


International Population Study in Spain, Cuba, and the United States of Attitudes Toward Organ Donation Among the Cuban Population

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Cuban immigrants constitute an important group in both the United States and Spain, with different behaviors toward organ donation having been described among the different Latin American nationalities. We analyzed the attitude toward organ donation among the Cuban populations in Cuba, Spain, and Florida. The study population was Cuban immigrants over 15 years of age residing in Cuba, Spain, and Florida, with samples randomly stratified by age and sex. A validated questionnaire on psychosocial aspects of organ donation (PCID-DTO Ríos) was used. Census was used as the sampling base in all 3 countries; however, additionally, in Spain and the United States (Florida), we sought the support of immigration support associations to determine the Cuban population without legal documentation. The questionnaire was completed anonymously and self-administered. The completion rate of the study was 74% (4123/5574) among 424 surveyed in Spain, 1224 in Florida, and 2475 in Cuba. The attitude in favor of donating their own organs upon death was 60.6% of those surveyed in Spain, 37.6% in Florida, and 68.9% in Cuba, or 58% of the global sample. Multivariate analysis showed that country of residence was an independent factor associated with attitude toward organ donation (odds ratio, 1.929). Other factors associated with attitude were sex, educational level, performance of prosocial activities, knowledge of the brain death concept, religion, the couple's opinion toward donation, fear of mutilation after donation, and attitude toward manipulation of the body after death. The attitude toward organ donation among Cubans in their country of origin and immigrants in Spain was similar, being significantly different from those who emigrate to Florida, where the attitude is much less favorable.

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Immigration is a global phenomenon that mainly affects Western societies. This situation has an impact both socially and on health, especially regarding organ

transplantation, as it will increase the number of non-national patients on the waiting lists for transplantations, and the request for organs from families of immigrant donors.⁽¹⁻³⁾ It must be remembered that the migrant population generally comes from countries with generally low donation rates, and their awareness of this issue is not as strong as in Western societies. In addition, it must be taken into account that the organ procurement system is very sensitive to social topics, such as the panorama effect⁽⁴⁾ or the last viral pandemic.⁽⁵⁾

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The impact of immigration on organ donation remains controversial. Thus, some data indicate that the Latin American population migrating to the United States has a relatively low attitude favoring donation and low donation rates.^(6,7) However, these data are not confirmed in Spain, where their donation rates are similar to those of the Spanish population.^(1,8)

Studies analyzing favorable attitudes toward organ donation in these population groups in different countries are difficult to compare because they use different methodologies, making it difficult to determine the real differences.^(9,10) The only project applying the same validated questionnaire and methodology in immigrant populations in Spain and the United States shows clear differences in the attitude toward donation between Latin Americans living in Spain (more favorable) and those living in Florida (less favorable).^(7,8) However, these 2 subprojects, one in Spain and the other in the United States, did not confirm whether these differences are due to the different groups because more Mexicans and Central Americans emigrate to the United States, while more South Americans emigrate to Spain. Therefore, studies that specifically analyze

homogeneous groups of the same immigrant nationality are needed to confirm whether these differences are real. This is important because this factor should be taken into account in campaigns to promote organ donation in these population groups. Thus, if the attitude depends on the country of immigration, the measures to promote organ donation must differ in each country, and for that reason, the circumstances that determine the said attitude must be known. However, if the attitude is similar by nationality, the campaigns and approach need not differ by the country of immigration.

The objective of this study is to analyze whether the attitude of the Cuban population is the same when they reside in their native country or emigrate to Spain or the United States.

Patients and Methods

STUDY POPULATION

An international cross-sectional observational study was conducted in Spain, the United States, and Cuba. The project was approved by the Ethics Committee (Code: CE012115).

The study population comprises individuals aged 15 years or older born in the Republic of Cuba and residing in Cuba, Spain, or the state of Florida in the United States.

In the study population, 3 population groups were differentiated, and in each group, the determination of the study population required different sources:

Group 1. Cubans residing in Cuba (n = 11,173,151). Data were obtained from the database of the National Office of Statistics and Information of the Republic of Cuba (<http://www.one.cu/>). The population comprised 11,173,151 people.

