

# ANALYSIS OF IMPLICATIONS OF ORGAN DONATION ON LIVING DONORS IN SOUTHEASTERN IRAN: A QUALITATIVE STUDY

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**Objectives:** despite the annual increase in living donors and the positive and negative implications following organ donation, this issue had become a significant challenge for donors. The present study aimed to analyze the experiences and views of living donors to organ donation implications. **Material and Methods.** The present study was performed using qualitative content analysis. Twenty participants were selected using the purposive sampling method; data were collected by semi-structured interviews and analyzed based on Lundman and Graneheim contractual content analysis method after implementing MAX 12. **Results.** Data analysis elicited 721 codes, 20 subcategories, six main categories, and two themes, including positive and negative implications of organ donation from the viewpoint of living donors. The main categories of positive effects resulting from organ donation included the “donor’s peace of mind”, “fundamental strength”, and “recipient’s achievements”. On the other hand, the main categories of negative implications resulting from organ donation included “donor’s physical suffering”, “damaged interactions”, and “abandonment”. **Conclusion.** Increasing the number of living donors makes us consider it essential to understand the efficiency of its two-way implications on many aspects of donor and recipient. Thus, managing the negative impacts of living organ donation and strengthening its positive side emphasizes the need to increase the awareness of organ donation associations, develop health policies at higher levels, and, most importantly, improve the satisfaction of live organ donors.

**Keywords:** *qualitative study, implications, living donors, organ donation.*

## INTRODUCTION

In the current century, significant advances in providing health care services have shifted the pattern of disease to non-contagious diseases. These advances have led to an increase in life expectancy, life span, followed by the spread of chronic diseases and organ failure [1]. Iran is one of the 23 countries with a high burden of these diseases and low and middle income [2]. Organ transplantation is the best treatment for patients with end-stage organ failure. However, the demand for transplanting organs does not match the supply of living and deceased donors [3]. The lack of organs for transplantation is one of the major problems worldwide [4]. This deficiency is much more severe among Black and Asian societies than in European ones [5]. The unavailability of the donated organ is a global concern, as in most cases, this donation takes place when a person is brain dead [6]. Obviously, deceased donors cannot meet the growing demand, especially for organs such as the kidneys, and their families may not even be consent to organ donation

[7]. For this reason, voluntary organ donation attracted the attention of living people all over the world, including Iran. This donation can include organ donation during the wellbeing period and voluntary consent to donate organs after death by receiving an organ donation card [8].

Dong et al. (2011) stated that the transplantation of living organs has more benefits. For example, the liver is an organ that possesses the capacity to regenerate. In particular, after transplantation of a living organ, the donor and recipient’s liver regrow and regenerate to complete organs. In terms of survival and transplant rejection, transplantation of living organs is better than that of dead organs [9].

Regardless of the benefits of living organ donation to the recipient, living donors may experience many positive and negative implications after donating an organ. For example, a recent literature review about these implications on living liver and kidney donors has shown that generally, they feel optimistic about the organ donation experience and are not regretful. They have a high level

of health related quality of life (HRQOL) [10, 11]. Some other studies have suggested that a considerable number of living donors experience psychosocial problems after donation. For example, one study found an increase in detectable psychiatric disorders among one in four living donors, including cases without a history of pre-donation disorders. In this analysis, at most one-third of donors reported poor health conditions or significantly got worse than before the donation, and persistent fatigue and pain were relatively common complaints [10]. Others agree on considering the potential benefits of donating to living kidney donors. They agreed that organ donation candidates should be aware of the risks and benefits of donation despite the confirmation of guidelines; there is, unfortunately, no scientific evidence on the benefits of live donation [12, 13]. However, some studies showed that the experience after transplantation, the same as a new chronic condition, leads to an uncertainty about the future and affects life accommodation [14].

Despite the growing number of living donors, few qualitative studies measured the implications of organ donation. The present study examined the positive and negative implications of organ donation from participants' perspectives in southeastern Iran's cultural context, using a qualitative approach and in-depth analysis of the phenomenon from the standpoint of living donors regarding the high frequency of organ donations in this region. It directs the community's policies toward describing potential risks and enhancing its benefits for potential donors when making informed decisions and informed consent.

