





ORIGINAL ARTICLE

Usefulness of an organ donation opinion survey as a tool to promote organ donation among the adolescent population

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SUMMARY

Opinion surveys on health issues are considered health promotion tools. However, no studies have confirmed this in deceased organ donation for transplantation. This study aimed to analyse the impact of completing an opinion questionnaire about deceased organ donation on the attitude towards organ donation among the adolescent population. This longitudinal study with repeated measurements of attitude towards deceased organ donation was conducted with an adolescent population. The measurement instrument was a validated questionnaire of the attitude towards organ donation (PCID-DTO-Ríos). The study process involved the application of the questionnaire at an initial time, 1 month later, and 6 months later. A total of 1374 adolescents participated in this study. The favourable attitude towards donation was 43.1%, which fell to 41.4% at 1 month ($P = 0.145$), and to 39.7% at 6 months ($P = 0.019$). Changes in the attitude were observed in all groups, both 1 and 6 months after the questionnaire was completed. There was no objective relationship between the adolescent's socio-family environment and the effect of completing the questionnaire on their attitude towards deceased organ donation. In conclusion, the opinion questionnaire was not useful for promoting organ donation and did not have a positive effect on adolescents' attitudes towards organ donation in the medium or long term.

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Key words

adolescents, attitude, opinion questionnaire, organ donation

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Introduction

Obtaining organs is the main limitation of organ transplantation. Therefore, the promotion of organ donation, to obtain organs, is an important activity for the

development of transplantation. However, there is no consensus on the best way to promote organ donation. Thus, promotional campaigns can be counterproductive and even lead to a negative attitude towards organ donation [1].

Within health promotion, adolescence is an important time, as it is the vital stage where the maturation process of an individual occurs and their own identity is affirmed. Therefore, during adolescence, the attitudes of a person are forged, and understanding and processing is carried out by the subject individually from the information they receive. Therefore, adolescents are a group whose beliefs, opinions and attitudes are going to be decisive in maintaining donation rates in the near future.

In the field of health, it has been proposed that conducting opinion questionnaires on certain health issues indirectly acts as a promotional tool [2,3]. Thus, when a questionnaire is passed, in addition to allowing the attitude of the population to be known and the possible factors that condition this attitude, a space for internal reflection on the question posed will be generated indirectly. In theory, this could lead to a change in the attitude towards said topic, which enables the possibility of generating a debate on the question posed in the socio-family sphere.

No previous studies have analysed the capacity of a questionnaire to modify an attitude towards a specific area, such as the attitude towards deceased organ donation. This aspect is important given that the application of a questionnaire could be used as a tool to promote organ donation, which is easy to apply and cost-effective.

Hence, the objective of this study was to analyse whether an opinion questionnaire about deceased organ donation for transplantation produced a positive effect on the attitude towards deceased organ donation among an adolescent population.

Materials and methods

Type of study

This was a longitudinal study with repeated measurements of attitudes towards deceased organ donation in an adolescent population. The attitude assessment was carried out through the administration of a validated opinion questionnaire regarding deceased organ donation.

Study population

The study population consisted of adolescents from southeast Spain. For the selection, four schools with compulsory secondary education (ESO) were contacted. These schools were chosen randomly from educational centres in southeast Spain.

The ESO included adolescents between 12 and 16 years who were distributed in four courses. For this project, a group of students from each course was selected. The estimated sample size for the project was 1470 adolescents and they were distributed across the four ESO courses.

Measurement instrument

For this study, a validated attitude questionnaire on deceased organ donation for transplantation 'PCID-DTO-Ríos [4]' was used ('Cuestionario del Proyecto Colaborativo Internacional Donante sobre Donación y Trasplante de Organos desarrollado por el Dr. Ríos', abbreviations from its name in Spanish). This questionnaire was validated in the Spanish population (adults and adolescents) and presented a total explained variance of 63.203% and a Cronbach's alpha (α) coefficient of reliability of 0.834 [4].

Project design

The following steps were followed to carry out the project: (i) four secondary education centres were randomly selected for the study, (ii) interviews were conducted with the head teacher of the educational centres to present the project and deliver the informative dossier, (iii) approval of the project was taken from both the school board and the parents of the students. After approval by both, signed authorization from the parents was requested, (iv) interviews were conducted with the tutors of the selected courses to plan the project's work and establish direct contact with the course managers, and (v) the most suitable dates for data collection were determined so that there were no situations where minority attendance in the classroom could be foreseen (exams, field trips, festivities, etc.).

