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© The Author(s) 2024. This is an Open Access article under the CC BY **Research Article**

Design of an Educational Campaign Based on the Theory of Planned Behavior to Encourage People to Donate Organs: A Study Protocol

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In all countries, organ donation shortage is a concern, and there is a huge difference between the number of organs available for transplant and the number of potential recipients on waiting lists. The authors of this protocol intend to design an educational intervention based on the theory of planned behavior (TPB) to encourage people over 18 years old to become organ donors. This is the protocol of a campaign that will be carried out in three phases in Sirjan city, located in southern Iran. Initially, an educational campaign will be designed, then it will be implemented, and eventually, the educational campaign will be evaluated. In order to evaluate the effect of the campaign, a researcher-made questionnaire will be designed based on the theory of planned behavior and after a detailed literature review and inquiring the opinion of experts. The findings of this study will provide valuable evidence regarding the efficacy of the educational campaign on the intention of people to donate organs.

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1. Background

One of the important achievements in modern medicine is the process of transplanting organs and body tissues (McGlade and Pierscionek, 2013). In all countries, organ donation shortage is a concern (Lewis et al., 2021), and there is a huge difference between the number of organs available for transplant and the numbers of potential recipients on waiting lists (Mahdi et al., 2023).

The kidney, heart, liver, lung, intestine, pancreas, and cornea are the most important transplanted organs (Chandler et al., 2017). In most cases, organ donation takes place when the donor is brain dead (Walker and Sque, 2016).

Donating organs from brain-dead people is a sacred phenomenon that involves various medical, social, religious, and even economic aspects in a way that few other phenomena can be compared with. From the medical point of view, organ donation and organ transplantation are among the most advanced medical procedures (Schicktanz and Wöhlke, 2017).

The global statistics about organ donation from braindead patients is 20 per one million people. In a country

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like Spain, which has the highest number of organ donations from brain-dead patients, this rate is close to 34.3 per one million people. Brazil and Luxembourg, respectively, with 9.9 and 6 per one million people, are at the bottom of the list. Organ donation from brain-dead patients in Iran is 14.34 per one million people, and this index in Sirjan city is 6.2 per one million people [5], which is much lower than the national average.

Every year, 5-8 thousand people encounter brain death in Iran, of whom 2,500 to 4,000 have organs that can be donated. This is while in every 10 minutes, one person is added to the organ transplant waiting list (Talebi Doluee et al., 2020). Each brain-dead person can save 8 lives. There are 27,000 patients in Iran who need organs, and 7 to 10 people die every day due to the lack of an organ to transplant in Iran [3].

Organ transplantation saves the lives of thousands of people around the world, but at the global level, only about 50% of brain-dead patients donate their organs (Ramadurg and Gupta, 2014). The process of organ donation is different in different countries. In some countries, such as Iran, before death, a person consents to donate his body organs in case of brain death by obtaining an organ donation card, or the family members of the brain-dead patients give consent for the person's organs to be donated.

In order to increase the satisfaction of family members to agree with organ donation, it is very important for family members to be aware of the person's decision about donating organs and to know about the person's donor card (Hyde and White, 2013). People's participation in social activities, including voluntary donations, is influenced by their opinions, beliefs, motivation, and awareness. Beliefs and convictions of each person are also directly influenced by the environment in which a person has grown up (Atik et al., 2019).

The basics of health communication are frequently used to design educational interventions that lead to changes in behavior (Sadeghi et al., 2020a). Health campaigns are one of these educational interventions (Stellefson et al., 2020) and can convey encouraging messages to persuade people to perform a specific behavior (Sadeghi et al., 2021). Among educational interventions, campaigns have the highest penetration to audiences (Sadeghi et al., 2020b). Campaigns transfer through specific messages, various multiple communication channels, to a specific population, in a specific and limited period, and in line with the goals of the educational program (Waisbord, 2020). Campaigns also play a significant role in creating a health culture (Sadeghi et al., 2019b), changing norms and wrong behaviors, or promoting healthy practices and behaviors (Sadeghi et al., 2020b). Many health campaigns are designed based on a strong theoretical foundation. This issue is also present in organ donation campaigns ¹².

