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RESEARCH ARTICLE

Motivation for body donation to science: More than an altruistic act

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ABSTRACT

Background: In recent years the Netherlands has witnessed a steep increase in the number of bodies donated for medical research and training. To explore this upward trend and motives for donation, a survey was conducted among registered body donors in the database of the Department of Anatomy at the University Medical Center of Groningen (UMCG).

Methods: In November 2008, postal questionnaires were sent to 996 people enrolled at the UMCG body donor database. The present study focuses on motives for donation and social background characteristics of the body donors.

Findings: Registered donors responded quickly and the survey response rate was high (76%). The mean age of respondents was 69 years and the majority described themselves as Dutch (98%) and non-church affiliated (79%). One quarter (25%) of the respondents are/were health care professionals and 11% involved in education. Principal factor analysis revealed three dimensions underlying ten different motivations for body donation: a desire to be useful after death, a negative attitude towards funerals and expression of gratitude. Despite the current economic recession only 8% of respondents are prompted by money motives to bequeath their bodies.

Conclusions: The majority of motives for body donation stem from the wish to be useful after death. However, the present survey suggests that body donation is more than an altruistic act; people are also motivated by personal benefit. Results of our survey contradict the notion that body donation stems from loneliness. Many donors have a supportive social network and meaningful social relationships. People moreover propagate body donation within their social networks.

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1. Introduction

Whereas organ donations in the Netherlands are decreasing (Oosterlee and Rahmel, 2008, p. 26), whole body donations for medical research and skills training have been increasing dramatically. This growing popularity of body donation among the Dutch population contrasts sharply with trends in other countries, where anatomy institutes frequently report inadequate numbers of bodies for dissection (Boulware et al., 2004; Garment et al., 2007; Sehrlirli et al., 2004; Lagwinski et al., 1998; McHanwell et al., 2008). To avoid a surplus of incoming bodies, several Dutch anatomy institutes have actually decided to decline new registrations. This does not apply to the University Medical Center of Groningen (UMCG), because of an increasing demand for education and improved medical skills. Since 2006 the Center's annual

registration rate has increased substantially, peaking at 410 registrations in 2008 (Wijbenga et al., 2009).

In addition to burial and cremation, Dutch legislation on human body disposal mentions donating one's body to science as a third option. Anatomical institutes do not solicit donors through advertising. People need to contact one of the eight anatomical institutes to ask for information. To donate one's body requires personal approval in the form of a signed contract between an anatomical institute and the potential donor. The indirect result is that only well motivated people complete this procedure.

To gain a better understanding of the increase in registration numbers, a survey was conducted among registered body donors of the UMCG. Previous surveys of potential body donors have been conducted in New Zealand and the United Kingdom (Fennell and Jones, 1992; Richardson and Hurwitz, 1995). However, they only reported briefly on the motives and attitudes of potential body donors. They identified the wish to be useful as the main motivation for body donation and presented it as a positive expression of altruism. Yet this apparent altruism is multi-layered and more complex than

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previously assumed. Hence the present study was conducted to deepen knowledge of the motivations of body donors. The aim has been to examine motives for deciding to donate one's body and how these motives relate to the donors' cultural, social and religious background.

2. Materials and methods

In November 2008 postal questionnaires were sent to 996 registered body donors in the database of the Department of Anatomy, UMCG. The entire database currently contains 2357 registrations of potential body donors (male to female ratio: 49% to 51%). Donors were selected according to date of registration. The first group consisted of all potential donors who registered in 2007–2008 (314 donors) and the second group was selected from donors who registered in 2000–2006 up to donors with surnames starting with H (682 donors). Selection of the second group was based on a recent update (questionnaire) which had supplied the database with additional information up to the character M of the surnames (Wijbenga et al., 2009). Therefore the donors were selected from this updated database which contained only few errors or little missing information. The survey data were entered using the data-entry software program Epidata and verified for consistency (Epidata, 2009). Subsequently the data file was exported to the software program SPSS, version 15.0 for statistical analysis.

Respondents were asked about their motive for donation in two ways. First, the questionnaire included an open-ended question asking donors to indicate why they want to donate their bodies to science. Respondents answered this question by defining one or two motivations. The various motivations were coded into categories (see Table 1), from which two variables were constructed (motivations 1 and 2). To analyse both motivations together, SPSS was used to determine a single multiple response variable (Grotenhuis and Matthijssen, 2005).

