Willingness toward donation in Mexico and the influence of personality

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SUMMARY

Organ and body donation are key elements in health sciences. This study examines the perception of the population toward organ and body donation and how it may be influenced by personality traits. A cross-sectional study was designed, in which a questionnaire including items of demographic data and attitudes toward organ and body donation were distributed among the general population. A validated questionnaire for the screening of personality disorders was applied as well. 202 questionnaires were obtained, 76 (37.6%) from men and 126 (62.4%) from women. A total of 95.2% of women and 93.4% of men responded to be in favor of organ donation (p>0.05). However, only 40.3% of women and 37.8% of men were in favor of body donation. Sixty-eight percent of participants had a probable personality disorder. Of those against body donation, 67% had a probable personality disorder. Body donation is not a well-known option among the Mexican population. However, for a program to be feasible, it is necessary to raise public awareness regarding donation and its implications to achieve greater engagement.

Key words: Donation – Organ donation – Body donation – Dissection – Motivation for donation – Human anatomy – Education

INTRODUCTION

Donation is a key element in medicine. Organ donation is widely accepted around the world and improves the quality of life of thousands every year (Milaniak et al., 2018). Not only is organ donation the ultimate way of contributing to medicine in an altruistic manner; body donation is too, in particular in research and education. The use of the human body has been a fundamental tool for teaching and studying gross anatomy for centuries (Biassuto et al., 2006; Jeyakumar et al., 2020; Tapia-Nañez et al., 2022). Students develop anatomical and surgical knowledge directly from the body, as well as professionalism and empathy (Papa and Vaccarezza, 2013; Quiroga-Garza et al., 2017; Reyes-Hernandez et al., 2016; Riederer, 2016; del Campo, 2016). Donation programs contribute to transplantation, medical education, and
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Research (Garment et al., 2007; Querevalú-Murillo et al., 2012). However, many countries still lack a formal donation program. (Quiroga-Garza et al., 2017; Wainman and Cornwall, 2019; Salinas-Alvarez et al., 2020).

Along with history, there have been changes concerning the methods used to study medicine and anatomy (Korf et al., 2008; McBride and Drake, 2018; Salinas-Alvarez et al., 2020). The recent COVID-19 outbreak disrupted the traditional education settings and challenged medical schools to adopt the use of available tools and innovative technologies (Iwanaga et al., 2021; Krebs et al., 2021; Muñoz-Leija et al., 2020; Pather et al., 2020). The use of imaging studies, virtual and augmented reality, 3D impression, and simulation models, have been increasing in popularity for anatomy education (Baskaran et al., 2016; Chytas et al., 2020; Fernández-Reyes et al., 2022; Gadaleta et al., 2020). However, many anatomists argue the importance of donors for dissection and prosection to actively complement learning. Students develop anatomical and surgical knowledge directly from the body, as well as professionalism and empathy (Papa and Vaccarezza, 2013; Sanchez del Campo, 2015; Reyes-Hernández et al., 2016; Riederer, 2016; Quiroga-Garza et al., 2017; Guerrero-Mendivil et al., 2023).

Current, legislation, costs, and ethics have influenced the dissection practice in gross anatomy laboratories. There is a limitation in the availability of bodies, primarily in countries without body donation programs, as is the case in most of Mexico (Quiroga-Garza et al., 2022, 2017; Salinas-Alvarez et al., 2020). Most medical schools continue to use unclaimed bodies for dissection and prosection as teaching tools in the laboratory while lacking formal donation programs (Quiroga-Garza et al., 2017; Salinas-Alvarez et al., 2020; Wainman and Cornwall, 2019). Research regarding perspectives is scarce (Elizondo-Omaña et al., 2005). Mexico has a low rate of organ donation, below the necessities of the healthcare system, due to a low donation culture (Centro Nacional de Trasplantes, 2021; Ríos et al., 2014). To strengthen and implement current organ donation programs, it is important to consider the psychological aspects and the lack of information of the general population (Hernández Rivera et al., 2020; Irving et al., 2012; Marván et al., 2017; Quiroga-Garza et al., 2017).

The objective of this study was to evaluate the perspective of the general population toward organ and body donation, as well as the personality spectrum of potential donors.

MATERIALS AND METHODS

A cross-sectional, descriptive study was designed with the purpose of evaluating the perception of the population toward organ and body donation after death. Simultaneously, the presence of personality disorders and their relation with the perception toward organ and body donation were assessed. Two questionnaires were applied voluntarily and anonymously to the general population. Age of ≥18 years was required for inclusion. Those who were healthcare professionals and students were excluded.

The Salamanca questionnaire was used for screening personality disorders. The result of the Salamanca questionnaire is obtained by a score of ≥ 4, which indicates a probable personality disorder, although further evaluation by a psychiatrist is necessary to confirm a diagnosis (García-Portilla et al., 2011; Giner Zaragoza et al., 2015). To assess attitudes and perceptions toward organ and body donation, a questionnaire was designed and validated by the Delphi method, in which demographic information was obtained as well (Supplement File 1). During recruitment of participants, the questionnaire and its purpose were explained by members of the research study, obtaining verbal informed consent. The questionnaires were printed and distributed at our University Hospital “Dr. José Eleuterio González”, a tertiary level healthcare institution in the north of Mexico.