## MATERIALS AND METHODS

### Study design and setting

A qualitative approach of contractual content analysis was used to explain organ donation's impact on living donors, applying purposive sampling of living organ donors in the southeastern part of Iran. In the present study, samples were referred to the organ donation center, Kidney and Bone Marrow Donation Commission in Afzalipour hospital, and Kidney Donation Association. The interview place, chosen by participants, was cozy and comfortable so that people safe during the interview (hospital, private home, park, nursing school, etc.).

### Participants

In the present study, a total of 20 participants, including 16 organ donors, one member from the family of the donor, one organ recipient, one surgeon from the Organ Donation Commission, and one psychologist, were studied. Nine of the donors participating in the study included kidney donors, five were non-related (for sale), and four were related (not for sale). Four of them had bone marrow donations, one non-related (for sale)

and three related (not for sale), and the remaining three donors, who were related (not for sale), donated a portion of the liver.

### Data collection

The collected data analysis determined the number of participants; sampling continued without any restrictions until all levels and codes were saturated and completed. Proper communication was established between categories. The first author conducted interviews. However, all the researchers reviewed the interviews like an outside supervisor. After each interview, the researchers studied the interviews, identified the interview's strengths and weaknesses, and reviewed the items considered in the following interview. According to the written reminders, the proposed questions required researchers to refer to two participants for the interview during the analysis of the interviews. Two interviews were conducted with participants 2 and 1. Researchers conducted a total of 22 interviews with 20 participants. The interview questions centered on the implications of organ donation in living donors. First, the interview started with open questions like "Would you mind sharing your experience of positive and negative implications of the organ donation you did?", then a follow-up question was asked to clarify the concept. The interview took 45–90 minutes. At the end of the interview, participants were given the interviewer's mobile phone number and asked to discuss any issues with the interviewer if they remembered any of the implications of organ donation and the possibility of further interviews. Finally, participants were appreciated with a small gift.

### Analysis

Data collection and analysis were performed simultaneously. The MAXQDA.12 used to facilitate organization and comparison of the data. The transcription of each interview was reviewed several times. The qualitative data content analysis process was performed according to the method proposed by Graneheim and Lundman, including writing the entire interview, reading the entire text of interviews several times to achieve a general understanding of its content and immersion in the data, determining semantic units and summarizing them, extracting the primary codes, classifying the similar primary codes under the same subcategories, classifying similar codes under more comprehensive categories, extracting latent and manifest concepts from the data, and formulating the final themes [15]. To this end, after preparing the transcriptions, each text was reviewed several times. Later, the semantic units were identified based on the research questions and appropriate codes were written for each semantic unit. As shown in Table 1, the preliminary codes were categorized and labeled based

on their conceptual similarity (subcategories). The subcategories were compared and placed under the main categories, which were more abstract (categories). The main categories were categorized under a more abstract concept (theme). All extracted codes and categories were reviewed and approved by the second and fifth authors of this study. The initial extracted codes were reduced by continuous data analysis and comparison; finally, the categories and subcategories were abstracted. Lincoln and Guba criteria (credibility, dependability, confirmability, and transferability) were used to ensure the data trustworthiness [16]. To ensure the results credibility, participants were asked to confirm the extracted codes from the interview and resolve the contents on demand (member check). Data-source triangulation from interviews with family caregivers with variety in relationship with patient, ethnicity and religion established credibility. Regarding confirmability of the findings, all texts of the interviews, codes, and categories were reviewed and confirmed by the second, third, and fifth authors of this study (peer check) as well as a faculty member outside the research area (faculty check). To ensure the dependability of the results, all stages of the study were recorded. Participants were selected by maximum variation sampling in terms of ethnicity, level of education, religion, economic status, relation to the patient, and social class, which enhanced the transferability of the study.

### Ethics approval and consent to participate

To observe ethical considerations, the researcher asked participants to complete the informed consent form, and before starting the interview, they were allowed to record audio and take notes. They were assured all demographic information would remain confidential. After the final report, the audio files would be removed, and, if desired, they could obtain the audio file of the interview from the researcher and be informed of the overall results. Participants were reassured that they were free to leave the study at any stage of the study. The Ethics Committee of Kerman University of Medical Sciences approved this study with the code of IR.KMU.REC.1398.222.

