Health Care Providers’ Attitudes Toward Do-Not-Resuscitate Order in COVID-19 Patients: An Ethical Dilemma in Iran

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Abstract
This study aimed to investigate the health care providers’ attitudes toward the Do-Not-Resuscitate order (DNR) in COVID-19 patients. This study was conducted on 332 health care providers (HCPs) at the COVID-19 referral hospital in Shahroud, Iran by convenience sampling method. The study tools included a demographic information form and the DNR attitude questionnaire. Significance level was considered 0.05 for all tests. The mean scores of attitudes toward DNR order, the procedure of DNR, some aspects of passive euthanasia, and religious and cultural factors were 25.27 ± 2.78, 40.61 ± 5.99, 11.26 ± 2.51, and 6.12 ± 1.27, respectively. The death of relatives due to COVID-19 and female gender were associated with high and low scores of attitudes toward DNR order, respectively. Extended working hours and more work experience

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were correlated with high scores of DNR procedure. The history of COVID-19 increased the mean score of attitudes toward some aspects of passive euthanasia. In addition, an increase in following COVID-19 news decreased the score of religious and cultural factors affecting DNR order. Despite the legal ban on implementation of the DNR in Iran, the attitude of Iranian HCPs toward this was positive in COVID-19 patients.

Keywords
cardiopulmonary resuscitation, COVID-19, CPR, DNR, do not resuscitate

Introduction
The high prevalence of coronavirus-related acute respiratory syndrome and the resulting high fatality rate necessitate the adoption of advanced care planning (ACP) in coronavirus disease 2019 (COVID-19) patients who have sudden cardiac arrest and require cardiopulmonary resuscitation (CPR) (DeFilippis et al., 2020). In-hospital cardiac arrest is prevalent in COVID-19 patients, and it frequently results in unsatisfactory outcomes. According to a study conducted in the United States, 14% of patients with acute COVID-19 suffered in-hospital cardiac arrest, of whom only 7% with normal or mild neurological state survived and were discharged (Hayek et al., 2020). Due to concerns about the transmission of the disease via aerosols to health care staff during intubation and CPR, the management of cardiac arrest in patients with COVID-19 is really complicated (Perkins et al., 2020). Before discussing the conditions during this pandemic, it is crucial to understand the patient’s values and objectives. However, preventing inappropriate CPR is critical for two reasons. One reason is that not only undesired or ineffective CPR can cause psychological distress in patients’ families, but also it is highly stressful and potentially dangerous for health care providers (Ornstein et al., 2017). Another reason is that ineffective or undesirable advanced cardiovascular life support (ACLS) puts pressure on health systems to use available resources to supply personal protective equipment (PPE), as successful ACLS necessitates the utilization of expert health care providers. As a result of the COVID-19 pandemic, the DNR order for appropriate inpatients has become even more critical. In three scenarios, the DNR order may be used. First, patients or their substitute decision makers (SDM) may understand and agree that if the patient’s heart stops beating, s/he will not need CPR, even if the physician is directed to perform CPR. In the second scenario, patients or their SDM may choose to reject CPR by consciously following the physician’s recommendation. Third, in critical cases where CPR may not be helpful, clinicians at some hospitals may issue a DNR order unilaterally (Bosslet et al., 2016; Curtis & Burt, 2007).

According to the related literature, treating patients in their final days of life has always been a conundrum for medical staff, including physicians and nurses, and
deciding whether to continue treatment in these patients is one of the most basic needs of health professionals (Peimani et al., 2012). This moral issue is viewed in a variety of ways due to the country’s Islamic culture (Assarroudi et al., 2017). According to Islamic beliefs, Muslims must take the appropriate precautions to avoid premature death. However, treatments that prolong the lives of patients with low probability of survival may be terminated or not initiated (Hatzinikolaou, 2003). On the other hand, treatment procedures should not hasten death. As a result, feeding should not be discontinued because it hastens the patient’s death, which is considered a sin in Islam. The decision to stop unsuccessful treatment should have no impact on the natural course of death. Additionally, the treating physician should make this decision based on informed consent, conversation with the patient and his/her family, and the medical team (Daar & Khitamy, 2001). It should also be noted that euthanasia is completely prohibited (Ahaddour et al., 2018). Since people’s beliefs influence their behavior, the medical staff’s attitudes toward DNR may have an impact on their caring activities (Petty & Krosnick, 2014). Some previous research performed in Iran revealed an unfavorable view about the DNR order (Fallahi et al., 2016; Mogadasian et al., 2014).

