

Knowledge, beliefs, and attitudes of young adults from Guanajuato toward organ donation

Abstract

Objective: The study aimed to determine the relationship between the knowledge, beliefs, and attitudes of young adults (YA) toward organ donation.

Method: A quantitative, correlational, and non-experimental study design was used. The research was conducted in a community in Guanajuato, Mexico, between January 2019 and November 2020, using a convenience sampling method. The hypothesis was tested using Spearman's Rho correlation. Ethical and legal considerations were applied according to the Mexican General Health Law, the Declaration of Helsinki, and informed consent was respected. **Results:** Fifty-two young adults aged 18 to 39 years participated. While 57.7% had moderate knowledge about organ donation and 96.2% expressed a positive stance toward it, 55.8% showed indifferent attitudes, indicating a discrepancy between beliefs and practical willingness. A moderate and statistically significant correlation ($\alpha = 0.454$) was found between beliefs and attitudes toward organ donation. **Conclusions:** The attitudes of young adults toward organ donation appear to depend on their beliefs (including cultural, spiritual, emotional, and trust-related aspects regarding the healthcare system). Although organ donation is recognized as a benevolent act, such recognition does not necessarily translate into the decision to donate. The development of favorable attitudes is suggested through educational strategies, promotion, and training led by nursing professionals both at the community level and within healthcare institutions.

Keywords: organ donation, attitudes, beliefs, knowledge

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Jorge Arturo Hernández Rodríguez,¹ María Mercedes Moreno González,² Leticia Casique Casique³

¹Professor in the Division of Health Sciences and Engineering, Celaya - Salvatierra Campus, University of Guanajuato, Mexico

²Doctor in the Division of Health Sciences and Engineering, Celaya - Salvatierra Campus, University of Guanajuato, Mexico

³Emeritus Doctor of the Division of Health Sciences and Engineering, Celaya - Salvatierra Campus, University of Guanajuato, Mexico

Correspondence: Jorge Arturo Hernández Rodríguez, Professor in the Division of Health Sciences and Engineering, Celaya - Salvatierra Campus, University of Guanajuato, Celaya, Guanajuato, Mexico, Tel + 524613015654

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Introduction

Organ donation represents an altruistic act of consent that, within the framework of the *Ley General de Salud (LGS)* in Mexico, authorizes the removal and delivery of organs, tissues, and cells from a person (either during life or after death) for the purpose of enabling transplantation.¹ This medical procedure is complex and has proven to be efficient in saving lives and/or significantly improving the quality of life of patients suffering from terminal diseases, often representing the only available therapeutic alternative.^{2,3} However, despite its medical and social importance, organ donation faces significant challenges in Mexico. According to data from the *Centro Nacional de Trasplantes (CENATRA)*, as of July 30, 2025, there were 19,178 individuals on the waiting list to receive a transplant.⁴ Nevertheless, the number of transplants performed annually has not been sufficient to meet this demand. For example, in 2023 there were 3,338 registered recipients and 2,680 donations from deceased persons; in 2024, 19,774 recipients were on the waiting list, with only 2,823 deceased donors.⁵ Furthermore, the number of voluntary donors has fluctuated over the years-reaching 24,884 in 2021, but decreasing to 13,532 in 2024, and by September 2025, only 8,550 had been reported.⁶ This imbalance between supply and demand is exacerbated by population aging, as chronic and degenerative diseases are increasingly prevalent among Mexicans. In 2025,¹⁶ 1 million older adults were reported, representing 12.8% of the total population.⁷ Although the majority of the population supports organ donation, the gap between intention and action persists, highlighting the urgent need to strengthen the culture of donation and improve awareness mechanisms.⁸ The low rate of organ donation has been attributed to various factors that generate rejection or indecision. Among these are myths and misconceptions (social influences) within family and personal spheres, lack of communication regarding the willingness to donate while alive, family refusal at the time of death, and distrust arising from concerns about corruption or the potential misuse of organs.⁸⁻¹²