### RESULTS

A total of 20 participants, including 16 organ donors, one donor family member, one organ recipient, a surgeon member of the donation commission, and a psychologist included in the present study. Participants were in the 26–58 age range. Table 1 displays other participants' features including gender, marital status, education level, age, etc. Based on the participants' statements about organ donation implications, we extracted 721 codes, 20 subcategories, six main categories, and two themes

(Table 2). Table 3 also shows the narrations of the participants according to the subcategories.

## Positive Implications of Organ Donation

### *The Peace of Mind*

The first major category of positive implications was living donor's "peace of mind". Based on a thorough analysis of interviews with living donors, this category includes the subcategories of "Donor's Sense of calm and Satisfaction", "Satisfaction of donor's Spiritual Needs", "Improvement of donor's Economic status", and "Donor's Adaptation and acceptance and his family with a donation".

#### **Donor's Sense of Tranquilization and Satisfaction:**

This subcategory was more evident in related donors. Participants felt disburdened after donating, thus leading to peace of mind and happiness. Some participants considered donation an honor and never regret it. They stated that their family members pay attention to them more than before, which leads to strengthening their relationship and finally their satisfaction.

**Satisfaction of donor's Spiritual Needs:** Donating an organ is a humanitarian and God-pleasing act and can save the lives of patients who need organs or transplanted tissues due to having various diseases. Hence, some participants showed great interest in filling the form of transplant cards. Participants described it God-pleasing act and anticipated a reward in the other world. Some of the participants who donated the organ for charitable purposes stated that they felt light, disburdened, and satisfied.

**Improvement of donor's Economic Status:** Due to the economic plight governing the society, selling the organs in towns has increased. We see Organ For Sale Ads distributed in social networks beside urban graffiti. Improving the donor's economic state is what some donors consider as a positive consequence of organ donation.

**Donor's Adaptation and acceptance with a donation:** When a person steps into the process of acquiring a new identity, he or she may anticipate and experience many challenges and concerns along the way. What awareness the donor face or what reaction their family member show facilitates the acceptance. In this regard, we have seen better acceptance and adaptation in related donor families and non-related donor families who did this great job to save their family's lives.

The present study showed that most related donors felt satisfied, peace of mind, acceptance, and adaptation, but non-related donors did not feel them. However, improving the economic state was seen more in non-related donors in the early days due to receiving money from the receivers; and in the long term, due to compensating for the hard-working and suffering of patient's family by the receivers in related donors. Spiritual needs of

both non-related and related donors of kidney and bone marrow were satisfied.

### *Donor's Fundamental Strength*

The second major category of positive implications of organ donation, in living donors, is the fundamental strength of the donor. This main category includes three subcategories of donor's "Paying more attention to life", "Taking more care of the physical condition", and "Resistance against the difficulties".

**Paying more attention to life:** This is the first and most leading subcategories. Evidence has shown that those who experience life-threatening diseases appreciate the renewed life.

**Taking more care of physical condition:** Because these people once experienced illness and transplantation, they prefer to take more care and pay more attention

to their physical condition so that they do not get sick again. Post-donation self-control and self-care are positive aspects.

**Resistance against the difficulties:** A number of donors believed, it is normal to have troubles, unhappiness, and failures in our lives. Problems and inconveniences arise in people's lives and are not specific to one person. When people face problems and losses, they have to solve them to the best of their abilities. Life has its ups and downs and is not always meant to be. Sometimes the hardships and misfortunes grow and evolve us. This increases capacity, patience, and forbearance. Both related and non-related donors of kidney, liver, and bone marrow experienced these subcategories. They were more intense in related donors.