According to the theory of planned behavior (TPB), the intention to perform a behavior is predicted by three factors (Knowledge, Attitudes, Intention towards behavior, Behavior, Subjective norms, Normative beliefs, Control beliefs, and Perceived behavioral control). The meaning of "attitude towards the behavior" is to what extent the desired behavior is desirable, pleasant, useful, or enjoyable for the person; which depends on the individual's judgment about the effects and consequences of the behavior. Subjective norms are the amount of social pressure perceived by the individual to perform the behavior and, in other words, are a reflection of social influence and influence on the individual. Perceived behavioral control is a degree of the individual's feelings and to what extent he/she is under voluntary control regarding doing or not doing a behavior. Perceived behavioral control can influence behavior both directly and indirectly through intention [10].

In the process of attracting people to voluntary organ donation, the identification of people's attitudes and beliefs plays a central role. The attitude towards behavior is determined by a person's personal belief about the result of that behavior. Having a positive attitude towards a social issue can turn into a positive social behavior. On the other hand, having a negative attitude may prevent a person from performing an action (Azizi and Ahmadi, 2014).

Studies have used the planned behavior model for organ donation and reported that behavioral beliefs and subjective norms were the direct predictors of organ donation. Also, important people, including family, influenced the decision to donate organs (Tinning et al., 2021). According to the Karam et al. study, holding training courses, creating sensitivity among people, and attracting the support of officials can improve the effectiveness of organ donation interventions (Alishan Karami et al., 2021).

All around the world, and even in developed countries, many people do not easily agree with organ donation (Lewis et al., 2021). Therefore, building the culture, providing information, and raising awareness are necessary. The purpose of this protocol is to design an educational campaign based on TPB to encourage people to donate their organs.

2. Methods

This is the protocol of an interventional study that will be conducted to promote organ donation. This study will be carried out in Sirjan, Kerman province, southwest of Iran. The population under study will include people over 18 years old. This study will be implemented in three phases.

- 1. Designing an educational campaign
- 2. Implementing the educational campaign
- 3. Evaluating the educational campaign.

2.1. Aim

The aim of this study is to design, execute, and evaluate an educational campaign based on TPB to encourage people over 18 years old to join the organ donation volunteer center.

Furthermore, the aim is to raise people's knowledge, change their perceptions, and improve their behavior towards organ donation. Hopefully, this campaign will encourage people to donate organs and will improve the culture of this behavior in Sirjan, Iran.

2.2. Research hypotheses

The researchers hypothesize that after the campaign, the mean scores of the TPB constructs and the number of organ donors will increase.

2.3. Phase I: Designing an educational campaign

2.3.1. Study environment and population

This campaign will be conducted in the health centers, Friday prayers, mosques, schools, shopping centers, offices, universities, and entertainment centers of Sirjan, in Kerman province, Iran. In these places, training, persuasion, and recruitment of people for membership in the organ donation campaign will be done by trained executive teams.

2.3.2. Determining the name and logo of the campaign

This campaign will send specific, sequential, and repeatable messages to targeted audiences through mass communication tools and influential media. Therefore, the structure of the messages plays a significant role in the success of the campaign. Also, the name of the campaign and its logo are influential and give direction to the campaign and its messages (Sadeghi et al., 2020a).

To determine the name of this campaign, various suggestions were given by the target group, but after investigation and gathering the opinions of 12 experts in a focus group discussion, the name of the campaign was chosen as "Organ Donation, Long Lasting Sacrifice." The campaign logo was also designed during a call (logo design contest). The campaign logo was chosen from 20 submitted works, in a meeting and based on the majority of votes (Figure 1).



Figure 1. Campaign name and logo

2.3.3. Sampling method

In addition to the mass teaching events, a list of comprehensive health centers in Sirjan will be inquired. Then four centers will be chosen at random. After going to the selected centers, a list of participants will be extracted from the household files by random. These participants will complete a questionnaire once before the start of the campaign and later after the campaign is finished.

2.3.4. Inclusion criteria

These participants have to be between 18 and 70 years old, able to understand the questions, and consent to participate in the study.

2.3.5. Exclusion criteria

Participants will be excluded if they have a malignant disease, hepatitis B, hepatitis C, or AIDS, if they are under 18 or over 70 years old, or unwilling to cooperate in the research.