Group 2. Cubans residing in Spain (n = 165,733). The data were obtained from the database of the Spanish National Statistics Institute (<http://www.ine.es/>) for the population with legal documentation, which comprises 120,296 people. For the Cuban population without official documentation, 64 support associations for the immigrant population in Spain were consulted, resulting in an estimate of 45,437 people.

Group 3. Cubans living in the US state of Florida (n = 1,542,438). Data were obtained from the

The data underlying this article will be shared upon reasonable request to the corresponding author.

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Additional supporting information may be found in the online version of this article.

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Florida State Population Census database (<http://www.census.gov/>) for the population with legal documentation, which constitutes 1,213,438 people. For the Cuban population without official documentation, 101 immigrant support associations in the state of Florida were consulted, resulting in an estimate of 329,000 people.

SAMPLE SIZE DETERMINATION

The sample size was determined based on the study population in each group, assuming a null hypothesis that the attitude toward donation is favorable in 50% of the respondents. Based on this, the estimated sample size for each group was as follows:

Group 1. Cubans residing in Cuba: 3483 respondents.

Group 2. Cubans residing in Spain: 544 respondents.

Group 3. Cubans living in the US state of Florida: 1547 respondents.

STRATIFICATION OF THE SAMPLE

The sample was stratified according to sex and age of respondents.

OPINION SURVEY

The measuring instrument used was a validated questionnaire on attitudes toward organ donation and transplantation: “PCID-DTO RÍOS”^(11,12) (“Cuestionario del Proyecto Colaborativo Internacional Donante sobre Donación y Trasplante de Organos desarrollado por el Dr. Ríos” or “International Donor Collaborative Project about Donation and Organ Transplantation Questionnaire developed by Dr. Ríos,” abbreviated from its name in Spanish). This questionnaire includes questions distributed into 4 subscales or factors validated in the Spanish population, presenting a total explained variance of 63.20% and a Cronbach α reliability coefficient of 0.83.

STUDY VARIABLES

The dependent variable was the attitude toward organ donation after death. The independent variables were grouped into the following categories: (1) demographic variables or country of residence, (2) sociopersonal variables, (3) knowledge variables related to donation

and transplantation, (4) social interaction variables, (5) religious variables, and (6) attitude toward the body variables.

FIELDWORK

The fieldwork group consisted of researchers from the International Donor Collaborative Project with expertise in psychosocial studies. In each group, they needed support from collaborators. Thus, Group 1 in Cuba required the support of health professionals involved in organ donation for transplantation. In Group 2 in Spain and Group 3 in Florida, support was required from members of immigrant support associations.

For the location of the study population in the 3 groups, the official population data obtained from official organizations (see previous section) were used as a basis. Thus, in Group 1 in Cuba, this was based on data from the National Statistics Office. Sampling was carried out in 6 of the 15 provinces that make up the country—Cienfuegos, Havana, Santiago de Cuba, Pinar del Río, Santa Clara, and Camagüey.

However, in Groups 2 in Spain and 3 in Florida, given the high percentage of the population without legal documentation, it was necessary to seek the support and collaboration of immigration aid associations to locate them. In these 2 groups, the population of Cuban origin was located according to the official population census and based on the data provided by the immigration support associations. In Spain and Florida, the Cuban population tends to reside in specific areas, which facilitates their location. Regarding the population without legal documentation, the associations indicated the areas where the sampling should be focused within each municipality.

In each population nucleus selected to perform the study, and after locating the potential respondent, it was confirmed that they met the age and sex stratification criteria. After this, it was explained to them that this was an anonymous opinion study, and their oral consent was requested to proceed to fill in the questionnaire. The questionnaire was completed anonymously and self-administered.

The study did not use convenience sampling. In this way, each potential respondent is considered only once. If the potential respondent did not agree to be surveyed or the completed questionnaire was invalid, it was considered a lost case. Once selected, no respondent was replaced with another.

STATISTICS

Data were stored in a database and analyzed using the statistical package SPSS 21.0 (IBM, Chicago, IL). Descriptive statistics were performed, and Student *t* test and χ^2 test were applied for comparison of the different variables, supplemented by a residual analysis. For the determination and evaluation of multiple risks, a logistic regression analysis was performed using variables that showed a statistically significant association in the bivariable analysis. Statistical significance was set at $P < 0.05$.