Specifically, beliefs may include misconceptions about brain death (such as believing that organ removal occurs before death) or fears of bodily mutilation.^{13,14} Attitudes toward donation are considered to be closely associated with variables such as educational level, social environment, and-more specifically-the information provided by healthcare professionals. For instance, nursing professionals, due to their role in teaching, research, and education, play an essential part in health promotion.^{13,15} This role supports the development of evidence-based strategies to foster positive attitudes toward organ donation. Previous studies have demonstrated the effectiveness of nursing educational interventions in improving knowledge and reducing unfavorable attitudes toward organ donation.¹⁶⁻¹⁹ This study is based on *Nola J. Pender's Health Promotion Model*, which posits that personal experiences and cognitions (such as knowledge and beliefs) influence health-promoting commitments and behaviors. Within this model, knowledge is interpreted as perceived benefits, while beliefs represent the barriers that limit donation-related behavior.²⁰ In this study, the population of choice comprised young adults (18 to 39 years old), as they are considered a group with less ingrained ideas, receptive to change, and with the potential to promote awareness and ethical reflection in future generations.^{21,22}

Methodology

Study design

This was a quantitative, correlational, and non-experimental study with a cross-sectional design. The research was conducted in *La Huerta*, municipality of *Cortázar*, *Guanajuato (Gto)*, from 2019 to November 2020.

Population and sample

The study universe (N) consisted of 164 YA residing in the community of *La Huerta*, *Cortázar*, *Gto*. A non-probabilistic

convenience sampling method was used. The minimum sample size was calculated using the statistical software *Epi Info Version 3.5.1*, resulting in a minimum of 52 YA. Inclusion criteria defined eligible participants as men and women between 18 and 40 years of age who were residents of the community, literate, and willing to sign informed consent. A total of 52 YA aged between 18 and 39 years ultimately participated in the study.

Data collection instruments

Three instruments were used for data collection.

1. General Data Form: Collected sociodemographic information including age, gender, occupation, marital status, educational level, economic income, and religion.
2. Scale of adults' attitudes towards organ donation in outpatient clinics of the Sergio Bernales Hospital Lima-2017: Designed to measure the variable Attitudes. It consists of 17 items with responses on a 5-point Likert scale and has a Cronbach's alpha reliability of 0.75. The scale classifies attitudes as Favorable, Indifferent, or Unfavorable.²³
3. Factors associated with organ donation: A Likert-type questionnaire comprising 25 questions used to measure the variables Knowledge and Beliefs, with a Cronbach's alpha reliability of 0.84.²⁴

Knowledge about donation: Assessed through 7 items using a 6-point scale.

Beliefs about donation: Assessed through 14 items using a 6-point scale.

Procedures and statistical analysis

The research protocol was reviewed and approved by the Comité de Investigación (registration CBCCS-04327012020) and the Comité de Bioética (document 0748/DIR/DCSI/CCS/2020) of the Campus Celaya-Salvatierra, Universidad de Guanajuato. For data collection, home visits were conducted in the target community. YA who met the eligibility criteria were informed about the study objectives through an information sheet; doubts were addressed, and written informed consent was obtained. The instruments were applied sequentially. Ethical and legal considerations were governed by the Reglamento de la Ley General de Salud en Materia de Investigación para la Salud¹ (classifying the study as risk-free) and the Declaration of Helsinki, ensuring confidentiality, anonymity, and respect for the autonomy of YA.²⁵ For statistical analysis, IBM SPSS Statistics Data File Drivers 27.0 was used. Descriptive statistics (measures of central tendency and dispersion, frequency tables, and percentages) were applied to sociodemographic variables. To test the hypothesis and determine the relationship among the study variables (knowledge, beliefs, and attitudes), Spearman's Rho correlation test was used.

Results

A total of 52 YA who met the inclusion criteria were interviewed.