Table 1

**Participants demographic characteristics**

Row	Gender	Age	Education	Economic state	Marital status	Donation	Period	Donation state	Relation with recipient
1	Female	30	Bachelor's Degree	average	single	kidney	1 year	not for sale (related)	sister
2	Male	35	Master's	poor	single	kidney	1 year	not for sale (related)	brother
3	Female	33	Diploma	poor	others	kidney	5 years	for sale (non-related)	non-related
4	Female	27	Bachelor's Degree	good	single	kidney	5 months	not for sale (related)	sister
5	Female	43	Master's	good	others	bone marrow	8 months	not for sale (humanitarian aids)	non-related
6	Male	45	Diploma	good	married	bone marrow	4 months	not for sale (related)	father
7	Male	28	Diploma	poor	single	bone marrow	2 years	for sale ads (non-related)	non-related
8	Male	36	Bachelor's Degree	poor	married	kidney	6 years	for sale by organ donation association (non-related)	non-related
9	Female	35	illiterate	poor	married	kidney	10 years	not for sale (related)	mother
10	Male	38	Bachelor's Degree	average	married	liver	2 years	not for sale (related)	father
11	Male	32	Diploma	good	others	liver	1 year	not for sale (related)	mother
12	Male	40	Diploma	average	single	kidney	5 years	for sale by organ donation association (non-related)	non-related
13	Male	56	Bachelor's Degree	average	married	kidney	15 years	for sale by organ donation association (non-related)	non-related
14	Female	29	Master's	good	single	liver	11 months	not for sale (related)	sister
15	Male	40	Diploma	average	others	kidney	7 years	for sale by organ donation association (non-related)	non-related
16	Female	46	Diploma	good	married	bone marrow	1 year	not for sale (related)	mother
17	Male	56	Super-specialized	good	married	—	—	—	Surgeon
18	Female	38	PhD	good	married	—	—	—	psychologist
19	Female	34	Diploma	poor	married	—	—	—	donor's family member
20	Male	26	Bachelor's Degree	average	single	—	—	—	recipient

Table 2

**Theme, Categories and subcategories extracted from the data**

Theme	Main category	Subcategory
Positive consequences of organ donation	Peace of mind	Donor's sense of tranquilization and satisfaction
		Satisfaction of donor's Spiritual Needs
		Improvement of donor's Economic status
		Donor's Adaptation and with a donation
	Fundamental strength	Taking more care of the physical condition
		Paying more attention to life
		Strengthening the donor against the difficulties
	Recipient's achievements	Recipient's Mental state Improvement
		Recipient's more attention to life
		Reducing the time limits of disease
		Recipient's More Accomplishments in life
Negative consequences of organ donation	Physical suffering	Change in the donor's body image
		Physical effects on the donor
	Damaged interaction	The emotional gap in married life
		Threats and the collapse of intimacy
		Chaos and differences in relationships
	Abandonment	Donor's psychological disorders
		Donor's Fear of the unknown future
		Regret for the decision to donate
		Economic, social, educational collapse on the donor

Table 3

**Examples of quotes from study participants**

Subcategories	Participant Narratives
Donor's Sense of Tranquilization and Satisfaction	<p>"We were all happy after the donation. I had a strange feeling after donating my kidney, as if I was feeling peace and calm. I was feeling on top of the world. I had never experienced it before. "It was a calm after a storm." (P1).</p> <p>"I feel intimate with my partner more than before, Elahe tells me that she feels a piece of my organ in her body, and she is into me. I am not regretful; It was the best decision I had ever made. I talk about it with honor." (P4).</p>
Satisfaction of donor's Spiritual Needs	<p>"By doing so, I proved to myself and my children that this world is transient and hereafter is important, and God gives me a hand. I felt I took one of thousand responsibilities God assigned me." (P5).</p> <p>"In our religion, just as taking the life of a human being is highly condemned, giving life to people is also highly valued. I strongly believe in this expression. By doing so, I feel released from concerns of daily life" (P6).</p>
Improvement of donor's Economic Status	<p>"I could clear my debts. At least I did not feel ashamed in front of my family. I did not have any mental concern" (P15).</p> <p>"I could run a business, it was not so profitable, but I am happy with it." (P7).</p>
Donor's Adaptation and acceptance with a donation	<p>"Before making this decision, I was anticipating these days, so I tried to deal with the issue of living with one kidney, so that this issue would not be challenging for me in the future, and thank God, My family and I accepted this issue, and I cope with it easily." (P4).</p> <p>"I sold my kidneys in a tough situation and my wife supported me greatly. Even after the donation, she paid more attention to me physically and mentally; I feel better and better. As she accepted this matter, I could deal with it." (P15).</p>
Paying more attention to life	<p>"Sometimes I find this event a flip, believe it or not, I don't waste my times after donating, and I plan for every moment of life" (P14).</p>
Taking more care of physical condition	<p>"I am careful of my about healthy nutrition and safety. For example, in the fall, I will get the influenza vaccine. Thank God I did not face any problem." (P8).</p> <p>"My sister and I are much more careful about our health than before. We strengthen ourselves. We try to stay far away from someone who has an infectious disease because now our body system is more vulnerable." (P4).</p>
Resistance against the difficulties	<p>"Now I do not make life hard as I did before and am not greedy for many things. I don't get tired with any difficulty. I am extremely patient now". (P11).</p> <p>"I stand on my own feet now. I think I will be able to cope with many problems alone, either economically or psychologically and ...". (P12).</p>

