Saudis’ knowledge, attitudes, and perspective toward do-not-resuscitate orders: a systematic review

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ABSTRACT

Do-not-resuscitate (DNR) order is a medical decision for patients who will not benefit from resuscitation. It is considered as a prudent decision in all aspects. This systematic review aims to determine the Saudis’ knowledge, attitudes, and perspective toward DNR orders. This review identified 94 articles from a comprehensive search on PubMed academic database to recognize relevant studies from Saudi Arabia and additional 13 references through secondary search, religious books (Quran and hadith), and legal fatwas (decrees) from official websites. A total of 30 articles were included in this review. The population’s knowledge about DNR orders varies in each study. However, the majority were not adequately knowledgeable or a policy or fatwa, but there were different responses regarding Islam’s agreement on DNR orders. Healthcare workers, however, we are most familiar with DNR orders. The knowledge increased throughout the years. However, most trainees failed to acknowledge that patients with DNR orders should be managed as other patients except for resuscitation purposes. Many responders were familiar with the fatwa regarding DNR orders in other studies. Since the DNR order is legal in Islam’s laws and fatwa (decree), the Saudi population needs to have sufficient knowledge about it from and outside the medical field. Raising awareness regarding DNR order should be considered for the Saudi population and end-of-life training in residency programs. Additional studies covering other Saudi regions are needed to fully understand the Saudis’ knowledge, attitudes, and perspective toward DNR orders.

Keywords: Do-not-resuscitate, knowledge, perspective, attitudes, beliefs, Saudi Arabia.

Introduction

Cardiopulmonary resuscitation (CPR) is an emergency intervention used to restore the heart and lungs’ function [1-3]. The procedure was initially named a closed-chest cardiac message introduced in 1960 [4]. It is performed by chest compressions and artificial ventilation in patients who suffer from cardiac and respiratory arrest [1,3]. Cardiac arrest manifests as a loss of consciousness and cessation of pulse and breathing due to a sudden loss of heart function due to blood flow cessation into vital organs such as the brain and lungs [2]. The respiratory dysfunction is manifested as a loss of consciousness and cessation of breathing resulting from oxygen deprivation [2]. However, CPR will not always be considered as an effective procedure in patients who have a terminal illness or an untreatable condition where it may increase patients’ suffering [3, 5-7]. In Saudi Arabia (SA), the Islamic fatwa (decree) about the do not resuscitate (DNR) order policy was issued in 1988 [8-10]. In fact, it is a legal order to withhold CPR measures in vegetative state cases and futile, irreversible, or untreated cases where the resuscitation measures are considered ineffective [3,11-15]. Every patient should receive all the required interventions, including CPR, until the DNR order is confirmed [5]. DNR order means that patients should receive high-quality care that ensures their comfort and well-being, including hydration, pain control, and nutrition, with the exception of artificial life support [3,14,15]. The DNR order form should be considered
valid only if approved and signed on the patient’s medical record by three physicians (one as a consultant and the other two at least specialists) who are trustful and knowledgeable about the patient’s condition [10,15-17]. In addition to that, DNR orders should be regularly reviewed, recorded, and signed by three physicians every six months for any changes in the condition of inpatient cases. It is considered effective in any emergent situation in recent DNR orders (up to 1 year) in outpatients. When a conflict occurs regarding the DNR decision between the three physicians, they must consult the chairperson in the department or the medical director [15]. DNR order is considered as a pure physician decision. Patients and families are not involved in the decision-making process since they are considered unqualified persons by the fatwa (decree) [3,9,10,16,17]. If the family persists in doing the CPR, they should be offered the chance to transfer the patient to any hospital they desire [3]. During the transfer, the DNR order is considered valid for up to 24 hours, and those patients should have a copy of the DNR order form that includes their name [15].