Results

COMPLETION RATE

The completion rate of the study was 74% (4123/5574 respondents). As can be seen in Table 1, the completion rate was over 71% in each of the 3 groups under study.

ATTITUDE TOWARD DONATION OF OWN ORGANS AFTER DEATH

The attitude toward own solid organ donation was favorable in 58.8% of respondents ($n = 2423$). The main reasons given for this favorable attitude were “solidarity” (59%; $n = 1422$) and “reciprocity” (52%; $n = 1260$).

Of the remaining patients, 22% ($n = 905$) were unfavorable and 19% ($n = 795$) were undecided. A large proportion of respondents justified their attitude by “leaving the dead in peace” (57%; $n = 552$),

TABLE 1. Level of Compliance in Each of the Study Groups

	Estimated Sample Size, n	Sample Obtained, n	Level of Compliance, %
Group 1: Cuba	3483	2475	71
Cienfuegos		<i>636</i>	
Havana		<i>920</i>	
Santiago de Cuba		<i>455</i>	
Pinar del Río		<i>121</i>	
Santa Clara		<i>227</i>	
Camagüey		<i>116</i>	
Group 2: Spain	544	424	78
Group 3: Florida	1547	1224	79
Global	5574	4123	74

The numbers in italics are the specific distribution of each group. For example, the numbers in italics in group 1 of Cuba indicate the respondents in each of the Cuban populations surveyed.

“fear of possible mutilation of the corpse in the donation process” (27%; $n = 262$), and “religious reasons” (25%; $n = 244$).

BIVARIABLE ANALYSIS OF FACTORS ASSOCIATED WITH ATTITUDE TOWARD DONATION

Country of Residence

Significant differences in attitude were found according to the country of residence ($P < 0.001$; Table 2), such that the attitude is more favorable among Cubans residing in Cuba (68.9% in favor), followed by those residing in Spain (60.6%), and finally those residing in Florida (37.6%).

Sociopersonal Variables

The attitude was more favorable among women (63.3% versus 53.9%; $P < 0.001$), with no differences by age ($P = 0.827$). With respect to marital status, those who were single had a more favorable attitude than married ones and widowers (61.4% versus 56.7% and 54%, respectively; $P = 0.027$). Those without children had a more favorable attitude (61.3% versus 57%; $P = 0.02$). With respect to the level of education, university graduates had a much more favorable attitude than those with no education (83.3% versus 15.4%; $P < 0.001$; Table 2).

Variables of Knowledge About Organ Donation

Respondents who had previous experience with organ donation, transplantation or both through having a transplantation recipient or donor among their relatives or friends had a more favorable attitude than those who did not (82.1% versus 50.3%; $P < 0.001$). Similarly, respondents who considered that they may need a transplantation for themselves in the future showed a more positive attitude than those who did not (83.2% versus 51.6%; $P < 0.001$). Finally, those who knew the concept of brain death had a more favorable attitude than those who did not accept this concept as marking the death of a person (78.7% versus 58.1%; $P < 0.001$; Table 3).

Social Interaction Variables

Respondents who had previously discussed organ donation and transplantation at the family level had a more favorable attitude (82.8% versus 46.6%; $P < 0.001$).

TABLE 2. Demographic and Sociopersonal Variables and Their Association With the Attitude Toward Organ Donation

Variable	Favorable Attitude (n = 2423; 58.8%)	Unfavorable Attitude (n = 1700; 41.2%)	P value
Demographic variable			
Spain (n = 424)	257 (60.6)	167 (39.4)	<0.001
United States (n = 1224)	460 (37.6)	764 (62.4)	
Cuba (n = 2475)	1706 (68.9)	769 (31.1)	
Sociopersonal variables			
Mean age: 35.45 ± 13.76	35.49 ± 13.8	35.39 ± 13.72	0.83
Sex			
Male (n = 1966)	1058 (53.8)	908 (46.2)	<0.001
Female (n = 2157)	1365 (63.3)	792 (36.7)	
Marital status			
Single (n = 1564)	960 (61.4)	604 (38.6)	0.027
Separated/Divorced (n = 543)	324 (59.7)	219 (40.3)	
Married (n = 1888)	1070 (56.7)	818 (43.3)	
Widowed (n = 124)	67 (54)	57 (46)	
Missing data (n = 4)	2	2	
Offspring			
Yes (n = 2688)	1543 (57.4)	1145 (42.6)	0.02
No (n = 1435)	880 (61.3)	555 (38.7)	
Missing data (n = 0)	0	0	
Level of education			
No education (n = 538)	83 (15.4)	455 (84.6)	<0.001
Primary (n = 1017)	381 (37.5)	636 (62.5)	
Secondary (n = 1225)	840 (68.6)	385 (31.4)	
University (n = 1343)	1119 (83.3)	224 (16.7)	
Missing data (n = 0)	0	0	

NOTE: Data are given as n (%) or mean ± standard deviation. *Italic* indicates missing data.