End of Table 3

Subcategories	Participant Narratives
Recipient's Mental state Improvement	<i>"I remember exactly a few days after the donation, that his mental state had improved. He was no longer sad. I never imagined that he would get better quickly and get out of his loneliness." (P2). "I saw my patient's wellness. They were no longer as frustrated and depressed as they were during the disease period", said the psychologist. (P18).</i>
Recipient's More Accomplishments in life	<i>"My sister has won a place in chess and tennis and even won a medal. She is very successful at work as well." (P1). "I promised that if I returned to normal life, I would work hard and be able to compensate for my family's attempts", said one of the participants, who was a recipient and related donor (P20)</i>
Recipient's more attention to life	<i>A related participant who is close to the recipient stated: "When he talks to relatives and acquaintances, he advises them not to waste their life and appreciate it. He keeps repeating these words at home." (P16). the experience of the organ recipient was as follows: "I no longer need to follow a strict diet, I am more active, more outgoing, now I feel like I live like other people." (P20).</i>
Changes in the body image	<i>"Now, when I see the scar on my body, I feel bad. In the early days, I felt malformed, and I was upset. Or if someone saw my scars, I would tell them that I fell and wounded." (P15). "I think because I am different financially and physically from the others, it has caused me to lose my self-confidence." (P8). "I think I am entirely different from others. This weakens my morale. I feel a change in people's behavior to me. Is it a true feeling, or I became crazy?" (P3).</i>
Physical Complications	<i>"Although I underwent transplantation long ago, sometimes I feel pain on my scar; I went to the doctor several times, had a general examination and sonography, and finally told me that you have no problem, another doctor told me that it could be caused by damage and you have to put up with it." (P10). "Evidence has shown that patients undergoing kidney transplantation may have long-term complications such as high blood pressure, diabetes, etc.", the participant surgeon said. "Therefore, they should be monitored for a long time and given the necessary training." (P17). "When I researched the complications of kidney donation, I got information about the risk of death, not about the physical damage." (P 9).</i>
The emotional gap in married life	<i>"After the operation, my wife distance herself from me. She did not express her feelings at all. She did not say anything. Later, I found out that she was under the care of a urologist and she is physically malformed." I turned the blind eye. I was damaged emotionally." (P19).</i>
Chaos and differences in relationships	<i>"Every time I dispute with my wife, she blames this as my weakness. It makes me even more nervous. We were on the verge of getting divorced once." (P13). "My wife did not have the slightest idea of my donation when she found out, e had conflicts and dispute. I am regretful. Although I am happy with this act, I would consult my wife if I returned." (P15). "I objected because I did not want my husband to be defective and a friend and acquaintance would tease me. Although I turn a blind eye, I blame him sometimes (P19).</i>
The threat of intimacy	<i>"I lost my favorite girl because I told a lie to her about it. At first, I thought she would get angry and come back, but she left me forever. So sometimes I say, 'I wish I had not done it' Now I think I cannot start a family." (P12).</i>
Fear of the future	<i>"I'm afraid of any possible problem in the future because I am a man and I have to work. If I get exhausted, my family do nothing", said one participant. (P12). "Before making a decision, I did not think about the future at all, I thought only about the present, I wanted to make those conditions better; but now after a few years, I am regretful. I know I was under a lot of pressure at the time, and I really could not make the right decision, I could not collect the correct information because I did not have much time." (P3).</i>
Economic, social, and educational collapse	<i>"The tests and visits were costly for me because I was not insured. Unfortunately, the recovery process took a long time because of the extreme stress I had. I am the head of my family." (P9). "I did not attend the classes for a while due to the situation at home, my sister's illness, and the decision I made for the donation. I was excluded from the class because of my frequent absence. I got fired from a part-time job due to troubles we go into." (P4).</i>
Mental disorders	<i>"After the operation, I was completely depressed. I am no longer as happy as before. I am not hopeful for life. I just got better. The first few months after I had severe depression, I was targetless. I used to go mountain climbing and travel, but now I don't even like to attend family events." (P13). the psychologist believed: "Donors are not physically monitored, except for some alarming cases. Psychological symptoms are like flames in the ashes, which, if not constantly monitored, can lead to more severe mental disorders." (P18).</i>

