probability of infection ($r(76) = 0.312$, $p = 0.005$), and the stress level during the COVID-19 pandemic ($r(76) = 0.32$, $p = 0.004$). These findings were consistent irrespective of dilemma types (i.e., personal vs. impersonal). Detailed results are presented in Table 3. Finally, in line with expectations, utilitarian response in impersonal scenarios (48%) were significantly higher compared to the personal scenarios (38%) ($t(77) = 3.913$, $p < 0.001$) (Fig. 1).

Prediction of Morality

Backward multiple regression analysis was used to find the best model that predicts utilitarian behavior. Results showed that age ($\beta = 0.226$, $p = 0.033$), estimated chance of self-infection ($\beta = 0.246$, $p = 0.030$), stress ($\beta = 0.219$, $p = 0.053$), and job satisfaction ($\beta = -0.202$, $p = 0.055$) significantly predict the utilitarian behavior in healthcare workers ($F(4,73) = 5.37$, $p < 0.001$). Similar results were

Table 2 Sex differences in response to COVID-19 pandemic

Measures	Male	Female	$T_{(df = 191)}$	*p*	*Cohen's d*
Estimated chance of self-infection in future	38.28 [26.86, 49.69]	39.18 [30.35, 48.01]	-.127	.899	0.12
Estimated chance of infection of a family member in future	33.79 [25.02, 42.56]	30.82 [24.51, 37.13]	.568	.572	0.132
Stress experienced during the COVID-19 pandemic	3.79 [2.98, 4.61]	6.02 [5.19, 6.85]	-3.883	$<.001$	0.876
Job Satisfaction during the COVID-19 pandemic	7.90 [6.99, 6.80]	6.67 [5.85, 7.50]	2.025	.047	0.465
Two-meter distance	3.52 [3.07, 3.97]	4.04 [3.81, 4.27]	-2.119	.040	0.517

Table 3 Correlation between the study variables

Measure	1	2	3	4	5	6	7	8	9	8
1. Age	-	.082	-.074	-.190	.046	.104	.197	.187	.188	.159
2. Number of dead cases of COVID-19 confronted with		-	.225*	.065	.315**	-.135	.269*	.249*	.264*	.232*
3. Estimated chance of self-infection in future			-	.521***	.373**	-.008	.312**	.288**	.308**	.029
4. Estimated chance of infection of a family member in future				-	.197	.002	.086	.021	.141	-.081
5. Stress experienced during the COVID-19 pandemic					-	.007	.320**	.270*	.338**	.272*
6. Job Satisfaction during the COVID-19 pandemic						-	-.179	-.182	-.159	-.084
7. Utilitarian behavior							-	.951***	.956***	.042
8. Utilitarian behavior in personal scenarios								-	.819***	.044
9. Utilitarian behavior in impersonal scenarios									-	.036
8. Two-meter distancing										-

Notes: *$p < .05$; **$p < .01$; ***$p < .001$

Table 4 Comparison of infected and not infected healthcare workers

Measures	Infected	Not infected	$T_{(df = 76)}$	p	*Cohen's d*
Estimated chance of self-infection in future	41.13 [33.32, 48.94]	34.00 [19.90, 48.10]	.970	.335	0.227
Estimated chance of infection of a family member in future	31.70 [25.64, 37.76]	32.40 [22.77, 42.03]	-.129	.898	0.003
Stress experienced during the COVID-19 pandemic	5.64 [4.87, 6.41]	4.24 [3.11, 5.37]	2.079	.041	0.506
Job satisfaction during the COVID-19 pandemic	6.91 [6.12, 7.69]	7.60 [6.55, 8.65]	-1.039	.302	0.255
Two-meter distance	4.04 [3.82, 4.26]	3.44 [2.95, 3.93]	2.603	.011	0.589