This review paper aims to review all published research that studies the knowledge and attitude of DNR orders in the general population in SA. The following topics are addressed: Islamic law and fatwa (decree) regarding DNR, families’ decision regarding DNR, ethical and legal issues in neonates, pediatrics, and pregnant women regarding DNR, population’s perspective, knowledge and attitude toward DNR and the healthcare personnel’s perspective, knowledge and attitude toward DNR.

**Literature Search**

This study was conducted by examining the available relevant studies. We ran a comprehensive search on the PubMed academic database on September 26, 2021, utilizing the search terms “do not resuscitate,” “DNR,” “resuscitate,” “Resuscitation,” “Cardiopulmonary resuscitation,” “Saudi,” “Saudi Arabia,” “KSA,” “knowledge,” “perspective,” “attitude,” “belief,” with no limitation of time and all English-language studies were selected (Table 1). The search resulted in the identification of 94 articles, 17 of which met the inclusion criteria (5,8,11,12,17,18,21,25-27,31,33-36,38,39). A secondary search was performed on the included articles by checking the references listed at the end for further relevant references, religious books (Quran and hadith), and legal fatwas (decrees) from official websites. It resulted in an additional 13 references that are included in this review (3,10,15,19,20,22-24,28-30,32,37). A total of 30 articles were included in the study (Figure 1). This study is not applicable for ethical approval.

**Results and Discussion**

**Islamic law and fatwa regarding DNR orders**

Islamic law permits DNR orders and the withdrawal of life support measures from terminally ill patients in certain situations, allowing death to take its natural process. Taking a positive measure to terminate the patient’s life is not allowed for all the patients. In other words, physicians aim to maintain the process of life, not dying. The withdrawal occurs in certain situations according to many fatwas (decrees). These include: if the patient was not alive when arrived at the hospital if the patient did not fit for resuscitation, if the resuscitation is considered to be futile if the patient is suffering from a significant cardiac or pulmonary disease or recurrent cardiac arrest, if the patient was in a vegetative state, or if physicians concluded that the patient’s condition could not be treated and death is inevitable [18-21]. However, Al-Bar et al. [3] stated that “a clear policy from the Ministry of Health regarding DNR, brain death, and end-of-life issues is urgently needed for all hospitals and health providers in most (if not all) Muslim and Arab countries.”

**Families’ decisions regarding DNR orders**

DNR is an important topic that needs to be discussed deeply in medical practice. However, only a few studies in SA addressed this issue. According to the fatwa (decree) stated at the beginning of the paper, the decision of DNR and taking off resuscitation procedures and life support measures should merely be made by physicians. Even though this principle is applied in SA’s hospitals, there is heterogeneity in implementation. Families and guardians in the medical practice in SA do take a role and get involved in DNR discussion, but only when the situation is critical [8,20]. It is a matter of deciding what is best for the patient. If conflicts arise between the two parties, the institution’s bioethics committee may be consulted to help reach a consensus, inputs from religious advisors may also be helpful [22,23]. Unlike in the United States medical practice, the family and the patient’s wishes are the top priority [24]. In Asia, physicians are more likely to refuse to implement DNR orders if they do not value the families’ requests [25]. Phua et al. [26] have reported that physicians were more likely to involve families in DNR orders and end-of-life care discussions. It was believed by 22% of dialysis patients that their family members should decide on their behalf of them [27].

However, in some countries, families have minimal or no role in deciding a DNR order. It was reported that less than 6% of families were involved in South America. In Muslim countries, it is neither culturally nor socially acceptable to give full responsibilities to parents for decisions involving life or death [23].

There are some situations in the neonatal age group where DNR was not discussed before, for instance, after delivery in the labor room. In such circumstances, resuscitation almost always should be done. Nevertheless, DNR order can be considered in congenital abnormalities incompatible with life, prematurity (<23 weeks), or brain insult in severe birth asphyxia. In addition, brain death, chronic vegetative state, neurodegenerative or metabolic disorders, progressive neuromuscular disorders, frequent
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In pediatrics age groups, families may decide on behalf of their children as they cannot show preferences, and older children should be involved to an appropriate limit according to their age unless it was acted against the child’s best interest [23].