### *Recipient's achievements*

The last category of positive implications of organ donation in living donors was the achievements of the recipient. Because we used theoretical sampling, our participants included organ recipients, psychologists, and donor families. In the present study, most participants were related donors, regularly interacted with the recipient, and saw the implications of organ donation clearly in him, so this main category was elicited from their conversations. It includes four subcategories of "Recipient's Mental state Improvement", "Recipient's More Accomplishments in life", "Recipient's more attention to life", and "Time constraints reduction of diseases".

**Recipient's Mental state Improvement:** Recipients experience lots of pressure and stress due to enduring the disease's stressful conditions and involving family members in similar situations. Thus, it causes severe psychological problems. Related donors, friends, relatives, co-workers, psychologists, and even the recipient believed in improving the mental state after the operation was successful. The psychologist participating in the study also agreed with the patient's family members.

**Recipient's More Accomplishments in life:** Most organ recipients became successful in various life areas after the transplantation. The reason for their belief in working hard in life is to compensate for the wasted time.

**Recipient's more attention to life:** Another subcategory of recipient achievements is the recipient's more attention to life, which was also the case with organ donors.

**Reducing the time limits of disease:** During the illness, we hear about restrictions on diet, physical, recreational, and social activity in interviews with the patient and his relatives. These restrictions greatly affected the patient and those around him. Organ transplants significantly reduced the limitations of the disease.

### **Negative Implications of Organ Donation**

Despite the positive implications of living organ donation, participants believed that the other side of the spectrum was dark. It is clear that the expansion of living organ donation, like any other phenomenon in the treatment system, along with undeniable achievements, has undesirable implications. The negative implications of organ donation include "donor's physical suffering", "damaged interactions" and "Donor abandonment".

**Donor's physical suffering:** The first category of perceived negative implications of living-organ donation is donor's physical suffering, which includes two subcategories of "Changes in the body image" and "Physical effects".

**Changes in the body image:** Many participants believed that organ donation caused them unforeseen

physical experiences. This mental image results from sensory perceptions over the years, social interactions with other people, and responses. The body image changes with the gradual body change over the years. Any change in the body image of the body seriously disturbs the balance of the person. These changes can result from disease, accidents, or evolutionary changes in the body's structures and function. People are distressed by the slightest change in appearance or bodily functions. Significant changes can be devastating. Some people express their feelings easily and freely in such cases, but others even refuse to look or touch the area. Some people are so preoccupied with a change in their body's mental image that they become depressed or resort to self-destructive behaviors.

**Physical Complications:** Participants believed that organ donation caused unpredictable physical complications for them. In this regard, doctors in this study pointed to the unforeseen short-term and long-term complications of organ donation.

### **Damaged interactions**

The second category associated with perceived negative implications is damaged interactions, which included three subcategories of the emotional gap in married life, intimacy threats, conflict, and turmoil in the relationship. This category was more common in non-related donors.

**The emotional gap in married life:** Participants believed that organ donation caused an emotional gap following marital dissatisfaction in their lives.

**Chaos and differences in relationships:** Some donors had donated organs without consulting them due to the possible opposition against donations by the family. When their family learned this issue, implications such as chaos, quarrels, and disputes would arise. Family members of some patients saw organ donation as a defect in organs and a factor in labeling others, which they believed caused family members to be embarrassed by friends and acquaintances.

**The threat of intimacy:** Loss of intimacy and closeness between family members, especially spouses, was an important implication of organ donation.

**Abandonment:** The third category was related to the negative implications of organ donation in living donors. This category was elicited from the participants' statements. They stated that there was no monitoring after the donation, including three subcategories of "occurrence of psychological problems in the donor", "fear of the future", "regret for donating", and "the economic, social and educational collapse".