The attitude of the partner toward organ donation is also important. Thus, when the partner was in favor and the respondent knew it, 91.6% of respondents were in favor, while when their attitude was negative and the respondent knew it, only 51.9% were in favor of donating ($P < 0.001$; Table 3).

Finally, respondents who regularly performed pro-social activities such as volunteering or social aid had a more favorable attitude than those who had not or would not perform them (72.8% versus 34.2%; $P < 0.001$; Table 3).

Religion Variables

Atheists and agnostics had a more favorable attitude than Catholics (86.2% versus 47%; $P < 0.001$). Among the religious, those who knew that their church was in favor of organ donation and transplantation had a more favorable attitude than those

who believed it was opposed (83.5% versus 32.8%; $P < 0.001$). However, it is noteworthy that the vast majority were not aware of this attitude (n = 2265; Table 4).

Body Attitude Variables

Fear of possible mutilation after donation was associated with a less favorable attitude than in those without such fear (50.4% versus 75.8%; $P < 0.001$; Table 4).

Accordingly, those who would accept cremation of the body after death were more in favor of organ donation than those who would not (82.2% versus 49%; $P < 0.001$). Similarly, those who preferred options different from burial after death had a more favorable attitude (84.9% versus 43.7%; $P < 0.001$). Finally, the attitude was more favorable among those who would accept an autopsy at death if necessary (80.1% versus 50.7%; $P < 0.001$; Table 4).

TABLE 3. Variables of Knowledge and Social Interaction and Their Association With the Attitude Toward Organ Donation

Variable	Favorable Attitude (n = 2423; 58.8%)	Unfavorable Attitude (n = 1700; 41.2%)	P Value
Knowledge about donation and transplantation variables			
Previous experience of donation and transplantation			
No (n = 2993)	1506 (50.3)	1487 (49.7)	<0.001
Yes (n = 1080)	887 (82.1)	193 (17.9)	
Missing data (n = 50)	30	20	
A belief that one might need a transplantation			
Yes (n = 886)	737 (83.2)	149 (16.8)	<0.001
No (n = 146)	83 (56.8)	63 (43.2)	
Doubts (n = 3053)	1575 (51.6)	1478 (48.4)	
Missing data (n = 38)	28	10	
Knowledge of the brain death concept			
Does not know (n = 2211)	1035 (46.8)	1176 (53.2)	<0.001
Concept known (n = 1306)	1028 (78.7)	278 (21.3)	
Wrong concept (n = 578)	336 (58.1)	242 (41.9)	
Missing data (n = 28)	24	4	
Social interaction variables			
Family discussion about donation and transplantation			
No (n = 1374)	1137 (82.8)	237 (17.2)	<0.001
Yes (n = 2725)	1270 (46.6)	1455 (53.4)	
Missing data (n = 24)	16	8	
The opinion of one's partner toward donation and transplantation			
Yes, favorable (n = 1026)	940 (91.6)	86 (8.4)	<0.001
Yes, against (n = 106)	55 (51.9)	51 (48.1)	
I do not know it (n = 2100)	898 (42.8)	1202 (57.2)	
I do not have a partner (n = 849)	496 (58.4)	353 (41.6)	
Missing data (n = 42)	34	8	
Carrying out prosocial activities			
Yes (n = 1299)	946 (72.8)	353 (27.2)	<0.001
I will not take part in them (n = 459)	160 (34.2)	299 (65.1)	
No but I would like to (n = 2293)	1273 (55.5)	1020 (44.5)	
Missing data (n = 72)	44	28	

NOTE: Data are given as n or n (%). Italic indicates missing data.