Sociodemographic characteristics

The mean age was 26.9 years with a standard deviation (SD) of 4.5, ranging from 18 to 39 years. The majority of YA were women (75%), and 25% were men. Regarding marital status, 50% were single, 32.7% married, and 17.3% living in a common-law union. In terms of educational level, secondary education predominated (50%), followed by high school (36.5%), undergraduate degree

(11.5%), and postgraduate studies (1.9%). With respect to religion, 82.7% identified as Catholic, 7.7% as Evangelical, and 9.6% reported no religious affiliation. Regarding monthly income, 38.5% reported earning between \$1,000 and \$2,999 MXN, 36.5% between \$3,000 and \$6,999 MXN, 15.4% more than \$7,000 MXN, and 9.6% less than \$1,000 MXN (Tables 1–7).

Table 1 Characteristics of sociodemographic variables of the young adult participants

Variable	Minimum	Maximum	Mean	SD
Age (years)	18	39	26.85	± 4.5
Variable	Indicators	n	%	
Gender	Female	39	75	
	Male	13	25	
	Single	26	50	
Marital Status	Married	17	32.7	
	Common-law union	9	17.3	
	Secondary school	26	50	
Educational Level	High school	19	36.5	
	Bachelor's degree	6	11.5	
	Postgraduate	1	1.9	
	Unemployed	1	1.9	
Occupation	Housewife	12	23.1	
	Employee	30	57.7	
	Merchant	4	7.7	
	Professional	1	1.9	
	Student	3	5.8	
	Priest	1	1.9	
Religion	Catholic	43	82.7	
	Evangelical	4	7.7	
	No religion	5	9.6	
	< \$1,000	5	9.6	
Monthly income	\$1,000–2,999	20	38.5	
	\$3,000–6,999	19	36.5	
	> \$7,000	8	15.4	

n = 52; Source: General data collection form

Study variables

Knowledge about organ donation: 57.7% of YA demonstrated moderate knowledge, 21.2% adequate knowledge, and 21.2% deficient knowledge.

Table 2 Knowledge about organ donation

Category	n	%
Poor	11	21.2
Moderate	30	57.7
Adequate	11	21.2
Total	52	100

n = 52. Source: Instrument "Factors associated with organ donation"

Beliefs about organ donation: The majority of YA (96.2%) expressed favorable beliefs toward organ donation, while 3.8% expressed opposition.

Table 3 Beliefs about organ donation

Category	n	%
Against	2	3.8
In favor	50	96.2
Total	52	100

n = 52. Source: Instrument "Factors associated with organ donation."

Attitudes toward organ donation: Indifferent attitudes predominated (55.8%), followed by favorable (38.5%) and unfavorable (5.8%) attitudes.

Table 4 Attitude toward organ donation

Category	n	%
Unfavorable	3	5.8
Indifferent	29	55.8
Favorable	20	38.5
Total	52	100

n = 52. Source: Instrument "Scale of adults' attitudes towards organ donation in outpatient clinics of the Sergio Bernales Hospital Lima-2017."

Association of variables (Spearman's Rho Correlation)

Spearman's Rho correlation test was used to measure the relationships among the study variables.

Knowledge and attitudes: $r = 0.122$; $p = 0.390 \rightarrow$ Not significant \rightarrow Hi rejected.

Table 5 Attitude toward organ donation

		Knowledge	Attitude toward organ donation
Knowledge	Correlation Coeficiente	1.000	0.122
	Sig. (2-tailed)	.	0.257
	N	52	52
Attitude toward organ donation	Correlation Coefficient	0.122	1.000
	Sig. (2-tailed)	0.390	.
	N	52	52

n = 52. Source: n = 52. Source: Database analysis in SPSS.

Knowledge and beliefs: $r = 0.160$; $p = 0.257 \rightarrow$ Not significant \rightarrow Hi rejected.

Table 6 Correlation: knowledge and beliefs about organ donation

		Knowledge	Beliefs
Knowledge	Correlation Coefficient	1.000	0.160
	Sig. (2-tailed)	.	0.257
	N	52	52
Beliefs	Correlation Coefficient	0.160	1.000
	Sig. (2-tailed)	0.257	.
	N	52	52

n = 52. Source: Database analysis in SPSS.