The study protocol was approved by the Institute's Committee (CE012114), and verbal informed consent was obtained from all participants. The study was conducted in accordance with the code of ethics set by the Declaration of Helsinki and all its amendments.

Data collection and validation procedure

1. *Application of the questionnaire* took place during ordinary school hours, at the beginning of the class, during the first 10 min. The representatives of the study introduced themselves to the students, explained the project, solved any doubts the adolescents had and informed them that it was an anonymous project.

Adolescents were not provided with any information regarding organ donation and transplantation. Each student chose an anonymous password for the questionnaire. The questionnaire was anonymous and self-administered.

2. *Application of the questionnaire after 1 month* was completed during ordinary school hours using the same process as before. Special emphasis was placed on the correct completion of the password to allow subsequent data pairing.

3. *Application of the questionnaire after 6 months* was completed during ordinary school hours using the same process as before. Special emphasis was placed on the correct completion of the password to allow subsequent data pairing.

4. *Data validation.* Once the completion of the questionnaire was verified, the data collection was closed, the data were processed and a database was created.

Variables

For the independent variable of the study, the *attitude towards donating one's own organs at death* was used, with three response options: (i) in favour of donating, (ii) against donating or (iii) undecided. A comparison was made between the results of the attitude 1 and 6 months after the questionnaire was completed.

To analyse the changes in attitude towards donation among adolescents, three groups were defined: (i) *They did not change their minds*: adolescents who maintained the same attitude towards donation in the three data collections, either 'in favour', 'against', or 'undecided'. (ii) *They changed from being 'in favour' to 'not being in favour'*: adolescents who, in the first data collection were 'in favour' of organ donation and later change their attitude to 'against' or 'undecided'. (3) *They changed from being 'not in favour' to being 'in favour'*: adolescents who in the first data collection were 'against' or 'undecided' and later changed their attitude to 'in favour'.

Any changes from 'being against' to 'undecided' or from 'being undecided' to 'against' were not considered as a change in attitude.

The following were analysed as variables that may have influenced these changes in attitude: (i) sex, (ii) had met a transplant patient, (iii) had met a donor, (iv) had commented on the subject of organ donation at the family level, (v) had spoken with friends on the topic of organ donation, (vi) knew their father's opinion on organ donation, (vii) knew their mother's opinion on organ donation and (viii) knew their partner's opinion on organ donation.

Statistical method

The McNemar test was used to assess the effectiveness of completing the questionnaire in changing attitudes towards adolescent donation. For the rest, descriptive statistics were performed and Pearson's chi-squared test was conducted by applying a residue analysis and Fisher's exact test when the contingency tables had cells with an expected frequency of <5. Results were considered significant at $P < 0.05$.

Results

Data of the study population

The study group was composed of 1374 adolescents (average age: 14 ± 1.3 years), divided into four groups based on their academic year. Thus, 336 adolescents participated in the first year of ESO, 396 from the second, 321 from the third and 321 from the fourth (Table 1).

Regarding attitudes towards donating their own organs at death, 43.1% ($n = 592$) of the adolescents would donate their organs, 44.8% ($n = 616$) were undecided and 12.1% ($n = 166$) would not donate. Regarding the main reason to be in favour of donating, solidarity stood out (84.1%; $n = 1155$). In contrast, the main reason for not donating was the fear of not being dead at the time of donation (23.5%; $n = 323$), although assertive refusal (no, without giving reason) was the most frequent option designated to justify not donating.

Monthly assessment of the usefulness of the survey as a tool for promoting organ donation

One month after the first survey was given to the adolescents, 41.4% ($n = 569$) were in favour, 46.1% ($n = 633$) were undecided and the remaining 12.5%

Table 1. Distribution of the adolescents participating in the project by centre of compulsory secondary education and academic year.

	Course 1°	Course 2°	Course 3°	Course 4°	Total
Centre E1	180	111	101	94	486
Centre E2	48	157	88	87	380
Centre E3	38	62	79	86	265
Centre E4	70	66	53	54	243
Total	336	396	321	321	1374

($n = 172$) were against. There were no statistically significant differences in the attitudes of the participants at the beginning of the study ($P = 0.145$; Table 2).