Responses from all questionnaires were registered in a database using 2020 Microsoft Excel for Mac, version 16.43 (Microsoft Corp., Redmond, WA). These were then analyzed using SPSS statistical package, version 25.0 (SPSS Inc., Chicago, IL). For the statistical analysis, the variables were divided into positive (“strongly agree” or “agree”) and negative (“strongly disagree” or “disagree”) responses. Those who answered “neither agree nor disagree” were considered neutral. The sam-
Sample size was decided by availability. Quantitative variables are summarized in measures of central tendency and dispersion, and qualitative variables in frequencies and percentages. Associations in qualitative variables were tested using Pearson’s Chi-Squared test and by calculating the odds ratio (OR) and associated 95% confidence intervals (CI) to measure the degree of association. Variables with a p-value of <0.05 were considered statistically significant.

The study was previously reviewed and approved by the ethics and research committees of our institution, with the registration AH18-005, certifying that it adheres to the guidelines of the General Health Law on Health Research in Human Beings of our country, as well as international guidelines and the Declaration of Helsinki. No external funding was used. Due to the design and intervention of the study, informed consent was approved to be given verbally from all participants. The authors declare no conflicts of interest. All authors have reviewed the final version of the manuscript and certify their responsibility for the work.

RESULTS

A total of 202 questionnaires were collected: most of the respondents, 126 (62.4%), were female and 76 (37.6%) were male. Ages ranged from 18 to 75 years and the mean age was of 32 ± 15 years. Catholicism was the most prevalent religion (83%), and 62.8% of participants have a graduate educational level (Table 1). Knowledge of the terms “organ donation” and “body donation”, the willingness of participants to donate after death, and the spectrum of personality disorders were evaluated (Table 2). No statistical differences were identified among these variables and willingness toward donation.

Knowledge of donation

The term “organ donation” was recognized by 92.7% of female respondents and 89% of male respondents, in contrast to “body donation” which was known by only half of female respondents (51.2%) and 45.3% of male respondents (Table 2).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All participants n = 202</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>76 (37.6%)</td>
</tr>
<tr>
<td>Female</td>
<td>126 (62.4%)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>mean±SD (years)</td>
<td>32 ±15.14</td>
</tr>
<tr>
<td>Religion</td>
<td></td>
</tr>
<tr>
<td>Catholic</td>
<td>151 (83%)</td>
</tr>
<tr>
<td>Christian</td>
<td>15 (8.2%)</td>
</tr>
<tr>
<td>Atheist</td>
<td>11 (6%)</td>
</tr>
<tr>
<td>Other</td>
<td>5 (2.7%)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>Elementary</td>
<td>9 (4.5%)</td>
</tr>
<tr>
<td>Middle</td>
<td>21 (10.6%)</td>
</tr>
<tr>
<td>High School</td>
<td>34 (17.1%)</td>
</tr>
<tr>
<td>Graduate</td>
<td>125 (62.8%)</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>10 (5%)</td>
</tr>
</tbody>
</table>

N: sample size; SD: standard deviation.

Willingness toward donation

High acceptance toward organ donation was given in contrast to acceptance of body donation. Over 90% of male and female respondents expressed being in favor of organ donation after death, while more than 50% were unwilling towards body donation. However, of those who had a negative response toward donating their body after death (n 106), over half (n 59, 55.7%) lacked knowledge of the term.

Screening for personality disorders

Sixty-eight percent of participants (n 137) had highly marked personality traits, which are classified as probable personality disorders. Of the 78 patients who were in favor of body donation after death, 51 (65.4%) had a probable personality disorder. Of the 191 participants who were in favor of organ donation, 130 (68%) had a probable personality disorder. Of those who answered to be against donating their organs after death (n 2), 1 had a probable personality disorder. Of those 106 participants who answered to be against body donation, 71 (67%) had a probable personality disorder. No statistical difference was found.
Perceptions of body destination

Perception regarding what is considered appropriate regarding body destination after death was assessed as a multiple-choice question, but an open-ended option was included as well (Figure 1). Most participants (70%) consider it important to respect the wishes of the deceased. Twenty-eight percent of participants answered that burial or cremation with a religious ceremony was the preferred option. Only 2% reported it as “not relevant”.

DISCUSSION

Our results demonstrate high knowledge and willingness towards organ donation. However, body donation is still a widely unknown term by the Mexican population. Most of the participants had strongly marked personality traits, which places them in a probable personality disorder category. However, we did not find statistically significant differences in trends toward donation among those with or without a probable personality disorder.
Despite an apparent high willingness for organ donation from previous studies (Quiroga-Garza et al., 2017), the most recent data from the National Transplants Center CENATRA report 22,988 individuals on the waiting list for a transplant. Additionally, regarding the kidney—which is the most frequent organ transplanted—less than half (49%) in 2019 and less than a third (31.1%) in 2020 were from deceased-donor donations (Centro Nacional de Trasplantes, 2021).