**Fear of the future:** Most participants with different intensities experienced fear of the future. This fear was more prevalent among non-related donors. It was evident in related donors whose transplant was rejected but was

more accepted by the related donors, arguing that the transplant would be done to save the life of their beloved ones and they acted resorting to God. A small number of organ donors regretted the decision sometime after the organ donation. They believed that the decision was made in a critical situation and alone; perhaps a safer decision would have been made if there was enough time.

**Economic, social, and educational collapse:** Another subcategory was donor abandonment after the donation that was more evident in related donors. Participants believed that no insurance covered their costs, and they were completely ignored after the donation in many ways, which disrupted their lives after the donation. This was more evident in poor donors.

**Mental disorders:** Several participants believed that they experienced different symptoms after donating an organ. These symptoms were more severe in non-related donors, while the related donors, except in cases of forcible donation (lack of time to find a suitable donor, physician's recommendation due to multiple rejections of recipient's transplantation) did not have symptoms. Psychologists believe that donors get mental disorders after organ donation due to lack of monitoring and sudden abandonment.

## DISCUSSION

The present study aimed to investigate living donors' experiences and views about the implications of organ donation. One of the positive implications of organ donation from the participant's perspective was "donor's peace of mind". In this regard, Rasmussen et al. Stated that donors experienced a sense of tranquility and reduced anxiety after donation. The donation has strengthened their relationship, caused a positive change, dynamism, and fortified the whole family [17]. These donors believe that the pleasure of seeing the recipient's everyday life compensates for the donor's adverse experiences, besides the appreciation by the recipient's family and constant respect from others makes the donors feel proud and privileged [18–20]. In contrast, some donors express dissatisfaction that their recipient does not appreciate them [21].

In the present study, many related donors described the donation as an honor and believed that they would not be regretful in the future. Donors consider the increased attention and care of other family members to improve relationships and their satisfaction. From the spiritual perspective, recent studies consistent with the present study have shown that this decision has philosophical or spiritual nature and strengthens spiritual beliefs [17, 19, 22]. From an economic point of view, although some studies report financial problems after organ donation [23–25], others suggest the improvement of the economic state. In this regard, a qualitative study showed

the recipient's back to work and a decrease in donor's responsibility [17].

However, related donors had difficulties in making a living. They had financial problems due to the prolonged recovery period after donation, the cost of surgery and tests, and even job loss. After recovery, they became motivated to return to life; thus, their economic state improved (with more intensity in the related liver and kidney donors). On the other hand, the improvement of economic state was evident in the non-related donors in the first days of donation, after receiving financial assistance from the recipient's family. In this category, we saw donors' acceptance and adaptations. They accepted the possibility of danger in the future and did so by trusting in God. In another study, donors decided that they would live with the implications, no matter what happens to them, and that the donor's risk and implications would be acceptable to them with the prospect of improving the recipient's life. The donor was adapted to it mentally and physically [18].

The second category for positive outcomes was donor's "fundamental strengthening" and was more experienced in related donors. Previous studies, consistent with the present study, have shown that donation caused a change in donor's viewpoints to life [26], increased self-esteem [19], personal growth [27], feelings of success and pride [28, 29]. They felt no physical difference [26, 28, 30]. According to a qualitative study, donors believed that donation led donors to pay greater attention to their physical condition, independence, improved social life, and return to normal by related donors [17]. In contrast, in our study, most related donors noted that donation was a turning point in their lives. Most donors returned to life at an even higher level than the pre-donation period. The opposite was true for some non-related donors.

The last category was the positive implications of organ donation, the "achievements of the recipient", and was more intense in recipients who received organs from a related donor than those who received it from a non-related donor. However, some studies have negatively described the overall experience of donating. They showed that some recipients experienced stress, symptoms of depression, or anxiety, reported to occur despite the desired medical outcome [21, 29]. It can result from stress, adaptation and effects of steroids, so it affects their relationships. These recipients said that despite the successful transplantation, they did not feel stronger or better due to comorbidities such as diabetes and thought that they wasted the donor's effort and kidneys so that the donor and other family members blamed him [21]. Another study reported the significant effect of transplantation on health for both the recipient and his family [30]. Rasmussen's qualitative study addressed the ending up of limitations (dialysis, diet, and reduced impact on the family), returning recipient to full-time work, handling

more tasks and responsibilities, and then reducing the care and financial burden of the donor as well as the recipient's potential to participate in activities such as hanging out with friends, eating out, and gaining independence. The present study stated that the donor's and recipient's lives had excelled to a higher level than before the operation (routine) [17]. Organ recipients had great success in various areas of life after the transplantation. Most of them agreed on compensating for the wasted time resulting from their diseases and all efforts of their family and donor.