Of the adolescents who at the beginning of the study were in favour of donating their organs at death ($n = 592$), 87.3% ($n = 517$) maintained this attitude at 1 month; however, 2.4% ($n = 14$) had changed their attitude and had become against donation, and 10.3% ($n = 61$) had become undecided. In the group who were initially against donating ($n = 166$), 3.6% ($n = 6$) had changed to in favour, 83.1% ($n = 138$) maintained the attitude and 13.3% ($n = 22$) had become undecided. Finally, among the undecided group ($n = 616$), 7.5% ($n = 46$) had become in favour, 3.2% ($n = 20$) were against, and 89.3% ($n = 550$) maintained an indecisive attitude (Fig. 1).

When we analysed any factors that may have been associated with the effect of the questionnaire on the attitude of adolescents, there was no objective relationship between any of them, except for the knowledge of

their partner's attitude towards organ donation ($P = 0.008$; Table 3). However, the value of this association was debatable, as 56.2% ($n = 772$) did not have a partner and 36% ($n = 494$) did not know their partner's opinions. This meant that the analysis was limited to the remaining 108 adolescents.

Assessment at 6 months of the usefulness of the survey as a tool for promoting organ donation

Six months after the survey, the adolescents' attitude towards donation showed a significant change with respect to the initial attitudes ($P = 0.019$; Table 4). Thus, the percentage of adolescents in favour of donation was 39.7% ($n = 545$), with 13% ($n = 179$) against, and 47.3% ($n = 650$) as undecided.

Of the adolescents who at the beginning of the study were in favour of donating their organs at death ($n = 592$), 76.4% ($n = 452$) maintained this attitude at 6 months, but 3.4% ($n = 20$) had become against donation, and 20.3% ($n = 120$) were undecided. In the group of adolescents who were initially against donation ($n = 166$), 6.6% ($n = 11$) had become in favour of donation, 72.9% ($n = 121$) maintained the same attitude and 20.5% ($n = 34$) had become undecided. Finally, among the undecided adolescents at the time of the study ($n = 616$), 13.3% ($n = 82$) had become in favour, 6.2% ($n = 38$) had become against and 80.5% ($n = 496$) continued to be indecisive (Fig. 2).

When we analysed the factors that may have conditioned the effect of the questionnaire on adolescents' attitudes, there was no objective relationship between any of them, except with the knowledge of their partner's attitude towards organ donation ($P < 0.001$; Table 5). However, the value of this association was

Table 2. Change in attitude towards deceased organ donation among adolescents 1 month after completing the opinion questionnaire.

Initial attitude towards donation	Attitude towards donation after 1 month		
	In favour	Against	Undecided
$n = 1374$ $P = 0.145$			
In favour 592 (43.1%)	517 (87.3%)	14 (2.4%)	61 (10.3%)
Against 166 (12.1%)	6 (3.6%)	138 (83.1%)	22 (13.3%)
Undecided 616 (44.8%)	46 (7.5%)	20 (3.2%)	550 (89.3%)

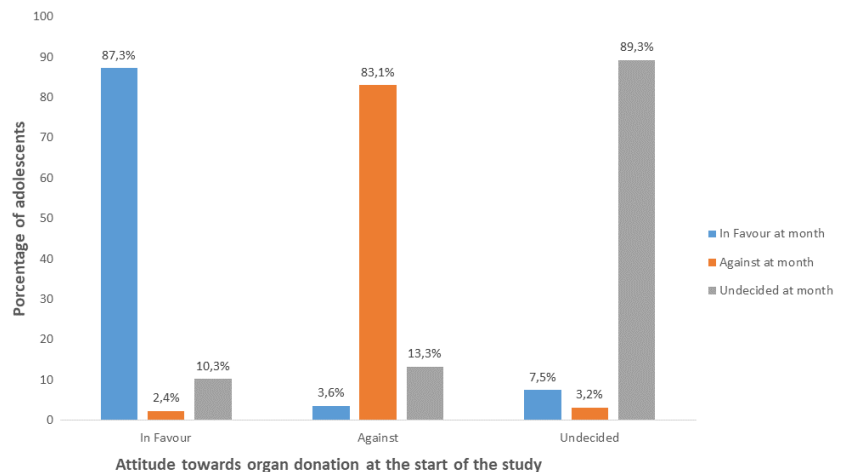


Figure 1 Change in attitude towards deceased organ donation among adolescents 1 month after completing the questionnaire.

Table 3. Analysis of the socio-personal factors that can be associated with the attitude towards deceased organ donation 1 month after applying the questionnaire to adolescents.