Beliefs and attitudes: $r = 0.454$; $p = 0.001 \rightarrow$ Moderate and significant correlation \rightarrow Hi accepted.

Table 7 Correlation: beliefs and attitude toward organ donation

		Attitude toward organ donation	Beliefs
Attitude toward organ donation	Correlation Coefficient	1.000	0.454**
	Sig. (2-tailed)	.	0.001
	N	52	52
Beliefs	Correlation Coefficient	0.454**	1.000
	Sig. (2-tailed)	0.001	.
	N	52	52

n = 52. Source: Database analysis in SPSS.

Discussion

In the sociodemographic variables of the YA, some factors were identified that, according to the reviewed literature, influence attitudes toward organ donation. The mean age was 26.86 years ($SD = 4.5$) with a range from 18 to 39 years. This population YA is relevant because, by nature, it is considered to have greater openness to change and to be less influenced by deep-rooted ideas, with the potential to become promoters of organ donation awareness.²⁶ Regarding gender, women represented the majority of participants (75%). Literature from Guanajuato reinforces the importance of this variable, as the female gender has been observed to show more favorable attitudes toward donation in the state. This finding is relevant because, despite the high female representation, indifferent attitudes remain predominant (55.8%), suggesting that other barriers are stronger than gender predisposition.^{26–28} The predominant educational level was secondary school (50%), followed by high school (36.5%), representing a total of 86.5% of the population with a medium or low level of education. Regarding monthly income, a large part of the sample reported low or moderate earnings: 38.5% earned between \$1,000 and \$2,999 MXN, and 36.5% between \$3,000 and \$6,999 MXN. Altogether, 75% of the YA reported an income below \$7,000 MXN. Low income tends to be associated with an unfavorable tendency toward donation, as limitations in quality and educational opportunities may facilitate the formation of false beliefs based on invalid or incorrect information. Most YA work as employees (57.7%) or homemakers (23.1%), occupations often correlated with the educational and income levels observed.^{13,28,29}

Regarding religion, 82.7% of the YA declared practicing Catholicism. Religious beliefs are a significant factor that may act as a barrier since they can lead to misconceptions, such as the belief that the body must remain whole to resurrect or that donation constitutes mutilation. The belief system is intimately linked to the sociocultural context. National literature identifies that refusal toward organ donation is often driven by belief systems and religious convictions, which can negatively influence the decision to become a donor. In the context of Guanajuato, the predominant religion (Catholicism) could be influencing the indifferent attitude (55.8%) and reinforcing cultural myths or fears.^{26,30,31} These figures are essential in the context of effective donation, since in Mexico, the LGS (Article 324) establishes the need for family consent (spouse, partner, descendants, etc.) in the absence of an explicit negative statement by the donor.¹ Therefore, it is relevant to determine who legally makes the final decision. Family communication about the will to donate is a predisposing factor in decision-making, as the family can ultimately deny donation (family refusal has been reported as high as 62.5% in other studies).^{32–34} Regarding knowledge about organ donation, it was determined that more than half of the YA (67.7%) presented a moderate level of knowledge. Deficient and adequate levels were both 21.2%. These results show that the knowledge level is moderate-although not deficient, it is a key finding since the literature establishes that a lack of adequate knowledge is the main factor that hinders donation, as it can generate myths, misunderstandings, distrust, and anxiety.^{12,26,35,36} Beliefs showed that 96.2% of YA expressed being in favor of donation. Beliefs are defined as a firm assent to something, influenced by the environment or an event, and in the context of donation, these ideas operate as cognitions and affects that condition behavior. The high percentage in favor indicates that, at higher academic levels, YA value donation as a positive and altruistic practice.^{12,36–39} Attitudes represent the real predisposition and anticipated willingness to donate. The present study showed a different behavior from beliefs. Despite 96.2% favorable beliefs, 55.8% of YA were classified with

indifferent attitudes, while only 38.5% had favorable attitudes and 5.8% unfavorable ones. These indifferent attitudes are the main barrier to increasing the donation rate. These results agree with the literature showing that attitudes are a critical and multifactorial problem that must be addressed considering social context, myths, and beliefs.^{12,26,35–39}