2.3.6. Data collection method

The data collection tool will be a questionnaire including demographic information and questions related to the TPB structures (Knowledge, Attitudes, Intention towards behavior, Behavior, Subjective norms, Normative beliefs, Control beliefs, Perceived behavioral control). The participants will complete the questionnaires themselves, and a trained research assistant will complete the questionnaire for those who are illiterate or have low literacy.

2.3.7. Validity and Reliability

The questionnaire will be made by the researchers after reviewing the relevant texts, articles, and literature. The face validity of the questionnaire will be reviewed by a panel of experts. For this purpose, the questionnaire will be sent to 10 professors (4 health education and health promotion experts, 2 public health experts, 3 psychologists, and 1 surgeon). To determine the content validity ratio (CVR), a group of experts (10 people) will be asked to review each question based on a 3-point scale (it is necessary=3, it is useful but not necessary=2, it is not necessary=1); and then we will calculate the CVR based on the formula below.

A CVR higher than 0.79 will be considered acceptable (Almanasreh et al., 2019). To check the content validity index (CVI), 3 criteria of simplicity, specificity, and clarity for each of the questions will be examined based on a 4-point scale. Then the content validity index score will be calculated by aggregating the scores for each question that has been ranked 3 or 4 (acceptable) and dividing it by the total number of experts. If the CVI of a statement is 0.79 or above, that statement will remain in the questionnaire (Baghestani et al., 2019).

In order to determine the reliability, the modified questionnaire will be distributed among 15-30 people who are similar to the study group, and the Cronbach's alpha coefficient will be estimated. Cronbach's alpha coefficients above 0.7 will be considered acceptable.

2.3.8. Designing and adapting educational material

Based on the results of previous studies, educational material will be designed, and their readability and

appropriateness will be checked using the Readability Assessment of Materials (RAM) method (Sadeghi et al., 2019a). The Suitability Assessment of Materials (SAM) will be used to evaluate the appropriateness of the content (Sousa et al., 2015).

The designed campaign messages will be distributed through mass media, health workers (through conducting training sessions for the target group and attracting their participation), presentations with PowerPoint in training sessions at health centers, visiting workplaces or gatherings (in the meeting halls of the city, mosques, and places of Friday prayers), installing banners and posters at designated points or billboards throughout the city, distributing pamphlets (in crowded urban places and also after training sessions), sending text messages, and forming Telegram (or other social groups) for three months (Table. 1).

Activity		Timeline in Months										
	1	2	3	4	5	6	7	8	9	10	11	12
1. Proposal writing and approval												
2. Building the questionnaire and determining its validity and reliability												
3. Determining the name and logo of the campaign												
4. Determining the current situation (through a survey).												
5. Formation of planning teams (advocacy) and operational teams												
 Designing and tailoring educational materials 												
7. Implementation of the organ donation campaign for three months												
 Determining the current situation after the organ donation educational campaign by a second survey 												
9. Evaluating the final result of the campaign												

Table 1.

2.3.9. Campaign activities and Participation

Campaign activities include two components:

- 1. Strengthening collective action and attracting the participation of cooperating organizations by holding joint meetings to increase inter-sectoral cooperation and coordinated action among health-related organizations. For this purpose, the representatives of the involved departments and organizations will be invited to participate in joint meetings to determine the duties of each department regarding the campaign in the city.
- 2. Holding briefing training sessions by the University of Medical Sciences authorities for the

personnel involved in the implementation of the campaign. This action aims to increase social support for the implementation of the campaign at health centers and local communities and will be implemented with the participation of health liaisons and trained facilitators.

The participating organizations are the City Council, the office of the Friday prayer leader, the Islamic Council, the Sirjan Department of Education, the Sirjan Municipality, the Sirjan Department of Islamic Culture and Guidance, the local newspapers, the Broadcasting organizations, the Vice-Chancellor of Health and the Vice-Chancellor of Treatment at the Sirjan School of Medical Sciences, the Gol Gohar Mineral Complex, the Meraj Andisheh Organization, the Majme Khayrin charity, the Nikan charity, and the Iranian Red Crescent.