In 2016, the first body donation program in Mexico was launched by the Universidad Nacional Autónoma de Mexico. Since then, the program has been marked by its success and advances in education, research, and innovation through the use of donors (Michel Olguin, 2019). Quiroga-Garza et al. (2017) researched willingness towards organ and body donation among anatomy students, near-peers, and educators in the medical school of Universidad Autónoma de Nuevo León. They report a high favor towards both types of donation (Quiroga-Garza et al., 2017), in contrast to our results of the general population, who are mostly compliant towards organ donation, but not body donation. Similar results were reported in India (Rokade and Gaikawad, 2012).

The Netherlands legislation on human body disposal mentions donating one’s body to science as an alternative to burial or cremation, which has led to an increase of body donor candidates (Bolt et al., 2010). These findings support the importance of raising public awareness about the possibility of willingly donating one’s body after death (Aneja et al., 2013; Cornwall et al., 2012; Winkelmann, 2016), as well as the benefits of a donation program (Cornwall et al., 2012; O’Neill, 2009). Altruism and empathy play an important role in motivation for donation (Hill, 2016; Milaniak et al., 2018), and the creation of a socially accepted donation program ruled by the law would support those interested in contributing to science to willingly register (Bolt et al., 2011).

Body donors aid in the education of future generations, research in anatomical sciences, development of new surgical techniques, patient safety, development of prostheses and medical equipment (Houser and Kondrashov, 2018; Korf et al., 2008; Riederer, 2016; Tapia-Nañez et al., 2022).

The limitations of this study include the omission of the calculation of the minimum sample size. Our sample was too small to be representative of the general community, which also made it impossible to analyze the personality traits individually. Considering that we did not find statistically significant differences among our results, we encourage future research where the number of participants might be expanded to search for the association between attitudes toward donation and personality traits. The use of a highly sensitive test to assess personality traits categorizes most of the sample in a probable personality disorder. The psychological outcomes from this study must be interpreted with caution.

Strategies to improve the current panorama

The International Federation of Associations of Anatomists published recommendations of good practice for the donation of human bodies and tissues for anatomical examination in 2012 (Jones, 2014). These include establishing a legal framework detailing the procedures and time frames; transparency and clear communication between the institution, potential donors, and their relatives; and encouragement for donors to discuss their intentions with their relatives to ensure that their wishes be carried out (Jones, 2014).

Cornwall et al. (2012) reported spouses, own children, and other closer relatives were the primary people who were consulted regarding donation. Donors’ knowledge of body donation programs was primarily obtained through friends and family. A positive experience will provide a positive response among relatives that will help raise awareness of donation programs (Cornwall et al., 2012; El-Haddad et al., 2021).

Special lectures in ethics to students and health-care professionals handling human remains for anatomical education and research must be held. Potential donors have experienced negative feelings when thinking of the potential type of treatment given to their bodies during laboratory practice (Hu and Huang, 2015; Richardson and Hurwitz, 1995; Rokade and Gaikawad, 2012), which highlights the importance of following ethical standards that promote respect, transparency, and trust (Jones, 2014).
Programs must target the population depending on demographics (da Rocha et al., 2017; Mueller et al., 2021). Gender does not influence willingness to donate. However, white single women seem to be the most prevalent donors in some programs (da Rocha et al., 2017; El-Haddad et al., 2021; Mueller et al., 2021). Most donors report an altruistic motive, although aiding medical sciences for research purposes and worry of costs have also been reported (Cornwall et al., 2012; da Rocha et al., 2017; Gürses et al., 2019; Jiang et al., 2020).

Local, social, and cultural aspects as these may influence attitudes towards donation (El-Haddad et al., 2021; Habicht et al., 2018). Body donation programs should be in collaboration with mental health professionals to aid in the assessment, needs, and preferences of potential donors, to offer a vast and dignified program (Bolt et al., 2011; McClea and Stringer, 2013; Riederer, 2016). Commemoration services for those who donated their bodies for medical education and research should be performed (Jones, 2014; Pawlina et al., 2011). These commemoration ceremonies can also be shared with relatives and registered living donors (El-Haddad et al., 2021; Quiroga-Garza et al., 2017). Future studies should evaluate attitudes and perspectives of family members of donors.

In a study by Štrkalj et al. (2020), of the universities of 71 countries surveyed only one-third used exclusively donated bodies. Unclaimed bodies are still widely used (Caplan and DeCamp, 2019; Habicht et al., 2018; Salinas-Alvarez et al., 2020). This still implies uncertain ethical and legal parameters that must be updated through awareness of the populations (Chia and Oyeniran, 2020; Cornwall et al., 2012; Sasi et al., 2020).

**CONCLUSION**

We found a positive outcome regarding attitudes toward organ donation. However, body donation in Mexico is a topic that remains unexplored and highly unaccepted. Our findings demonstrate that this population might show a positive response to a donation program that is well-funded and promoted. We suggest encouraging health professionals to explore donations and raise awareness among the surrounding community. Future studies are needed to determine factors influencing attitudes toward organ and body donation in underdeveloped countries. Efforts should be undertaken to change the mindset of the wider society toward body donation.

**REFERENCES**