Due to the high mortality rate of COVID-19 in Iran and the urgent need to resuscitate COVID-19 patients, treatment professionals may be more concerned with the moral problems of the DNR order compared to pre-pandemic era. Implementation of the DNR order in Iran is prohibited under legal and religious principles. On the other hand, the observance of religious and legal principles in the implementation of the DNR order in Iran is in conflict with the observance of ethical principles in this field (Cheraghi et al., 2016). As a result, due to a lack of relevant studies in Iran, the current study aimed to explore the attitudes of medical staff toward the DNR order in COVID-19 patients.

**Method**

The current cross-sectional study included 332 health care staff (treatment staff and clinical medical science students) from Shahroud University of Medical Sciences, Iran in 2021. Inclusion criteria were as follows: at least 1 year of work experience in hospital, no history of addiction or mental illnesses, working or interning in hospitals during the study, and having access to the Internet and social media to complete the online surveys and exclusion criterion was repeated and unauthorized response entry. The eligible subjects were selected using the convenience sample method. Participants were notified about the study aims and procedures through WhatsApp Messenger. The participants then completed the online questionnaires generated by the porsoleine.ir website. Data collection was completed from February 21 to March 7, 2021. Following the participants’ permission, the attitudes toward the DNR were measured using the demographic information form and a questionnaire designed by Dunn (2000) to assess attitudes towards DNR. Also, 18 responses were excluded due to repeated and unauthorized entry.

The participants completed a self-reported demographic information form including age, sex, job, working hours per month, level of education, work experience, history of
COVID-19 in individuals or their relatives, history of death among relatives due to COVID-19, and history of performing unsuccessful CPR during the COVID-19 pandemic. The information was collected using online questionnaires so as to improve access to participants and reduce disease spread.

Dunn (2000) developed a questionnaire to evaluate the attitudes toward DNR order. This questionnaire has 25 items as follows: the attitudes of medical staff toward the DNR order (8 items), the DNR procedure (12 items), the attitudes toward some aspects of passive euthanasia (3 items), and the impact of religious and cultural factors (2 items). It investigates how individuals feel about the DNR order. The response to each item is graded on a five-point Likert scale ranging from strongly disagree to strongly agree, with scores ranging from 1 to 5. The items are interpreted separately, and there is no summary of scores or a cut-off point for the tool. A higher score indicates a more positive attitude toward that item (Dunn, 2000). According to (Moghadasian et al., 2013), the reliability of the Persian version of the questionnaire was 84% after the pilot study using Cronbach’s alpha method (Moghadasian et al., 2013). The internal consistency method based on Cronbach’s alpha coefficient was used to assess the reliability of dimensions of attitudes on DNR order ($\alpha = 0.70$), DNR procedure ($\alpha = 0.79$), attitude to some aspects of passive euthanasia ($\alpha = 0.60$), the effect of religious and cultural factors ($\alpha = 0.64$), and the entire questionnaire ($\alpha = 0.85$). According to Shojaei et al. (2016), the sample size for the current study was estimated to be 350 individuals, with a 10% error rate, a power of 85%, and a 10% probability of participants’ exclusion (SHojaei et al., 2016). The following standard formula was used to calculate the sample size in current study.

$$n = \frac{z^2* (p*1-p)}{d^2}$$

The data were analyzed using descriptive and inferential statistics (multivariate linear regression analysis). Significance level was considered 0.05 for all tests. The study was approved by the Ethics Council of Shahroud University of Medical Sciences (code: IR.SHMU.REC.1399.141). An online informed consent was obtained from all participants before completing the questionnaire.

### Results

In our study, 51.2% of the participants were female and 50% of them were married. The average age of participants was 32.06 ± 9.76 years. Half (50%) of the participants had a bachelor’s degree, with 113 (34%) reporting a COVID-19 history and 192 (57.8%) reporting an unsuccessful CPR on a COVID-19 patient during the pandemic. The participants’ average working time was 179.78 ± 62.86 h per month (for detailed info, see Table 1).

According to the results of this study, the mean scores for attitudes toward DNR order (range: 8–40), DNR procedures (range: 12–60), attitudes toward some aspects of
passive euthanasia (range: 3–15), and the effect of religious and cultural factors (range: 2–6) were $25.27 \pm 2.78$, $40.61 \pm 5.99$, $11.26 \pm 2.51$, and $6.12 \pm 1.27$, respectively (Table 2).