Also, community members consisting of trusted representatives of the people, civil volunteers, working local clergymen in mosques, health liaisons, health workers, and representatives of the target group (consisting of young people, students, and volunteers) will be asked to cooperate (Table 2).

Number	Partner's names	Expectations
1	City Council	Mentioning the campaign in the city's health committee, monitoring the performance of partner departments in the campaign, financial and executive support for the campaign
2	The office of Friday prayer leader	Participation in the coordination meetings, spiritual support of the campaign, informing people in the Friday prayer, coordination with the clerics working in the mosques
3	City Islamic Council	Participation in coordination meetings, coordination in installing banners and posters, financial support in the implementation of the campaign
4	Education ministry	Participating in coordination meetings, issuing permission to hold training classes for training coaches, providing information in schools, financial support in the implementation of the campaign.
5	Municipality	Issuing permission to install advertising banners and posters in the city streets and parks, executive support of the campaign
6	Department of Islamic Culture and Guidance	Participating in coordination meetings, installing advertising banners and posters in the city, helping in holding training sessions
7	Local newspaper	Publishing educational articles about the organ donation campaign, interviewing experienced people and reflecting their experience in newspapers, news coverage of the campaign activities.
8	The radio and television broadcasting organization	News coverage of the campaign, broadcast of educational programs regarding the implementation of the campaign
9	Vice-Chancellor of Health and Vice-Chancellor of Treatment	Designing and then distributing campaign training packages, asking medical school professors to teach in health centers
10	Gol-e Gohar Mineral Complex&MerajAndisheh organization	Participation in community education, holding health exhibitions, financial support
11	Iranian Red Crescent	Participation in community education, holding health exhibitions, financial support
12	Health workers	Planning, implementation, and evaluation of the educational campaign activities include: training participating members, designing and printing material required for the training campaign, supervising the correct implementation of the campaign, monitoring and evaluation of the proceedings
13	Health and charity associations	Participation in community education, holding training sessions, financial participation
14	Local clerics in mosques and youth of the mosques	Encouraging participation of mosque visitors, installation of banners and posters, distribution of pamphlets and brochures
15	Nikan charity	Participation in community education, holding training sessions, financial participation
16	Civil volunteers	Participation in community education, banner and poster installation, pamphlet and brochure distribution

Table 2.

2.3.10. Outcome measures

The primary outcome will be the change in the number of organ donors, and the scores of intention and behavior. The secondary outcome will be the change in the TPB constructs (including Knowledge, Attitudes, Intention towards behavior, Behavior, Subjective norms, Normative beliefs, Control beliefs, and Perceived behavioral control).

Variable		Scale	Sample questions				
	Intention	1 (Strongly disagree) to 5 (Strongly agree)	I have decided to become a member at the organ donation center.				
Primary outcome	Behavior	Yes 1, No 2	I ama member at the organ donation center.				
	Number of volunteers 6 months after the end of campaign	Frequency					
	Knowledge	Yes 3, I don't know 2, No 1	Do you know about the organ donation card?				
	Attitudes	1 (Strongly disagree) to 5 (Strongly agree)	Organ donation is a humanitarian act.				
	Subjective norms	1 (Strongly disagree) to 5 (Strongly agree)	Parents' opinion is important for me to receive an organ donation card.				
Secondary outcome variables	Normative beliefs	1 (Strongly disagree) to 5 (Strongly agree)	I accept the opinion of my parents regarding membership in the organ donation center.				
	Control beliefs	1 (Strongly disagree) to 5 (Strongly agree)	Membership or non-membership in the organ donation center is completely under my control.				
	Perceived behavioral control	l (Strongly disagree) to 5 (Strongly agree)	It is up to me to make a decision about organ donation.				

Table 3.

2.3.11. Sample size

Assuming that 10% of the people living in Sirjan have an organ donation card, if we aim for a 5% increase in the percentage of organ donors, and according to the sample size equation for changes in percentages, with α =0.05 and β =0.20, a sample size of at least 686 people will be needed.

Due to the use of cluster sampling in this study, the design effect equal to 1.5 will be used. Considering this value, the required sample volume will be equal to 1029. Assuming a 20% attrition in the samples, the sample size is considered to be 1235 people.