It is challenging for some physicians to approach the patient’s relative and are reluctant to discuss DNR with them because it will be refused or cause a loss of trust, primarily because of religious and cultural beliefs in Muslim communities. Abbott et al. [28] mentioned that only 41% of the patients were involved in such decisions. Furthermore, 48% had a conflict between the staff and

Table 1. Search strategy in PubMed.

<table>
<thead>
<tr>
<th>Search terms</th>
<th>Search details</th>
<th>Search results (number of items found)</th>
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<tr>
<td>(do not resuscitate OR DNR OR resuscitate OR resuscitation OR cardiopulmonary resuscitation) AND (Saudi OR Saudi Arabia OR KSA) AND (knowledge OR perspective OR attitude OR belief)</td>
<td>(&quot;DNR&quot;[All Fields] OR (&quot;resuscitability&quot;[All Fields] OR &quot;resuscitate&quot;[All Fields] OR &quot;resuscitates&quot;[All Fields] OR &quot;resuscitation&quot;[MeSH Terms] OR &quot;resuscitation&quot;[All Fields] OR &quot;resuscitates&quot;[All Fields]) OR &quot;resuscitative&quot;[All Fields] OR &quot;resuscitator&quot;[All Fields] OR &quot;resuscitation&quot;[All Fields]) OR (&quot;cardiopulmonary resuscitation&quot;[MeSH Terms] OR (&quot;cardiopulmonary&quot;[All Fields] AND &quot;resuscitation&quot;[All Fields]) OR (&quot;saudi&quot;[All Fields] OR &quot;saudis&quot;[All Fields] OR &quot;saudi arabia&quot;[MeSH Terms] OR &quot;saudi&quot;[All Fields] AND &quot;arabia&quot;[All Fields]) OR &quot;saudi arabia&quot;[All Fields]) OR KSA[All Fields]) AND (knowledge[MeSH Terms] OR &quot;knowledge&quot;[All Fields] OR &quot;knowledge s&quot;[All Fields] OR &quot;knowledgeable&quot;[All Fields] OR &quot;knowledgeably&quot;[All Fields] OR &quot;knowledges&quot;[All Fields] OR (&quot;perspective&quot;[All Fields] OR perspectives[All Fields]) OR (&quot;attitude&quot;[MeSH Terms] OR &quot;attitude&quot;[All Fields] OR &quot;attitudes&quot;[All Fields] OR &quot;attitude s&quot;[All Fields]) OR (&quot;belief s&quot;[All Fields] OR &quot;belief&quot;[All Fields] OR &quot;beliefs&quot;[All Fields])))</td>
<td>94</td>
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Figure 1. Primary search strategy at PubMed database - PRISMA flowchart.
the family [29]. There was a strong correlation with a religious background [3,30].

Alsaati et al. [31] conducted a cross-sectional study among the patient’s relatives regarding the concept of DNR. Around 26.7% thought that the patient would not receive adequate care and treatment following the DNR order, whereas 18% were not sure how much care would be provided. Only 1.2% of the participants agreed on discussing DNR orders with the patient, and 9.3% believed that relatives should be involved in such discussions. Either way, the majority (51%) believed that the doctor should always make the final decision.

Patients and families need to be educated regarding DNR. However, the decision is always difficult, in which sometimes prolonging the survival of patients will only prolong the misery and suffering even with the best medical practice provided. There are no distinctive signs between withholding and withdrawing life-sustaining treatment. CPR is only performed on patients who are likely to benefit from the procedure, likewise ICU admission [20,23].