MULTIVARIABLE ANALYSIS OF FACTORS ASSOCIATED WITH ATTITUDE TOWARD DONATION

As can be seen in Table 5, the following independent variables associated with the attitude toward organ donation remained as independent variables: (1) country of residence; (2) sex; (3) educational level; (4) performance of prosocial activities; (5) knowledge of brain death concept; (6) partner's opinion toward organ donation; (7) belief that one may need a transplantation in the future; (8) respondent's religion; (9) fear of possible mutilation of the body after donation; (10) attitude toward burial; and (11) acceptance of performing an autopsy if necessary.

Results of the multivariate analysis carried out independently in each of the 3 groups under study to obtain a more detailed and complete view of each group are presented in Supporting Table 1 ($P < 0.05$); however, not all the variables analyzed are significant in each population. In this sense, the group residing in Spain is where fewer variables associated with the attitude toward donation are described.

Discussion

One of the major problems of population-based psychosocial studies in determining attitudes toward organ

TABLE 4. Variables of Religion and Attitude Toward Body and Their Association With the Attitude Toward Organ Donation

Variable	Favorable Attitude (n = 2423; 58.8%)	Unfavorable Attitude (n = 1700; 41.2%)	P Value
Religious variables			
Religion of respondent			
Catholic (n = 2425)	1139 (47)	1286 (53)	<0.001
Other religion (n = 519)	268 (51.6)	251 (48.4)	
Atheist/agnostic (n = 1179)	1016 (86.2)	163 (13.8)	
Missing data (n = 0)	—	—	
Knowledge of the view of your church*			
Yes, in favor (n = 544)	454 (83.5)	90 (16.5)	<0.001
Yes, against (n = 128)	42 (32.8)	86 (67.2)	
I don't know (n = 2265)	910 (40.2)	1355 (59.8)	
Missing data (n = 7)	1	6	
Variables of attitude toward the body			
Concern about mutilation after donation			
Concern (n = 808)	407 (50.4)	401 (49.6)	<0.001
No concern (n = 2180)	1653 (75.8)	527 (24.2)	
Doubts (n = 1021)	307 (30.1)	714 (69.9)	
Missing data (n = 114)	56	58	
Acceptance of cremation			
No (n = 2920)	1432 (49)	1488 (51)	<0.001
Yes (n = 1191)	979 (82.2)	212 (17.8)	
Missing data (n = 12)	12	0	
Acceptance of burial			
No (n = 2616)	1269 (48.9)	226 (15.1)	<0.001
Yes (n = 1495)	1142 (43.7)	1474 (56.3)	
Missing data (n = 12)	12	0	
Acceptance of autopsy if one was necessary			
No (n = 2995)	1517 (50.7)	1478 (49.3)	<0.001
Yes (n = 1116)	894 (80.1)	222 (19.9)	
Missing data (n = 12)	12	0	

NOTE: Data are given as n or n (%). Italic indicates missing data.

*For this cross-section, Catholics and other religions were included.

donation is the lack of reliable epidemiological studies. In this sense, most of the studies present highly variable working methodologies, the measurement tools (questionnaires) are in most cases not validated, and the study populations are not stratified and therefore do not represent the study population.^(13,14) Thus, considering the reported data at the level of the Republic of Cuba, only data from a study of 200 respondents in Havana have been reported previously.⁽¹³⁾ In this small sample of a single Cuban city (ie, Havana), 81% of the population reported being in favor of organ donation. The remaining data for Cuba were derived from initial analyses published through congresses related to this project⁽¹⁵⁻¹⁸⁾ (Table 6). The data from our study, at the level of the Cuban resident population, showed

a favorable attitude of 68.9%, similar to that described in the Western population,⁽¹⁹⁾ though not as positive as the figure reported by Abdo et al.,⁽¹³⁾ and the differences, as indicated earlier, would be conditioned by the fact that it is a small, nonstratified study that might have a positive sample selection bias.