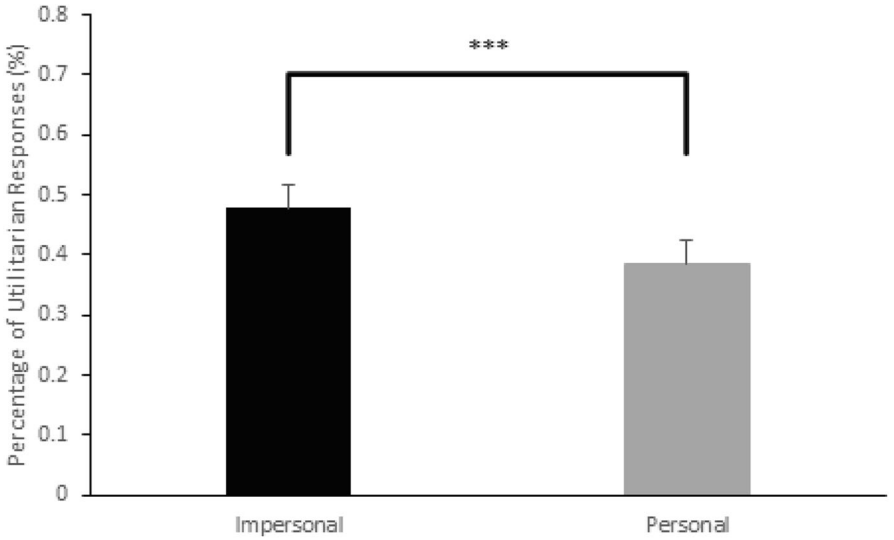

Fig. 1 Utilitarian responses to impersonal and personal scenarios. ***$p < .001$

also found when utilitarian response to impersonal moral dilemma scenarios was used as the dependent variable. Age ($\beta = 0.213$, $p = 0.045$), estimated chance of self-infection ($\beta = 0.231$, $p = 0.042$), stress ($\beta = 0.243$, $p = 0.032$), and job satisfaction ($\beta = -0.181$, $p = 0.085$) significantly predicted the utilitarian behavior in impersonal scenarios ($F(4,73) = 5.22$, $p = 0.001$). Next, utilitarian responses to personal scenarios were used as dependent variable, and age ($\beta = 0.231$, $p = 0.034$), estimated chance of self-infection ($\beta = 0.303$, $p = 0.006$), and job satisfaction ($\beta = -0.204$, $p = 0.060$) significantly predicted this variable ($F(3,74) = 4.96$, $p = 0.003$). Tables 5, 6, and 7 present a summary of the regression models and the coefficients for the final model.

Table 5 Coefficients of the regression model to predict utilitarian behavior

Variable	B	β	T	*p*
Age	.098	.226	2.17	.033
Estimated chance of self-infection in future	.022	.246	2.21	.030
Stress experienced during the COVID-19 pandemic	.205	.219	1.97	.053
Job satisfaction during the COVID-19 pandemic	-.194	-.202	-1.95	.055
R^2			.227	
Adjusted R^2			.185	
F (*df*)			5.37 (4.73)	
p			< .001	

Table 6 Coefficients of the regression model to predict utilitarian behavior in impersonal scenarios

Variable	B	β	T	*p*
Age	.012	.213	2.04	.045
Estimated chance of self-infection in future	.003	.231	2.07	.042
Stress experienced during the COVID-19 pandemic	.031	.243	2.18	.032
Job Satisfaction during the COVID-19 pandemic	-.023	-.181	-1.75	.085
R^2			.223	
Adjusted R^2			.180	
F (*df*)			5.22 (4.73)	
P			< .001	

Table 7 Coefficients of the regression model to predict utilitarian behavior in personal scenarios

Variable	B	β	T	*p*
Age	.013	.231	2.16	.034
Estimated chance of self-infection in future	.003	.303	2.85	.006
Job satisfaction during the COVID-19 pandemic	-.025	-.204	-1.91	.060
R^2			.168	
Adjusted R^2			.134	
F (*df*)			4.96 (3.74)	
P			.003	

Compliance with Social Distancing

Those who were confronted with more dead cases of COVID-19 reported higher degree of compliance with social distancing ($r(76)=0.232$, $p=0.041$). On the other hand, those who were infected in the past or thought to be infected reported a lower level of respecting the 2-m distancing ($t(76)=2.603$, $p=0.011$) (Table 4).

Prediction of Compliance with Social Distancing

Using a backward multiple regression analysis, we found that stress ($\beta=0.272$, $p=0.016$) solely predicted compliance with social distancing ($F(1,76)=6.68$, $p=0.016$) (Table 8).