**Ethical and legal issues in neonates, pediatrics, and pregnant women regarding DNR**

The ethical issues of DNR orders differ from one age group to another and from a situation or condition to another. In neonatal and pediatrics age groups, four fundamental principles need to be fulfilled discussed by January 2011. They include the duty of care to provide comfort by controlling pain and suffering, the partnership of care between parents and pediatric team, legal duty to sustain the child’s best interest, and respect for children’s rights. Resuscitation without a justifiable reason to restore vital function is considered to be a futile attempt [23].

In all circumstances, it is not permissible to prolong the misery in terminally ill patients who are dying or patients in a persistent vegetative state. Palliative measures should be taken to allow the patient to die peacefully and comfortably, including hydration, feeding, pain control measures, and to be treated with full respect. Otherwise, it will be considered murder by not letting the patient die peacefully and comfortably. The patient will suffer from dehydration and hunger for 10 to 14 days. It would be more humanitarian to induce death within seconds or a few minutes by certain injections. However, in that case, it will be considered euthanasia, which is prohibited in Islam [3,11,19,32].

DNR orders should be on hold for pregnant women if she is having a viable pregnancy until an emergency cesarean section saves the baby’s life [15].

**Population’s perspective, knowledge, and attitude toward DNR orders**

Several studies were conducted to evaluate the knowledge of the population toward DNR orders. In our opinion, it is an essential issue to tackle and should be studied to assess the population’s attitude toward DNR.

**Knowledge about DNR orders**

A study conducted at King Fahad Medical City (KFMC) among outpatient visitors in Riyadh showed that most participants (75%) heard about DNR, but only half of them gave the correct definition [33]. Another study conducted on the Saudi population showed that 32% of the participants heard about DNR, of which 58.6% were in the medical field and 19.2% were not. The majority of the respondents (54%) answered 4-5 questions correctly, 25.4% answered 6-7 questions correctly, and 20.6% answered a few questions correctly. In summary, the median score was 5 out of 7 for knowledge. Out of all 1,882 participants, 1,475 wanted to learn more about DNR [34]. King Abdulaziz University Hospital (KAUH) study results showed that out of the 400 participants, only 105 had heard of the term DNR with 47 of them answering correctly. Participants familiar with DNR had a high educational level, but there were no significant differences in age, gender, or marital status. Among those 105 participants, 34.3% gained knowledge about DNR from social media, and 15.2% had a previous experience with DNR [35].

**Sharing the decision**

As for choosing the person to be informed about DNR status and informing others, a percentage of 51.7% of respondents would not mind sharing the decision with their parents in the KFMC study, and 40.7% would choose their parents in the KAUH study [33,35].

**Attitudes toward DNR orders**

All the previously mentioned studies on the population aimed to evaluate the attitude toward DNR orders. KFMC study’s population showed that 34.3% agreed, 34.4% disagreed, and 31.3% were neutral regarding DNR order in association with the Islamic religion [33], whereas in the study of the Saudi population, almost 43.2% of participants rejected the fact of being on a DNR once diagnosed with a terminal illness, and the most common reason is hope and religious issues. On the other hand, the majority of the participants (69.9%) wanted to be involved in the decision of DNR order, with a percentage of 72.6% of them involved, while in good health and 15.9% when diagnosed with a terminal illness. However, participants who did not want to be involved in the decision represented 11.5% [34]. Finally, 40.7% of responders disagreed with the DNR order, and it was significantly associated with the educational level in the KAUH study. Most of the participants did not know the presence of either a policy or fatwa (decree) of DNR with a percentage of 69.5% and 89.8%, respectively. The most important factor in the DNR decision was religious issues with 81%, followed by the risk of vegetative state. Around 50% of the participants agreed on leaving
patients unaware of their DNR status [35]. Regarding the optimal time for DNR discussion, the KFMC study showed that 90% of the participants thought it should be discussed when diagnosing the patient with any illness, and 10% agreed that discussion should be done when the patient is healthy [33]. Knowledge score was significantly associated with increased agreement toward DNR order for the association between knowledge and attitude [34].