There were only 2 references found for studies in Spain. First, the study carried out by the Spanish National Transplant Organization and the Autonomous University of Madrid (Spain), which analyzed the entire Latin American population under the same heading without differentiating the Cuban population, found in a sample of 435 respondents that 73.6% were in favor of organ donation.⁽⁹⁾ The other study was carried out by the International Donor

TABLE 5. Variables Affecting Attitude Toward Deceased Organ Donation: A Multivariable Logistic Regression Analysis

Variable	Regression Coefficient (β)	Standard Error	Odds Ratio (Confidence Interval)	P Value
Areas				
US study (n = 1224)			1	
Spanish study (n = 424)	0.657	0.187	1.929 (1.338-2.782)	<0.001
Cuban study (n = 2475)	0.191	0.123	1.211 (0.952-1.540)	0.12
Sex				
Man (n = 1966)			1	
Woman (n = 2157)	0.296	0.098	1.345 (1.628-0.1)	<0.001
Level of education				
No education (n = 538)			1	
Primary (n = 1017)	1.308	0.173	3.703 (5.208-2.631)	<0.001
Secondary (n = 1225)	2.023	0.177	7.575 (10.638-5.347)	<0.001
University (n = 1343)	1.791	0.190	5.988 (8.695-4.132)	<0.001
Carrying out prosocial activities				
I will not take part in them (n = 459)			1	
Yes (n = 1299)	0.965	0.169	2.624 (3.649-1.886)	<0.001
No, but I would like to (n = 2293)	0.474	0.152	1.605 (2.159-1.193)	<0.001
Knowledge of the brain death concept				
Does not know (n = 2211)			1	
Wrong concept (n = 578)	0.060	0.147	1.062 (0.797-1.415)	0.68
Concept known (n = 1306)	0.447	0.124	1.564 (1.992-1.226)	<0.001
The opinion of one's partner toward donation and transplantation				
I know it and it is against (n = 106)			1	
I know it and it is favorable (n = 1206)	1.758	0.158	5.813 (7.936-4.255)	<0.001
I do not know it (n = 2100)	0.514	0.318	1.672 (0.896-3.119)	0.11
I do not have a partner (n = 849)	0.153	0.125	1.165 (1.488-0.912)	0.22
A belief that one might need a transplantation				
Doubts (n = 3053)			1	
Yes (n = 886)	0.716	0.147	2.049 (2.724-1.536)	<0.001
No (n = 146)	0.311	0.237	1.364 (0.858-2.171)	0.19
Religion of respondent				
Catholic (n = 2425)			1	
Atheist/agnostic (n = 1179)	0.652	0.147	1.919 (2.557-1.438)	0.04
Other religion (n = 519)	0.801	0.148	2.229 (1.668-2.979)	<0.001
Concern about mutilation after donation				
Doubts (n = 1021)			1	
Concern (n = 808)	0.966	0.143	2.631 (3.484-1.984)	<0.001
No concern (n = 2180)	1.795	0.123	6.054 (7.633-4.716)	<0.001
Acceptance of burial				
Yes (n = 2616)			1	
No (n = 1495)	0.718	0.123	2.049 (2.610-1.607)	<0.001
Acceptance of autopsy if one was necessary				
No (n = 2995)			1	
Yes (n = 1116)	0.597	0.128	1.818 (2.336-1.414)	<0.001

Collaborative Project involving a total of 1237 Latin Americans living in Spain, 60% of whom are in favor of organ donation. Of this sample, 62 were members

of the Cuban population, of whom 60% reported being in favor of organ donation (Supporting Table 1), a figure quite similar to that obtained in this project

TABLE 6. Published Studies on Attitude Toward Organ Donation Among the Cuban Population

	Author and Year	Sample Size, n	Favorable Attitude Toward Organ Donation, %	Risk of Study Bias*
Studies in Cuba	Abdo et al. (2012) ⁽¹³⁾	200	81	High
Studies in Cuban population resident in Spain	Ríos et al. (2015) ⁽⁸⁾	62	60	Low
Studies in Cuban population resident in the United States	Ríos et al. (2017) ⁽⁷⁾	438	28	Low
Preliminary studies of this project presented at congress (Transplant Proc) [†]				
Various cities of Cuba	Ríos et al. (2020) ⁽¹⁵⁾	2011	Cienfuegos: 71 Havana: 68 Santiago: 70	Preliminary
Cienfuegos	Ríos et al. (2019) ⁽¹⁶⁾	636	General population: 71	Preliminary
Havana	Ríos et al. (2018) ⁽¹⁷⁾	920	General population: 68	Preliminary
Santiago	Ríos et al. (2018) ⁽¹⁸⁾	455	General population: 70	Preliminary

*There is no specific scale for assessing the risk of bias in a psychosocial study. The risk assessment is determined based on 5 parameters that a psychosocial study must have so that the risk of bias is theoretically minimized, which are determination of the sample size, use of a validated questionnaire, carrying out a pilot study, indication of the degree of completion, and indication of how the sample was obtained. It is considered a low risk of bias if it has at least 3 points out of 5, and high risk if it has 2 or less.