Table 8 Coefficients of the regression model to predict compliance with social distancing

Variable	B	β	T	*p*
Stress	.094	.272	2.463	.016
R^2			.074	
Adjusted R^2			.062	
F (*df*)			6.68 (1.76)	
p			.016	

Discussion

Healthcare and medical workers have been facing hard challenges since the COVID-19 pandemic was initiated. The uncertainty and novelty of the situation, plus the limited number of equipment and scarce resources, relative to the great number of patients, places the world's healthcare and medical staff in a conflicting moral condition (O'Byrne, 2020). A situation in which saving the lives of patients with different health conditions could be a matter of prioritizing and selection. In addition to the workplace, several decisions in their daily social life should also be taken in morally conflicting situations (Lietz et al., 2016). For instance, after a night shift in ICU for COVID-19 patients, they should decide to go home and visit their family or isolate themselves and stay alone. Working in the frontline and being exposed to the infection put them at risk of getting infected and spreading the infection to their family members (Baker et al., 2020). Therefore, they must choose between depriving themselves of seeing close family members or putting them at an increased risk of infection (Dunn et al., 2020; Jeffrey, 2020; McConnell, 2020). Besides, clinicians face death and suffering of patients with COVID-19, which can result in several psychological symptoms like stress, numbness, and fear (Chew et al., 2020; Li et al., 2020), influencing their moral decision-making. In the current study, we first explored the relation between psychological and work-related factors related to the COVID-19 pandemic and stress among clinicians. Next, we explored the extent to which these factors can predict moral decision-making and social distancing in healthcare workers.

Our results showed that during the COVID-19 pandemic, the most important source of stress in clinicians is the infection of their family members, and this stress level was increased as the number of encountered death cases of COVID-19 incremented. It is not surprising that the increasing number of mortality cases due to COVID-19 was related to more stress in clinicians. Previous research demonstrated that the amount of time clinicians spend on treating a dying patient is an important source of emotional, physical, and cognitive stress (Jedlicska et al., 2019; Redinbaugh et al., 2003).

Using multiple regression analysis, utilitarian responses were predicted by estimated probability of self-infection, the level of stress, age, and job satisfaction. This indicated that the fear of being infected and sacrificed to treat others makes the clinicians more outcome-oriented. Moreover, clinicians of higher age ranges valued utilitarian solutions to attain greater goods. Previous findings also revealed that age

influences moral decisions through increased functional coupling in brain areas related to emotion and cognition (Decety et al., 2012; Rosen et al., 2016; However, see Arutyunova et al., 2016).

Interestingly, utilitarian behavior was predicted by lower job satisfaction. Considering the fact that clinicians' job entails putting themselves at risk to save the lives of others, this finding was to be expected. Satisfaction in such a situation entails a higher degree of empathy, prosocial behavior, and self-sacrifice, factors that are related to the lower level of utilitarian behavior (Gleichgerrcht & Young, 2013; Patil & Silani, 2014). Yet, this finding has important implications. Previous studies have stressed the influence of moral injury on the commitment and efficacy of frontline workers (Chirico et al., 2020; Greenberg et al., 2020). Moreover, Yücel (2012) has shown the direct effect of job satisfaction on organizational commitment. Hence, our finding necessitates the continuous monitoring of job satisfaction among clinicians during the COVID-19 pandemic. The decrement in job satisfaction not only does affect the psychological well-being of healthcare workers but also influences their morality and may lead to moral injury.

Stress was also among the significant predictors in two of the regression models (regression models with total utilitarian response and utilitarian response in impersonal scenarios). Although stress was not remained in the regression model to predict utilitarian response in personal scenarios, they were significantly correlated. Irrespective of the dilemma type, clinicians' utilitarian behavior increased as their stress leveled up. On the contrary, previous studies have shown the opposite (Starcke et al., 2012; Youssef et al., 2012). However, an important difference should be noted between our study and the previous ones. In previous studies, the Trier Social Stress Test (TSST) is used to induce stress, which causes an acute type of stress. Nevertheless, the type of stress that healthcare and medical workers experience is more of a chronic type of stress (Bavel et al., 2020). Evidence from the SARS pandemic also endorses that healthcare workers experienced long-term pandemic related stress (Maunder et al., 2006, 2008). In fact, the stress that clinicians face each day during the COVID-19 pandemic is different from laboratory-induced stress in nature, and therefore this leads to divergent responses (Pattyn et al., 2010). Facing patients' death, witnessing the death of co-workers, fear of infecting close family members, and high risk of self-infection are all disturbing long-term stressors that clinicians are exposed to.