**Healthcare personnel’s perspective, knowledge, and attitude toward DNR**

The healthcare workers’ point of view is essential and the populations. Few studies in SA covered the healthcare workers’ perspective, knowledge, and attitude toward DNR.

A study was conducted in the Western Region of SA focusing on internal medicine residents stated that most of the residents (66%) participated in a DNR discussion with the patient, the patient’s family, or the patient’s decision-makers. Most of those discussions were started by asking the families about their health condition and understanding of the disease [5]. Another study done on interns and residents showed a lack of knowledge regarding DNR policies. Even though residents are more familiar with the policies than interns, both failed to confirm the existence of the DNR policy [8]. In Alsaiti et al. [12] study, although half of the participants did not participate in any lectures or training courses about DNR orders, most were familiar with it. The knowledge of DNR increased with the progression through medical years, where interns were more familiar than second-year students. However, most participants were unsure whether the institute had a consistent policy on DNR orders.

A percentage of 51.9% of the residents were comfortable discussing DNR orders. This percentage may be because a higher rate of discussions was supervised by an attending physician, reported by 43% of the residents. Moreover, almost half of the respondents said they experienced discomfort while discussing DNR orders to some degree. Nevertheless, there were no significant differences in the comfort levels of the different levels of residents while discussing DNR. To add, senior residents were not more familiar with DNR forms than junior residents [5].

Aljohany et al. [5] reported that most residents who received formal training were first-year residents (38.3%). However, 77% of the responders showed willingness and felt that they would benefit from further training in running DNR discussions. In another study that supports DNR training, the majority also expressed that a training session in running DNR orders would help them discuss it with patients and their families in an improved way [12]. Amoudi et al. [8] stated that the participants’ lack of knowledge about DNR might be due to the lack of focus on DNR in medical schools or residency programs.

As for the patient’s inclusion in the DNR order, two studies included medical students, interns, and residents agreeing on the patient’s inclusion in the DNR order [8, 12]. However, this is against SA’s DNR policy, which follows the fatwa (decree) issued in 1988 that gives the physician the entire decision [10]. On the other hand, the majority of the physicians in another study thought that patients and their relatives do not have the right to request intensive care therapy in the face of a hopeless situation, and the majority believe that physicians are the ones who should determine the resuscitation status [36].

When it comes to the factors that should be considered in DNR order, participants put greater importance on the patient’s dignity, religious concerns, and legal concerns and less importance on other factors [8]. On the other hand, another study classified other factors as necessary, such as the risk of vegetative state, limited ICU space, efficient use of medical resources, cost reduction, and the previous factors. In addition, in the participants’ opinion, the main barrier that limits a DNR discussion’s effectiveness is the lack of understanding of DNR in patients and their families [12]. Furthermore, both studies’ participants failed to acknowledge that DNR patients should be treated and managed the same way as other patients except for resuscitation purposes. Moreover, the majority favored encouraging organ donation in DNR patients [8, 12].

Gouda et al. [37] study focused on physicians that included residents, unlike other physician-focused studies, which affected the responders’ percentage of discussing DNR with patients or their families to become almost 50%. This low percentage raises concerns about the need to enrich the residency programs with end-of-life care skills and DNR concepts and training. Most of the physicians know the policies of DNR order; however, two-thirds had not read the detailed DNR policy.