According to the results of the multivariate linear regression (Backward method), death of relatives due to COVID-19 and female gender increased and decreased the mean score of attitudes on DNR order by 0.879 and 0.631 units, respectively. Additionally, the average DNR procedure score increased by 0.014 and 0.019 units for each month of working hours and each year of work experience, respectively. Whereas

Table 1. Distribution of Demographic Characteristics of Participants.

| Variables                                      | Frequency | Percent |
|------------------------------------------------|-----------|---------|
| Gender                                         |           |         |
| Female                                         | 170       | 51.2    |
| Male                                           | 162       | 48.8    |
| Marital status                                 |           |         |
| Single                                         | 166       | 50.0    |
| Married                                        | 166       | 50.0    |
| Educational status                             |           |         |
| Associate                                      | 16        | 4.8     |
| Bachelor                                       | 166       | 50.0    |
| Master                                         | 50        | 15.1    |
| Ph.D. or M.D                                   | 100       | 30.1    |
| History of COVID-19 infection                  |           |         |
| Yes                                            | 113       | 34.0    |
| No                                             | 219       | 66.0    |
| History of COVID-19 infection in relatives     |           |         |
| Yes                                            | 66        | 19.9    |
| No                                             | 266       | 80.1    |
| Death of relatives due to COVID-19             |           |         |
| Yes                                            | 147       | 44.3    |
| No                                             | 185       | 55.7    |
| Experience of unsuccessful resuscitation of a patient with COVID-19 | | |
| Yes                                            | 192       | 57.8    |
| No                                             | 140       | 42.2    |
| Professional status                            |           |         |
| Surgical technologist                          | 12        | 3.6     |
| Practical nurse                                | 13        | 3.9     |
| Expert nurse                                   | 127       | 38.3    |
| Anesthetic                                     | 12        | 3.6     |
| Physician                                      | 90        | 27.1    |
| EMS                                            | 17        | 5.1     |
| Midwife                                        | 9         | 2.7     |
| Medical science student (medicine, nursing)    | 52        | 15.5    |

| Variables                                      | Mean   | SD     |
|------------------------------------------------|--------|--------|
| Age (years)                                    | 32.06  | 9.76   |
| Work experience (years)                        | 43.44  | 12.05  |
| working hours (per month)                      | 179.78 | 62.86  |
| Follow about COVID-19 news (hours/day)         | 1.73   | 1.37   |

SD, Standard deviation; EMS, emergency medical Services
having a history of COVID-19 raised the mean score of attitudes toward some aspects of passive euthanasia by 0.670 units, following COVID-19-related news lowered the mean score of religious and cultural factors by 0.153 units (Table 3).

**Table 2.** DNR Domain Scores in the Subjects.

| Domains                                           | Range   | Mean (SD)       | Median (IQR) |
|---------------------------------------------------|---------|-----------------|--------------|
| Attitudes about the DNR order                     | 8–40    | 25.27 (2.78)    | 25 (23–27)   |
| Implement the DNR procedure                       | 12–60   | 40.61 (5.99)    | 41 (37–44.75)|
| Attitudes toward aspects of passive euthanasia    | 3–15    | 11.26 (2.51)    | 12 (10–13)   |
| Religious and cultural factors involved in DNR    | 2–10    | 6.12 (1.27)     | 6 (6–7)      |

DNR, do-not-resuscitate; SD, Standard deviation; IQR, interquartile range

| Domain                                           | Variables                                | β      | SE    | t     | p value |
|--------------------------------------------------|------------------------------------------|--------|-------|-------|---------|
| Attitudes about the DNR order                    | Constant value                           | 28.98  | 0.254 | 102.15| <0.001  |
|                                                  | Gender                                   |        |       |       |         |
|                                                  | Male                                     | -0.631 | 0.301 | -2.09 | 0.037   |
|                                                  | Female                                   |        |       |       |         |
|                                                  | Death of relatives due to COVID-19       |        |       |       |         |
|                                                  | Yes                                      | 0.879  | 0.303 | 2.89  | 0.004   |
|                                                  | No                                       |        |       |       |         |
| Implement the DNR procedure                      | Constant value                           | 38.01  | 1.137 | 33.44 | <0.001  |
|                                                  | Work experience                          | 0.019  | 0.008 | 2.201 | 0.029   |
|                                                  | Work hours                               | 0.014  | 0.006 | 2.350 | 0.019   |
| Attitudes toward aspects of passive euthanasia   | Constant value                           | 11.49  | 0.169 | 68.08 | <0.001  |
|                                                  | History of COVID-19 infection            | 0.670  | 0.289 | 2.31  | 0.021   |
| Religious and cultural factors involved in DNR  | Constant value                           | 6.39   | 0.112 | 57.23 | <0.001  |
|                                                  | Follow about COVID-19 news               | -0.153 | 0.051 | -3.02 | 0.003   |

DNR, do-not-resuscitate; SE, Standard error

**Discussion**

According to the findings of the current study, females had a more negative attitude toward DNR than males. In this context, Jure et al. (2019) found that gender is one of the elements impacting decisions about autonomy, patient rights, and resuscitation commencement or prevention (Jure et al., 2019). In addition, Fayyazi Bordbar et al. (2019) found that gender is a significant factor in deciding on a DNR order, with male caregivers and family members of cancer patients having a more favorable attitude
toward the DNR order (Bordbar et al., 2019). In contrast to the current findings, Fallahi et al., 2016 investigated Iranian physicians’ perceptions toward the DNR order and discovered that gender was not a key factor in deciding on a DNR order, and there was no association between gender and attitudes toward a DNR order (Fallahi et al., 2016). This inconsistency might be due to differences in the conditions of assessing resuscitation in patients. Furthermore, in contrast to some previous research, the current study investigated the people’s attitudes toward resuscitation of COVID-19 patients.