Secondly, respondents were presented with a list of various motivations. They were asked to rate the items on a 5-point Likert scale ranging from 1 ("it played a very minor role in my decision to become a body donor") to 5 ("it played a very important role"). The motivations were presented in the form of statements. For an overview of items, see Table 2. Factor analysis was used to reduce the set of motivations items. Cronbach's alpha was used to measure internal consistency reliability.

3. Results

3.1. Database

The questionnaire was completed anonymously. The response rate was rapid and high (76%). About two thirds of respondents ($n=499$) declared their willingness to participate in a follow-up interview. Within three months 765 questionnaires were returned, of which 759 were completed and 6 were blank ($n=759$). Of all returned questionnaires, 223 (29%) were by donors who registered in 2007–2008, and 536 (71%) by donors who registered in 2000–2006.

3.2. Donor's characteristics

The mean age of the survey participants was 69 years. Ages ranged from 20 to 101 years and 83% of the respondents were born before 1950. Male/female ratio was 49–51%, which corresponds with the overall ratio in the UMCG database. Almost all respondents (98%) considered themselves members of the Dutch ethnic group, while the remainder (2%) claimed membership of ethnic groups such as Surinamese, Polish, German, Indonesian, English and Russian. Only 21% of the respondents described themselves as members of a church or religious community: Protestant (11%), Catholic (6%), other Christian belief (3%) or other non-Christian belief (1%).

Nineteen percent of the respondents had completed school at the primary level, 59% had secondary education and 22% had tertiary education. One quarter (25%) of the respondents are/were health care professionals and 11% were educators. Of the health care professionals ($n=191$) 74% had primary or secondary education. Many respondents working in health care are nannies, caregivers and nursing staff. Five medical doctors registered as body donors.

3.3. Thoughts on body donation

Despite its increasing popularity, body donation is still not a widely known option for body disposal. Accordingly people were asked how they came across the idea of donating their bodies. Thirty percent of respondents reported that they had been inspired by family or friends, 18% read about it in a newspaper or magazine. Less frequent responses indicated the source of the idea as UMCG publicity (6%), an obituary (6%), health care

Table 1
Motivations for donation.

	Responses	% Responses ($n=946$)	% Respondents ($n=728$)
To advance medical education	216	22.8	29.7
To contribute to medical science	160	16.9	22.0
To be useful	137	14.5	18.8
To help others	115	12.2	15.8
Be against burial/cremation	52	5.5	7.1
To avoid waste	51	5.4	7.0
Due to history of disease	38	4.0	5.2
In gratitude to medical science	26	2.7	3.6
Due to lack of relatives	19	2.0	2.6
Loved one died/is ill	17	1.8	2.3
Medical/professional background	16	1.7	2.2
For future generations	14	1.5	1.9
To prevent a lack of donors	12	1.3	1.6
Not to burden others with a funeral	10	1.1	1.4
Other	63	6.7	8.7
Total	946	100.0	129.9

Table 2
Factor analysis of body donation motivations (N=683).

Dimensions and scale items	Factor pattern loadings			h ²
	I	II	III	
<i>I Desire to be useful after death</i> (Cronbach's alpha=.77)				
I want to contribute to medical science	.77			.55
I want to contribute to good medical education for students	.73			.52
I want to help others	.52			.45
I want to be useful even after my death	.50			.49
<i>II Negative attitude towards funerals</i> (Cronbach's alpha=.79)				
I do not want to burden others with my funeral		.81		.64
I detest burial or cremation rituals		.80		.61
I don't want people with whom I am on bad terms to attend my funeral		.61		.43
I think a burial or cremation is too expensive and therefore choose this cheaper alternative		.59		.36
<i>III Expression of gratitude</i> (Cronbach's alpha=.70)				
I want to do something in return for medical professionals			.77	.60
I want to express gratitude for life and health			.68	.47
Explained variance (%)	22.02	20.60	7.62	
Total explained variance: 50.24%				

Notes: Roman numerals refer to the order in which the factors appeared in the oblique (oblimin) rotated solution using principal-axis factoring. Factor loadings lower than 0.30 (abs.) are not reported. Factor inter-correlations are -0.10 (I–II), 0.36 (I–III) and 14 (II–III).

professionals (5%), television or radio (4%), or their own medical professional background (4%). It is noteworthy that that 12% of the respondents recorded that they did not get the idea from some extraneous source but thought of it themselves – several wrote that the idea derived from personal contemplation.