Another study indicates that when physicians were asked about the DNR definition, 27.1% of junior pediatricians (JPs) and 35.4% of senior pediatricians (SPs) did not have the correct definition. This result showed that training is low in this sensitive subject, which can badly affect DNR implementation. That explains the high percentage of responders who think that residency training on DNR skills would help them in the future to discuss it with patients and families. Moreover, in this study, 51.4% of JPs and 33.3% of SPs declared that the DNR policy was unclear. The lack of clarity of the DNR procedure was declared by 39.3% of JPs and 43.7% of SPs. The result reflects that the clarity of DNR policies is essential in every hospital and should be discussed during orientation programs [38]. A study was conducted at King Fahad Hospital of the University (KFHU) showed that, among the participants, 91.7% know the DNR policy in KFHU, and 67.7% know about SA’s “National Policy and Procedure for DNR status”. Furthermore, the study evaluated the physicians’ experience in DNR order. A percentage of 86.1% had previously issued a DNR order. Among the participants, 41.6% discussed DNR with ≤10% of patients or their families, and 44.4% discussed with 76%-100% of the patients or their families [39].
As for the eligibility of participation in the DNR order, Aljethaily et al. [38] study on pediatricians found that almost half think that DNR order is the physician’s decision. Even though most believed that patients and their families had the right to demand intensive care considering their terminal illness. Besides, 9.3% of JPs versus 12.5% of SPs stated comfortable discussing a DNR discussion with the patient’s family. Another study stated that 44% believed that intensivists must participate, 58% agreed on treating physician participation, and 36% believed that any competent physician is eligible.

In addition, physician comfort in discussing DNR was at similar rates between very comfortable, somewhat comfortable, and not comfortable, and 77.8% do not hesitate to approach patients’ families [39].

The majority of the physicians stated that they would want a DNR order if they were terminally ill [37]. In a multicenter study, many physicians stated that they were concerned about the change of care level for DNR patients, even though DNR orders should not interfere with the level of care given to the patient [17]. As in the study done in KFHU, 30.6% strongly disagreed with changing the quality of care, and 5.6% strongly agreed. However, 69.4% agreed that palliative care should be initiated when a DNR decision is made [39].

Concerning religion, 46.4% of the respondents stated that they were familiar with the fatwa (decree) issued by the Committee for Islamic Research and Issuing Fatwa in SA [37]. Another study conducted in Riyadh reported that 47.3% of respondents believed that DNR is allowed in Islam [38]. Furthermore, the study done in KFHU showed that all participating physicians agreed that DNR order is legal, yet, in the aspect of Islam, only 83.3% of the physicians believed it to be allowed, 2.8% prohibited, and 13.9% did not know [39].

Gouda et al. [37] conducted a study on the ICU, and emergency department physicians stated that the main barriers in the process of DNR orders were culture, level of education and lack of understanding of the patient and their families, and lack of understanding and inadequate training of physicians. Madadin et al. [39] study showed that 66.7% of physicians family refusal did not prevent them from DNR, but 41.7% of them may hesitate but still go for the decision, where 52.8% knew that family consent is not required for a DNR decision and 91.4% agreed that it should be issued to any age. Almost half of the participants agreed that DNR order decision is not affected by age, while 44.4% believed that the age group from 18-35 is difficult to issue a DNR. Regarding DNR distribution, 80.6% and 77.8% agreed that it is more likely in multimorbid patients and oncological patients, respectively.

Al-Mobeireek [17] study on internal medicine, and ICU physicians indicated that physicians were mainly concerned about DNR’s legal and religious aspects. On the other hand, the cost of care and the patient’s age were the least important factors. Besides, the presence of premorbid cognitive dysfunction is a significant factor in signing a DNR order.

**Conclusion and Recommendations**

This study reviewed the Saudis’ perspective, knowledge, and attitude toward DNR orders. Since the DNR order is legal in Islam laws and fatwa (decree), the Saudi population needs to know it from and outside the medical field. Raising awareness regarding DNR order should be considered for the Saudi population and end-of-life training in residency programs.

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**List of Abbreviations**

CPR Cardiopulmonary resuscitation
DNR Do not resuscitate
ICU Intensive care unit
JPs Junior paediatricians
KAUH King Abdulaziz University Hospital
KFHU King Fahad Hospital of the University
KFMC King Fahad Medical City
SA Saudi Arabia
SPs Senior paediatricians

**Conflict of interest**

The authors declare that there is no conflict of interest regarding the publication of this article.

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**References**

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