2.3.12. Data analysis

Descriptive and inferential statistical methods will be used to describe and analyze data. Data will be presented as mean (standard deviation) for quantitative data and frequency (percentage) for qualitative data. The normality of data distribution will be checked using the Kolmogorov-Smirnov test. Data analysis will be done using paired t-tests (or its non-parametric counterpart) and conditional logistic regression analysis (to determine predictors of behavior). p<0.05 will be considered the significance level, and SPSS software (version 24) will be used for analysis.

3. Discussion

Various models have been proposed to explain the behavior of organ donors. Many researchers have used the (TPB) model for this purpose (Bresnahan et al., 2007, Hyde et al., 2013). Some researchers have concluded that in addition to attitude and intention, there are several other factors that determine organ donation (Bresnahan et al., 2007, Hyde and White, 2009, McMahon and Byrne, 2008, Park and Smith, 2007). Indirect predictors of organ donation, and attitude and intention, included demographic factors, cultural differences, religiosity, social understanding, and personality factors. Direct predictors of organ donation included behavioral beliefs, normative beliefs, selfefficacy, past behavior, direct experience, emotional reactions, social representations, identity, and moral norms (Nguyen et al., 2018, Parkinson et al., 2018, Shepherd and O'Carroll, 2014, Ghaffari et al., 2018, Hyde et al., 2013). According to research conducted outside Iran, behavioral beliefs and subjective norms and the influence of important people, including the family, play a significant role in the decision to donate organs (Ghaffari et al., 2018, Ghaffari et al., 2019, Lei et al., 2020, Hyde et al., 2013, Agarwal et al., 2018).

This theory-based intervention will be conducted to evaluate the efficacy of an educational campaign based on TPB on the intention of people to volunteer to donate organs. It will also assess the effect of the campaign in improving people's knowledge and their TPB constructs (attitude towards behavior and behavioral beliefs, subjective norms, perceived behavioral control, behavioral intention, and behavior) regarding organ donation in Sirjan, Iran.

To date, few studies have focused on organ donation in Sirjan and other provinces of Iran. Moreover, there are few studies about using theory-based campaigns to address knowledge, attitude, and behavior related to organ donation.

This theory-based, multi-component intervention will take into account a range of multiple factors affecting organ donation and will hopefully increase organ donations and save the lives of people waiting for organ transplants. In Salim et al.'s study about increasing organ donation among Hispanic Americans, interventions began in 2007 and were completed by 2012, and from 268 potential donors, 155 donors, of which 106 were Hispanic Americans, provided consent during this period. This study showed that educational programs can reduce the difference between the number of donated organs and the number of organs

needed by recipients by improving the willingness to donate organs in the target group (Salim et al., 2014).

A pilot study in Australia conducted three interventions to increase people's consent for organ donation in 2013. This motivational intervention included 1- planned behavior (strengthening intention through attitudes, control, and mental norms), 2- voluntary interventions using structures from the health action process approach (strengthening the transformation of intentions into action using action plans and coping plans), and 3- a combination of reinforcing (motivational) intentions as well as formulating specific action (when, where, how, and with whom to discuss) and voluntary coping (listing potential barriers and how to overcome them). These programs resulted in significantly higher rates of self-reported organ donation intentions(9).

We hope that the findings of this study will provide valuable evidence regarding the efficacy of this educational campaign based on TPB on organ donation in Sirjan, Iran.

Educational campaigns are usually cost-effective and can be extended to other similar populations in the world.

3.1. Limitations

One of the limitations of this study is that except for people with low literacy, participants are expected to fill out the questionnaire themselves. Another limitation of this study is the lack of a control group, which is due to the nature of the campaign in which information and messages are sent to the target population through multiple channels, and it is not possible to have a fair control group.

Statements and Declarations

Ethics approval and consent to participate

Ethical approval for this study has been obtained from the Ethics Committee of Sirjan School of Medical Sciences, Sirjan, Iran (Ethical Code IR.SIRUMS.REC.1401.007).

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Author contributions

RS, NK developed the study concept, and all authors further developed the study protocol. MM, SAR, and RS are responsible for the implementation of the intervention. NK, MM, and RS drafted the protocol and will draft the study manuscript. All authors contributed to the proposal and will contribute to the final manuscript.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

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