The utilitarian responses were raised as a function of enhanced anticipation of self-infection. This finding revealed that clinicians who perceived a higher degree of risk tended to be more utilitarian and appreciate maximizing more lives, demonstrating that failure in saving the lives of COVID-19 patients leads medical staff to endorse harmful actions that raise greater goods (Greene 2007). Similarly, the number of encountered death patients was correlated with utilitarian behavior. Yet this was not selected in the final regression model. Although we did not test this hypothesis, encountering more deaths may lead to enhanced anticipation of self-infection and stress, while these two result in more utilitarian behavior.

Concerning social distancing, our results also showed that the level of stress predicts compliance with the 2-m distancing rule. This is in line with previous findings showing that distress discourages people from in-person socializing

(Coroiu et al., 2020). Also, we found that confronting the higher number of deaths due to COVID-19 correlates with more respect to social distancing rules in clinicians. This finding likely indicates that clinicians who observe more death numbers perceive the seriousness of this disease better, which in turn induces a more functional fear of infection. Fear of COVID-19 has been shown to motivate adherence to social and physical guidelines (Harper et al., 2020; Winter et al., 2020).

In general, the current study's findings showed that a trade-off between the net value of moral decision outcomes and the action procedure was related to many factors like stress, fear of self-infection, and witnessing patients' death. These factors could influence clinicians to assign more value to the greater outcome of an action rather than to the action itself (Cushman, 2013).

This study has several key implications that should be taken into account for implementing policies for healthcare and medical workers. First, since the greatest stressor for clinicians who work during the COVID-19 pandemic was fear of their family infection, in addition to enough self-protection aids, sustained health follow-up of medical workers' family can be performed to detect any possible infection at the early stages. This may help in reducing clinicians' fear and anxiety about their families' health issues and increasing their confidence and availability (Adams & Walls, 2020). Moreover, we found that with the increasing rate of exposure to COVID-19 patients' death and enhanced perceived risk of infection, clinicians' stress and utilitarian behavior exacerbated. Hence, it is very crucial to implement interventional policies to control this. Health authorities in hospitals should establish rules and regulations to replace clinicians who encountered a specific COVID-19 mortality rate or at least provide them with free psychological consultations. Age was also a significant predictor of utilitarian behavior. This finding may indicate that clinicians may better work in teams comprising healthcare workers at different age ranges. Based on medical ethics, a balance between utilitarian and deontological perspectives is needed for practitioners (Mandal et al., 2016). Hence, further research should determine new strategies for making a balance between these two perspectives in clinicians' moral decision-making.

To our knowledge, this is the first study that investigates moral decision-making among healthcare and medical workers in Iran, both in medical sectors and society, during the COVID-19 outbreak. Despite essential findings, our study has some limitations. Due to safety reasons, we used a questionnaire to study moral decision-making in clinicians. Therefore, we were not able to collect reaction time data, which is a valuable source of information (Christensen et al., 2014). Future research should consider more scenarios of different types and collect reaction times to assess moral decision-making. Moreover, it would be useful to present each scenario using three text screens to control when participants are exposed to each piece of information (Christensen & Gomila, 2012). Another suggestion for future research is to check the degree of stress of being infected. We only considered the estimated chance of infection, and in this case, some may report a high probability while underestimating the difficulties of infection and the chance of dying. Finally, considering the limitations due to the COVID-19 pandemic, we could not investigate a large sample. Future studies may further investigate these findings using a larger sample size.

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Data Availability The data that supports the findings of this study is available upon reasonable request from the corresponding author.

Code Availability Not applicable.

Declarations

Ethics Approval This study was approved by the Ethics Committee of the Shahid Beheshti University.

Consent to Participate Informed consent was obtained from all participants.

Consent for Publication Not applicable.

Conflict of Interest The authors declare no competing interests.

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