Variable	P
Adolescent sex	0.173
Knowing an organ transplant person	0.804
Having known an organ donor	0.394
Having spoken on a family level about organ donation and transplantation	0.459
Having spoken to friends about organ donation and transplantation	0.407
Knowing the father's attitude towards organ donation and transplantation	0.500
Knowing the mother's attitude towards organ donation and transplantation	0.683
Knowing the partner's attitude towards organ donation and transplantation	0.008

Bold values indicates statistical significance.

Table 4. Change in attitude towards deceased organ donation among adolescents at 6 months after completing the opinion questionnaire.

Initial attitude towards donation	Attitude towards donation at 6 months		
	In favour	Against	Undecided
<i>n</i> = 1.374 <i>P</i> = 0.019	545 (39.7%)	179 (13.0%)	650 (47.3%)
In favour 592 (43.1%)	452 (76.4%)	20 (3.4%)	120 (20.3%)
Against 166 (12.1%)	11 (6.6%)	121 (72.9%)	34 (20.5%)
Undecided 616 (44.8%)	82 (13.3%)	38 (6.2%)	496 (80.5%)

debatable, since, as had occurred in the first month, 56.2% (*n* = 772) did not have a partner, and 36% (*n* = 494) did not know their partner's opinions. In

other words, the analysis was reduced to the remaining 108 adolescents.

Overall assessment of the usefulness of the survey as a tool for promoting organ donation

As shown in Fig. 3, the attitude towards donation by adolescents progressively decreased, from 43.1% at the beginning, to 41.4% after 1 month, to 39.7% after 6 months. The attitude against donation progressively increased from 12.1% at the beginning, to 12.5% after 1 month, to 13% after 6 months. Finally, the number of adolescents who were undecided about organ donation also showed a progressive increase from the initial 44.8% to 46.1% after 1 month, to 47.3% after 6 months.

Discussion

An opinion questionnaire tried to obtain, in a systematic and orderly manner, information on the variables that intervened in an investigation carried out in a determined population [1]. In the field of health, when a questionnaire is passed, in addition to making it possible to understand the attitude of a population and the possible factors that condition it, it generates a space indirectly for internal reflection on the question posed. This could theoretically provoke a change in attitude towards the said subject and also open up the possibility of generating a debate on the question posed in the socio-family environment [1–3].

Several projects by our group (Collaborative International Donor Project) have been approved owing to the potential organ donation promotion effect that questionnaires usually entail [5,6]. However, as it often occurs in medicine, there are actions that are assumed to be true, but have no scientific evidence. Therefore, there is no clear study that confirms that the realization

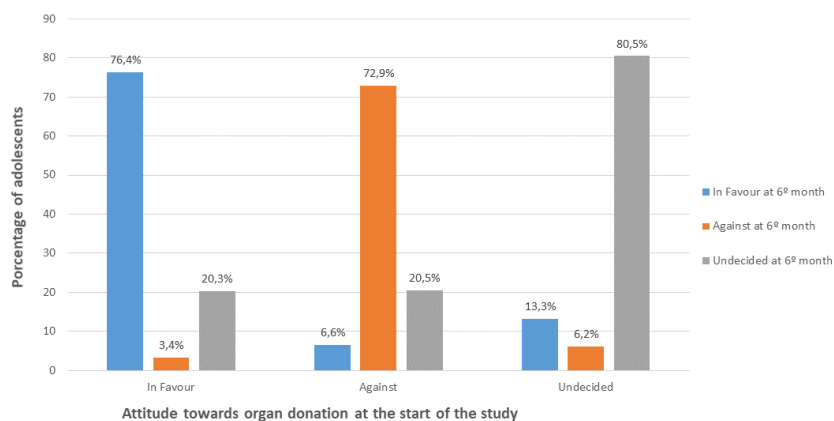


Figure 2 Change in attitude towards deceased organ donation among adolescents 6 months after completing the questionnaire.

Table 5. Analysis of the socio-personal factors that can be associated with the attitude towards deceased organ donation 6 months after applying the questionnaire to adolescents.

Variable	P
Adolescent sex	0.593
Knowing an organ transplant person	0.380
Having known an organ donor	0.851
Having spoken on a family level about organ donation and transplantation	0.995
Having spoken to friends about organ donation and transplantation	0.590
Knowing the father's attitude towards organ donation and transplantation	0.507
Knowing the mother's attitude towards organ donation and transplantation	0.236
Knowing the partner's attitude towards organ donation and transplantation	<0.001

Bold values indicates statistical significance.

of an opinion questionnaire has an effect, either in favour or against, on the opinion towards deceased organ donation.