The main results regarding the study variables revealed a fundamental inconsistency among YA: although the vast majority (96.2%) expressed being in favor of organ donation (beliefs) and recognized it as an altruistic act, a large percentage (55.8%) demonstrated indifferent attitudes toward the practice of donating, with only 38.5% showing favorable attitudes. This finding confirms a globally recognized issue, where the intention to donate does not necessarily translate into effective action or willingness, resulting in a limited number of donations.^{40,41} The correlation results are critical. Hypothesis 1 proposed the existence of a relationship between the knowledge of YA and their attitudes toward organ donation. However, the Spearman test showed a correlation coefficient of $r = 0.122$ with a p -value = 0.390, which is not statistically significant. This indicates that a higher level of knowledge is not a sufficient determinant to generate a favorable change in attitudes toward organ donation. This suggests that knowledge-understood as the comprehension of medical, legal, and procedural aspects of the donation process-does not, by itself, translate into favorable or unfavorable attitudes toward the practice. In other words, although YA possess information about donation, this does not guarantee a positive disposition to donate.^{40,41} For this reason, Hypothesis 1 was rejected, confirming that attitudes toward donation are probably more influenced by factors other than knowledge, such as beliefs, personal experiences, and trust in the healthcare system. Hypothesis 2 proposed a relationship between the knowledge of YA about organ donation and their beliefs regarding this practice. After applying the Spearman correlation test, a correlation coefficient of $r = 0.160$ with a p -value = 0.257 was obtained, indicating that the relationship is not statistically significant. This result suggests that the level of knowledge about organ donation does not necessarily influence the beliefs of YA. That is, a higher level of knowledge about medical, legal, ethical, and social aspects does not ensure favorable beliefs toward donation.³⁹ Knowledge can be defined as the rational and objective understanding of a topic, while belief implies personal assent based on individual experience and sociocultural influences. Beliefs are, by nature, multifactorial and grounded in subjective dimensions such as faith, family traditions, or social perceptions, not necessarily requiring empirical evidence. Thus, while some beliefs may have an altruistic foundation, upbringing and exposure to myths or misconceptions are essential components of the belief system.⁴²

Therefore, Hypothesis 2 was rejected, evidencing that other factors play a more relevant role in shaping beliefs. These sociocultural personal factors-such as cultural, spiritual, or emotional aspects-seem to be the real drivers that shape beliefs about donation. This idea is reinforced by the sociodemographic data indicating that 82.7% of YA declared being Catholic, a religion that often interacts with myths about bodily integrity or resurrection, acting as strong cultural barriers. It is worth emphasizing that beliefs are defined as personal understanding or experience, often based on faith and not empirically verifiable.^{26,30,31,43,44} Hypothesis 3 proposed a significant relationship between the beliefs of YA and their attitudes toward organ donation. The Spearman correlation showed a coefficient of $r = 0.454$ with $p = 0.001$, indicating a moderate and statistically significant relationship. This finding demonstrates that beliefs play a relevant role in shaping attitudes toward organ donation. Beliefs-defined as personal understanding or experience influenced by the environment-function

as cognitions and affects that condition behavior. That is, YA with favorable beliefs related to cultural, spiritual, emotional, and health system trust aspects have favorable attitudes toward donation.^{8–12,20} This result is fundamental, as it confirms that, unlike knowledge, beliefs are the main internal factor determining the predisposition of YA attitudes. However, although the vast majority (96.2%) of YA expressed beliefs in favor of donation, these favorable beliefs are not sufficient to guarantee the final decision to donate, which is reflected in the high prevalence of indifferent attitudes (55.8%). While the act of donating is widely recognized as a benevolent act, indifferent attitudes suggest that although altruistic beliefs are dominant, limiting beliefs (classified as perceived barriers to action within Pender's model) exert influence. These barriers may be rooted in cultural or religious fears (such as the belief that the body must remain whole) or in a lack of trust in the healthcare system and concerns about family consent.^{12,36,39} Therefore, Hypothesis 3 was accepted, highlighting the importance of considering beliefs when designing educational strategies, promotional campaigns, and awareness programs about organ donation.