[†]Preliminary studies of this project on Cuban population. These studies are communications to congresses, which have been published in an abridged version in the journal *Transplantation Proceedings*.

(ie, 60.6% of the Cuban population residing in Spain favored donating organs). These data confirm that if validated questionnaires and stratified samples are used, the results obtained are reproducible. Although there are only 2 previous studies, the attitude of the Cuban population living in Spain can be considered positive, although slightly lower than that described in the native Spanish population.⁽¹⁹⁾

Assessments in the United States are more complex. Thus, most studies^(10,14,20-26) have analyzed donation rates rather than attitudes toward organ donation, and most of them analyzed the Cuban population as part of a single Latin American population without distinguishing the nationality of origin. However, each study used a different methodology, and the samples were not representative of the population. Despite these limitations, most of them indicate lower donation rates in the White American population, although rates higher than those reported in the African-American population. In terms of attitude, the study by McNamara et al.⁽¹⁴⁾ involving a telephone survey of 566 Latin American respondents found similar levels of attitudes to that described in our study, with 31.2% in favor of organ donation. In addition, Frates et al.⁽²²⁾ analyzed the perceptions of the Hispanic population in California

toward organ donation and showed that there are many taboos on the subject. In addition to these studies that analyze the Latin American population as a whole, 2 other studies should be highlighted. On the one hand, the study by Perez et al.⁽¹⁰⁾ found significant differences in organ donation rates among the Latin American population in the cities of New York, Los Angeles, and Miami, and indicated that the favorability depended on the nationality of the Latin American residents in each city. Thus, donation rates were higher in Miami, reflecting the fact that the Latin American population is mainly Cuban. However, in New York, the rates were lower, indicating that this is because the Latin American population is mainly of Mexican origin. On the other hand, the study of the International Donor Collaborative Project,⁽⁷⁾ using the same methodology as that carried out in Spain,⁽⁸⁾ analyzed the attitudes of 1450 Latin Americans in Florida, of whom only 33% were in favor. Of those surveyed, 438 were Cubans, and of them only 28% were in favor (Supporting Table 1). In this study, 37.6% of the Cuban population living in Florida favored donations. This shows a clear difference from the data obtained in Spain and Cuba. The differences in the attitude toward donation are conditioned by the country to which they immigrate

and are not due to psychosocial factors specific to the emigrant population's nation of origin.⁽²⁷⁾ In the multivariable analysis, country of residence is an independent factor associated with attitude toward organ donation, independent of other sociopersonal factors (Table 5). Thus, the odds ratio is 1.929 favorable to the Cuban population residing in Spain compared with the group residing in the United States. However, although the group with a more favorable attitude is the one residing in Cuba, in the multivariable analysis the difference was not significant ($P = 0.12$). Specific data have already been reported suggesting this situation, as in the Uruguayan and Dominican populations that emigrated to the United States and Spain, although these studies had a small sample size.^(28,29)

This less favorable attitude toward donation was also observed among Latin American adolescents living in the United States. Thus, the study conducted by Berry et al.⁽³⁰⁾ among students at a high school in Los Angeles, with a sample of 4296 adolescents, found that only 27.5% of them were in favor of donating their organs.

Differences in attitudes toward emigrating to the United States or Spain should be sought not in the solidarity of the respondents but in other factors such as nonintegration, language, and access to the health system.^(14,31-33) Therefore, in some countries, the individual may be a donor but not a recipient because he or she cannot afford the costs of a transplantation in a private health system. Thus, our study found that a Cuban who emigrates to Spain is almost two times as likely to be in favor of organ donation for transplantation (odds ratio, 1.929) as a Cuban emigrant to Florida in the United States. One aspect to consider is the historical differences between the US- and Spain-based Cubans and their immigration patterns versus those who stayed in Cuba during the revolution and beyond. It has been argued that Cubans with a more progressive or leftist ideology stayed in Cuba, whereas the rest tended to leave the country. In this sense, emigration to Spain implies a higher economic cost and usually conditions greater purchasing power, while emigration to the United States was more accessible for the population due to geographical proximity. Although these differences in the type of emigration could condition these organ donation attitude rates, in our study, the multivariable analysis of the country where they reside is an independent factor that conditions attitudes independently of other sociopersonal factors analyzed (Table 5).