The results of the present study showed that the history of COVID-19-related death among the relatives of health care staff was associated with a more positive attitude towards the DNR order in patients with COVID-19. In this regard, it should be noted that personal attitudes toward death and non-resuscitation may influence attitudes toward caring for critical patients. In line with this finding, a study conducted by Shi et al. (2019) in China among the health care staff revealed that the experience of caring for dying relatives and friends was one of the predictors of attitudes toward end-of-life care (EOLC), so that it had a positive impact on increasing knowledge and attitudes toward EOLC (Shi et al., 2019).

Our findings also revealed a significant and direct relationship between work experience and attitudes about the DNR order. In contrast to this finding, Naghshbandi et al. (2019) found that intensive care unit (ICU) nurses with less than 15 years of work experience had a more positive attitude toward applying the DNR order than other nurses (Naghshbandi et al., 2019). This inconsistency might be due to differences in methods used to measure attitudes toward a DNR order, a full evaluation of all opinions of the health care professionals in our study, and differences in sample size. Accordingly, experience of medical professions should be considered when making ethical clinic judgments (Borhani et al., 2017) because people with more training and experience can make better judgments in critical situations (Ebrahimian et al., 2014). According to Kulju et al. (2016), professional experience is a requirement for moral competence (Kulju et al., 2016).

Our results showed that working hours was a determinant factor in health care staff’s attitudes toward the DNR order. In other words, higher working hours increased the likelihood of a positive attitude toward the DNR order. The low survival rate of CPR on COVID-19 patients could increase the tendency to follow a DNR in these patients (Girotra et al., 2020). The fatigue and exhaustion of health care staff due to the increase in their working hours during COVID-19 peaks may be another reason for this issue (Alsulimani et al., 2021; Khasne et al., 2020).

Based on the findings of the present study, a history of COVID-19 in health care staff was a contributing factor to a more positive attitude toward passive euthanasia. Since a significant number of participants in the present study reported a history of COVID-19, a possible reason for this finding could be the severe physical disability and weak cardiopulmonary function in the later stages of life in COVID-19 patients. Intercultural studies indicated that the unique characteristics of each culture play an important role in shaping attitudes toward euthanasia (Karumathil & Tripathi, 2020). It should be noted that, from an Islamic point of view, euthanasia and DNR order have significant
differences. All Islamic schools of thought consider all forms of euthanasia illegal and firmly prohibit them. Some Islamic scholars prohibit passive euthanasia even when the patient is not expected to recover and willingly chooses to die. Islamic countries, like Iran, do not have laws permitting euthanasia. Hence, performing any kind of euthanasia by the physician, even after getting the patient’s consent, is considered a murder (Madadin et al., 2020). As a result, to avoid future legal and criminal issues, comprehensive interventions are needed to change medical staff’s attitudes toward passive euthanasia in Iran during the COVID-19 pandemic.

Our findings also revealed that following COVID-19 news was an effective barrier to DNR attitudes based on cultural and religious considerations. Onwe et al. (2020) found that how online news sources handle key public topics like COVID-19 influences the audience’s level of knowledge and comprehension (Onwe et al., 2020). According to the findings of a study conducted in Iran, the media is one of the most powerful means of portraying and directing societal beliefs and legislation in favor of or against euthanasia (Zahedsamimi & Aknarzadeh Jahromi, 2020).

The current research was a cross-sectional study. Further longitudinal studies exploring COVID-19 in wider dimensions are recommended. Moreover, we only evaluated the attitudes of health care staff. In future studies, it is suggested that the participants’ understanding of DNR be tested using appropriate techniques. Furthermore, we only investigated the history of death among the participants’ relatives due to COVID-19 and ignored assessing the provision or non-provision of EOLC to them. This issue must be investigated in future studies.

Conclusion

According to the findings of this study, despite the legal ban on the implementation of DNR order in Iran, health care staff have a positive attitude toward the order. Hence, due to the existing conflict between health care staff’s attitudes and religious teachings, fatwas, and laws on DNR order in Iran, measures such as educational interventions on DNR and its ethical problems during the COVID-19 pandemic should be carried out with the cooperation of a team consisting of medical ethicists, jurists, and Islamic scholars.

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