The project in this study presents results that are not very encouraging in this regard. The application of an opinion questionnaire towards deceased organ donation not only did not produce a positive effect in improving the attitude towards organ donation but also showed a negative effect, as at 6 months, there was a significant worsening of attitude towards organ donation.

The design of this study aimed to assess the impact of an opinion questionnaire as a tool for promoting donation but did not allow for reasons as to why it was not useful. It should be noted that there are two factors that must be considered. First, applying an opinion

questionnaire, as indicated, will generate a process of reflection on the subject in question, in this case, deceased organ donation. Second and possibly the most important, the starting point for this reflection; this study starts from a poorly sensitized population, with only 43.1% of the study population in favour of deceased organ donation. This situation is key, given that the reflection that can be carried out tended to be negative, and, in addition, the discussion and talk forum among adolescents would be negative, since most were not in favour. Future projects should analyse if it is possible that a questionnaire could have a different effect in a more sensitized group than the one shown in this study, and if it could even be a positive effect. It must be remembered that the adolescent population is presenting a desensitization towards organ donation in several countries [7–11], a fact also observed in this study, and it is necessary to explore organ donation promotion tools that are efficient and effective.

It is important to remember that the target population, teenagers, is important but challenging to approach because of the specific biological, social and emotional conditions involved during adolescence. The development stage of adolescents may influence the lack of effectiveness of the survey as a promotional tool for deceased organ donation. Therefore, it cannot be ruled out that this potential donation promotion tool may be effective for other ages, especially in adults. Therefore, it is advisable to replicate this project with other age groups to try to contrast this situation.

Data analysis showed that after a sufficient period of time (1 month), the adolescents were able to reflect on the issue raised in the survey and share their opinions with their friends and family, in short, with their closer socio-family environment. This generated space for debate both internally and externally and the observed change, although not significant, was negative, which

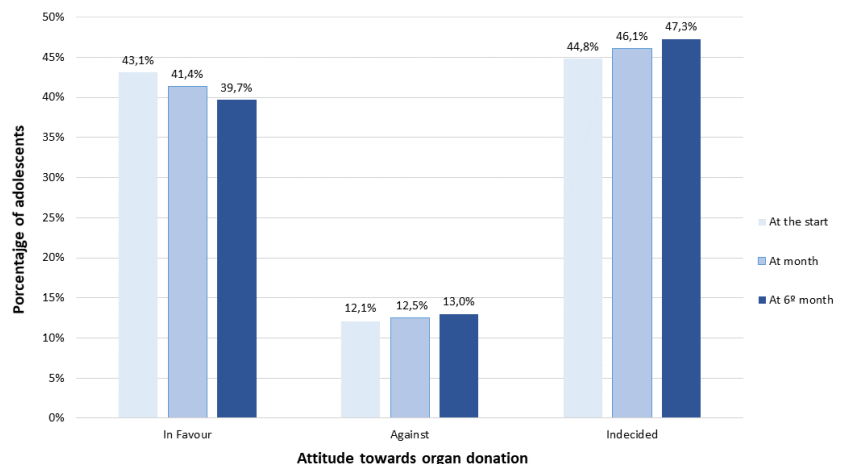


Figure 3 Change in attitude towards deceased organ donation among adolescents at 1 month and at 6 months after completing the questionnaire, by opinion groups.

increased the number of adolescents who were against or undecided regarding deceased organ donation. Possibly, as indicated above, a negative discussion forum was generated that did not favour the promotion of organ donation. Furthermore, as Fig. 1 shows, the fact that changes occur in the three attitude sectors (in favour, against and undecided) shows that adolescents' attitudes do not seem to be consistent and are clearly based on some solid principles. Among those who were initially in favour, having filled out the questionnaire and specifically asking certain questions related to donation seems to have raised doubts regarding their initial position. Therefore, 12.7% of the adolescents who were initially in favour of the donation changed their attitude regarding it, with 2.4% becoming against, and 10.3% remained undecided.

In the long term (6 months), the situation was accentuated, with a significant decrease in adolescents in favour of donation and an increase in those who were against and undecided. For these reasons, it can be concluded that conducting an opinion survey in an adolescent population has a negative effect on the attitude towards deceased organ donation.