**Negative Implications:** The first category of negative implications of organ donation is "physical suffering", which was equally evident in all donors. Other studies have shown that common concerns of liver donors include bloating, shrinking of the Muscle tone [11], fatigue [11, 20], abdominal pain, back pain, or interfering pain [20]. In contrast, kidney donors showed an increased risk of gestational hypertension or preeclampsia after donation compared to non-donors [31–33]. Another study showed that body image-related concerns were low in kidney donors [34] but evident in liver donors [11].

The second emerging category of negative implications is "damaged interactions". The items mentioned in the present study were primarily experienced in non-related donors and men. This category was manifested in sexual and emotional disorders and even chaos in living donors' normal relationships. However, previous studies have shown that even some related donors experienced increased family relationships and tensions, even years after donation [18, 29, 35]. It was not evident in related donors due to family intimacy and informed pre-donation decisions. Some studies suggested that the relationship between donor and recipient has remained constant or even sometimes improved [19, 28, 30]. Halpern et al. confirmed that sexual dysfunction is common among living kidney donors [21, 36]. Other studies have shown that related donors who donate their organs to spouses describe an improvement in their marital relationship resulting from the donation. Participants were closer to their partners and reported that kidney donation strengthened their relationships and family [17, 21]. Di Martini et al. showed a positive change in relationships even after donating a living liver. In this study, marital, family, and recipient relationships were improved after donation, respectively [20]. This study's results are inconsistent with those of the present study due to the kinship relationship between the donor and recipient.

The last category of the negative implications was "Donor abandonment." A qualitative study showed that donors trusted physicians' master to monitor their health and medical risks and appreciated medical follow-up. Donors believed that they felt safe and valued when the hospital followed up on their condition regularly [18]. Regarding follow-up, another study reported that most

donors expressed satisfaction with the care received after medical follow-up, but some donors expressed frustration with unfulfilled expectations from health professionals [28]. Although the present study showed that participants trusted in physicians before donation, they mentioned that patients were left alone after donation. It leads to a physical defect, psychological disorders, fear of the future, and feelings of regret for the donation that affected other aspects of life, such as economic, social, and educational collapse. Other studies have shown that donors feel positive about the experience of organ donation and show little regret for donating [10, 11].

Furthermore, donors unanimously agreed on making such a decision again [19, 30]. In the study of Meyer et al., none of the participants regretted their decision [18]. Perhaps this difference results from non-related donors' presence in the present study, which was mentioned as a study limitation in Meyer's study. Some studies showed that many living donors experienced psychosocial problems after donation [10, 37, 38]. The present study suggested that these problems were more common in women than in men, and so did Erim et al. in their studies [39].

In general, recent studies have emphasized the importance of pre-and post-donation evaluation. The transplantation team should pay attention to donors' emotional state and quality of life, especially those with chronic diseases or poor perception [40].

**Limitations:** The present study had several limitations based on which the implications should be interpreted. First, this study was conducted in southeastern Iran, so cultural beliefs, economic, and even educational problems in this region may cause difficulty in generalizing the results to the other areas. However, it was attempted to include participants with maximum diversity of socio-cultural, work experience, and different educational levels, which has made the results of the study applicable widely in similar units. Second, the analysis was performed during the pandemic; only those whose recovery had long been passed and reached a stable condition were included in the study due to their high-risk conditions. Therefore, it is recommended to perform future studies on living donors, especially in the early days after transplantation and due to corona's impact on their decision and other concerns.

## CONCLUSION

Based on the present study results, understanding the implications of organ donation is like a double-edged sword that can be interpreted positively or negatively from the donor's perspective. In this study, the negative implications were primarily observed in non-related donors and those who decided under emergency conditions, while the positive implications were observed in related donors who were close to the recipient and knew his problems. However, there were fewer negative and

positive implications in related and non-related donors, respectively. Commenting on this issue requires further studies on both groups of donors.

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