For this reason, we do not consider these differences in attitude to be due to the sociopersonal differences between the populations that emigrated to the United States versus Spain, but possibly reflect beliefs acquired within the Cuban community once they are in the United States or Spain. Studies are required to determine these causes because our project and the questionnaire used allow us to determine the differences, but not the reasons that determine these differences.

One aspect that has been considered in this type of study as a determining factor of attitude may be the immigrant population without legal documentation, although there are no conclusive studies in this regard.^(7,8) In our study, we did not differentiate whether the respondent had legal documentation or not because in the pilot study it was observed that when requesting the said information, the population without legal documentation presented a greater degree of distrust and their degree of completion decreased. However, we consider this not to be a limiting factor because in both groups the estimated percentage of the population without legal documentation is similar, ranging from 27.4% among the Cuban population residing in Spain to 21% among those residing in Florida, as can be seen in the "Study Population" section.

Only by carrying out specific studies by nationality will it be possible to determine the factors of each population that have an impact on organ donation. The generic grouping as a Latin American population may be interesting as a general concept, but it does not allow us to obtain specific data applicable to clinical reality. It should be remembered that Latin America is a huge region whose main characteristic is its heterogeneity in terms of ethnicity, development, resources, culture, and population. Economic development varies from agrarian economies to highly industrialized regions.⁽³³⁾ Ethnically, the population represents a mixture of the initial Spanish and Portuguese with the different genetic groups that inhabited the regions before discovery. Therefore, it is not valid to analyze the Cuban population coming from a Central American island as being the same as the Mexican population coming from one of the most populated Latin American countries. This is important because the immigration of the Latin American population is very important both in Spain and in the United States, but the nationalities involved differ and the appropriate approach to each population is also different, as indicated by Perez et al.⁽¹⁰⁾ There is a need for quality studies with validated instruments

and stratified samples that are adequately representative of the study population.⁽¹²⁾ Currently, there is an active project to analyze the situation of the population of Mexican origin in Spain, Mexico, and the United States following the same methodology as this work, whose results will allow us to determine whether the situation identified in this study among the Cuban population can be extrapolated to other Latin American nationalities.

An analysis of the psychosocial profile shows that most of the factors described in Western population studies are found in the Cuban population regardless of the country of residence.^(7,8,19)

The classic analysis treating immigration as “Latin American” should be avoided, and different nationalities must be considered, given the heterogeneity that each entails. In addition, the approach to promoting organ donation must be adapted to each nationality and country of immigration. In this sense, the attitude of the Cuban population residing in Spain is more favorable than that of the Cuban population residing in Florida, where less than 40% of those surveyed reported being in favor of donation.

Therefore, promotional campaigns should prioritize these most negative groups, and strategies other than the classic ones should be considered given that their attitudes are highly negative. Our study does not allow us to determine the reasons for this attitude in the Cuban population residing in Florida. This conditions the performance of other projects that make it possible to determine the reasons for this negative situation in order to carry out more targeted and effective campaigns. Among other factors, the Cuban population residing in Florida must take into account the language barrier and access to the health system. By contrast, in Spain, the situation of the Cuban population is similar to that of the native Spanish, so promotional campaigns directed toward the general Spanish population are effective for the Cuban population. Furthermore, unlike other immigrant groups in Spain, there is no language barrier that conditions a specific adaptation for this population group.

Finally, it should be noted that psychosocial studies have limitations that may influence the results, such as the degree of completion, social desirability bias, and the representativeness of the sample. In this international study, the same methodology was applied in the 3 countries to minimize specific biases in the different groups that could condition the results. Thus, the

degree of completion was high and similar among the 3 groups.

In conclusion, the emigration of Cubans to Florida in the United States is associated with a less favorable attitude toward organ donation than the emigration of Cubans to Spain.

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