The application of a questionnaire and its influence on the attitude regarding the proposed topic may be conditioned by different factors, both socio-personal and awareness-raising on the topic, and by the socio-family environment of the adolescent. In this project, although the different socio-personal and socio-family variables were analysed, no associations were found that conditioned the effect of the questionnaire with changes in attitude towards donation. For our group, it is striking that the family environment, especially the attitude of parents towards donation, was not a factor associated with the change in attitude. Usually, a family environment favourable towards deceased organ donation is conducive to a favourable attitude among the members of the family when the issue of organ donation is raised. Thus, several studies on adolescents have demonstrated how the effectiveness of a campaign increased when the issue was raised at the family level, and parents had a favourable attitude towards deceased organ donation for transplantation [12–16].

It is necessary to assess whether the application of an opinion questionnaire together with an activity associated with raising the issue of organ donation at the socio-family level could favour dialogue and family awareness on the subject. Therefore, the project design should consider a brief family activity that, while providing basic documentation on donation and transplantation of organs to adolescents, can be carried out on the subject and discussed at the family level.

In the friend circle of adolescents, the same occurs as with their family environment. Although numerous studies showed that adolescents who discussed the issue of donation with their friends presented a more positive attitude towards donation than those who did not comment on it [12–16], in our work, this factor showed no links with the changes in attitude observed either in the medium or long term. Possibly, this approach to social discussion has not been positive and has generated more fear and indecision. As mentioned previously, adolescents are not very sensitized.

In the field of organ transplantation, the use of questionnaires should be limited to conducting psychosocial studies to determine the profiles necessary to promote deceased organ donation. No study has demonstrated its usefulness for promoting organ donation among adults, and in adolescents, it is shown to be counterproductive. As long as there are no conclusive studies that confirm these results in adolescents and provide information on their usefulness in the adult population, opinion questionnaires on deceased organs should be limited to what they were designed for, which is in the performance of psychosocial studies. In the adult population, these types of projects should be carried out to examine whether this situation is specific to the adolescent population or is similar for all age groups.

Therefore, any promotional activity of deceased organ donation must be tested and its usefulness demonstrated. Hence, health promotion and education campaigns have become common practices because of their supposed positive effects. However, the usefulness and benefits are questioned in the face of the large consumption of necessary resources that they require. Furthermore, it is necessary to take into account the complexity of measuring the effectiveness and real impact of the campaigns. There are multiple promotional campaigns for organ donation and transplantation.

However, few results have been analysed in depth [12]. For this reason, promotional campaigns should be reconsidered to collect data on their real effectiveness.

The findings of this study have an important social value, and one of its strengths is its prospective design and the use of a validated and tested questionnaire in an adolescent population [16]. However, this single study could not generate any evidence. This is the first study to show the lack of usefulness of opinion questionnaires as a tool for promoting deceased organ donation. However, it is necessary that other psychosocial research groups in organ transplantation conduct similar studies that confirm or reject this proposal to promote organ donation. Additionally, it is necessary to assess whether there were

any cultural or socio-economic differences that may condition these results, according to the cultural geographical area where this project was applied.

In addition, we need to remember that the attitudes are a sum of the thoughts and emotions leading to action, which is a very complicated phenomenon to measure. Therefore, as a weakness of the study, it should be considered that the findings of this project may be because of how the phenomenon was operationalized in the questionnaire rather than a reluctance towards the donation of one's organs.

In conclusion, it can be said that the realization of an opinion questionnaire for deceased organ donation does not have a positive effect on the attitude towards donation among adolescents. Additionally, in the long term, it can lead to a decrease in adolescents who are in favour of organ donation and an increase in those who are against it or are undecided regarding organ donation.

Authorship

RA, and RM: Conception and design. RA, L-NA, MAL, and A-GMA: Acquisition of a substantial portion of data. RA, RM, de MM, L-NA, and RP: Analysis and

interpretation of data. RA, and LNA: Drafting of the manuscript. RA, L-NA, and RM: Critical revision of the manuscript for important intellectual content. RA, L-NA, and RMG: Statistical expertise. RA: Obtaining funding for this project or study. RA: Supervision. RA, L-NA, A-GMA, and RP: Final approval of the version to be published.

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Conflicts of interest

The authors have declared no conflicts of interest.

Data availability statement

The personal data of the participants is not published. All participants were informed of the research conducted. All participants agreed to participate in the study after providing informed consent. The study protocol was approved by the institute's committee (CE012114).

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