Recommendations

The study demonstrated relevant empirical evidence about the population of YA) a group characterized by its receptiveness to change and its potential as a transmitter of altruistic awareness. These findings are fundamental for strengthening organ donation promotion strategies and implementing public health programs that address belief-related barriers in the state of Guanajuato. Due to their educational and research roles, as well as their close connection with the community in Primary Health Care (PHC), nursing professionals play a key role in raising awareness among YA.

Suggested lines of action and research:

- i. **Educational strengthening and promotion led by nursing:** Implement educational, training, and promotional strategies aimed at increasing knowledge about organ donation, including medical, ethical, legal, and social aspects, as well as transparency in the process and professional ethics. These interventions should focus on developing positive beliefs that help overcome perceived barriers, generate trust in the healthcare system, and promote willingness for intrafamilial dialogue.^{13,15,17}
- ii. **Promotion of intrafamilial dialogue:** Design specific interventions to encourage family conversation about donation, considering that family consent is decisive in the final decision to donate organs. This dialogue allows for clarifying doubts, debunking myths, respecting individual decisions, and strengthening trust in the medical and legal procedures associated with donation.^{13,32,33}
- iii. **Qualitative and quantitative research on religious and cultural beliefs:** Qualitative research aims to delve into the feelings of congregants, identifying religious or cultural barriers such as the perception of donation as a sin or the belief in the need for an intact body for resurrection, as well as exploring subjective fears related to corruption, organ trafficking, and brain death.^{44,45} Complementarily, quantitative research analyzes the influence of moral and/or religious figures on acceptance, willingness, and trust toward the donation process. These studies will allow the design of culturally sensitive and participatory interventions that, with the collaboration of moral authority figures, promote donation as an act of solidarity and transform limiting beliefs into positive ones.^{46,47}

Conclusion

Based on the results obtained from the study, the following conclusions are presented:

- i. The description of the sociodemographic characteristics of YA was a specific objective of the study, and the results were analyzed in relation to variables such as age, gender, marital status, educational level, and religion.
- ii. The descriptive results of the sample of $n = 52$ YA are as follows: Moderate Knowledge in 57.7%, Beliefs in favor in 96.2%, and Favorable Attitudes in 96.2%; however, 55.8% demonstrated indifferent attitudes.
- iii. The moderate level of knowledge (57.7%) was not statistically significantly related (Spearman's Rho correlation) to beliefs ($p = 0.257$) nor to attitudes ($p = 0.390$). A higher level of knowledge does not guarantee organ donation, given that YA were educated within stronger religious belief frameworks. This lack of relationship suggests that future interventions should not focus solely on information transfer but also on modifying perceived barriers derived from beliefs.
- iv. A moderate and statistically significant correlation (Spearman's Rho) $r = 0.454$; $p = 0.001$ was demonstrated between beliefs and attitudes toward organ donation. This correlation confirms that the final disposition of YA to donate is dependent on their beliefs, which represent the most influential barrier in shaping attitudes toward donation.
- v. Although 96.2% of YA expressed being in favor of organ donation (beliefs), 55.8% of the sample exhibited indifferent attitudes toward the practice. This paradox shows that donation, while recognized as a benevolent and altruistic act, does not guarantee the decision or effective action to donate.
- vi. The results highlight the need to develop favorable attitudes in YA through educational strategies, promotion, and training, emphasizing that nursing professionals are crucially positioned to lead these initiatives at both community and institutional levels due to their role in teaching and health promotion. The recommendations stress the importance of strengthening Primary Health Care (PHC) interventions due to their broader coverage, social proximity, and professional influence.

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Conflicts of interest

The authors declared that there are no conflicts of interest.

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