Most of the respondents (80%) have/had a partner and 69% have children. About one-third of the respondents (37%) have a partner who is/was also registered as a body donor. Thus it frequently happens that both partners decide to register. Family, friends and acquaintances play an important role in “spreading the word”. Half of the respondents (50%) know someone else who has donated his/her body or is registered as a body donor and 31% actively encourage other people to become donors.

3.4. Motivations for body donation

Table 1 shows the categorised and coded responses to the open-ended question about motivation for donation. Some respondents give only one motive, while others give two. Thus the third column shows percentages based on the total number of responses, and the fourth column shows percentages based on the total number of respondents.

The motivations most frequently mentioned in response to the open-ended question were to advance medical education (29.7%); to contribute to medical science (22.0%); to be useful (18.8%), and to help others (15.8%). Other respondents want to donate for the sake of their offspring, especially their grandchildren or, more generally, future generations (1.9%).

Furthermore ten Likert-type statements were used to examine the principal motivations to become a donor. For purpose of data reduction the correlation matrix of the items was calculated and subjected to principal-axis factoring. The ten motivation items appeared to have three factors in common: the desire to be useful after death, a negative attitude towards funerals, and expression of gratitude. The resultant factor model was then rotated obliquely to “simple structure”. The results appear in Table 2, along with the reliability of the three sets of items determined by item analysis.

A cursory examination of the factor pattern structure indicates that there is little overlap in the items that make up the factors.

Table 3
Popularity of body donation motivations.

	# agree	%	N
Desire to be useful after death ^a	652	92.7	703
Negative attitude towards funerals ^a	104	14.7	702
Expression of gratitude ^b	341	49.1	694

^a # cases with summated score > 13 on 4–20 scale.

^b #cases with summated score > 6 on 2–10 scale.

The figures in Table 2 also reveal that the scales possessed quite acceptable psychometric properties. The factors accounted for a fair proportion of variance in the variables and the reliability coefficients (Cronbach's alpha) suggested a reasonable degree of internal scale consistency.

To examine the level of agreement or disagreement with the motivational statements the sum of responses to the three sets of items was obtained. Table 3 presents the number of donors that tend to agree with the particular set of motivational statements. It shows that 93% of the donors indicate that the desire to be useful after death played a major role in their decision to become body donors, and about half (49%) of them saw body donation as a way to express gratitude. Only a few donors (15%) seem to be motivated by a negative attitude towards funeral rites and practices.

The first four motivations mentioned in response to the open-ended question also form the first and strongest dimension in our factor analysis: the desire to be useful after death. The second factor can be understood as a negative attitude towards funerals. The respondents choose to donate their body, not so much because of a positive decision but rather because they are averse to other methods of body disposition. They dislike the disposal methods offered by burial and cremation: they are afraid of the burning process in cremation or the decomposition of the body in the case of burial, or they dislike the funeral ritual. Other donors do not want to burden their family and friends with the organisation of a funeral and body donation offers a way of avoiding it. Still others do not like visiting or maintaining a grave, or being left with ashes. The negative attitude towards funerals is

also evident in the cost aspect. Only 8% of donors responded to the individual item that burial or cremation is too expensive that cost aspects played an important role in their decision to become a donor. A different cost aspect emerged in response to the open-ended question – one respondent wrote that he did not want to give funeral professionals the opportunity to make money out of his death!

Sometimes the choice to donate can also be used as an instrument in family conflict. Some donors cite the self-centred motivation that they do not want a specific family member to attend their funeral. It can even be a method of retaliation in that the mere act of body donation makes a statement.

For about half of the respondents (49%) body donation is also a way to express gratitude to medical science and health care. Respondents expressed gratitude for their personal experience of successful operations, cured diseases and good treatment. Others want to give medical science something in return. Again the decision frequently stems from family and other social relationships. For example, some respondents want to express gratitude for what medical science has done for their family.

4. Discussion

Evidently most body donors have strong motivations for their decision. They had to register themselves and had to account for their unconventional choice to family and friends. In addition, the high response rate to our questionnaire denotes a strong dedication on the part of the UMCG body donors.

The majority of motives for body donation stem from the wish to be useful after death. People want their death to be meaningful; they strive to contribute to education and science. They express the feeling that, despite their death, they can still help others. For example: “I want to contribute to the world, even if they only use a small part of me. I still think this will be useful and meaningful”. For many registered donors body donation is a way of continuing a caring, socially involved attitude to life, for instance: “This is the last thing I can do for humanity.” These results are in line with previous studies on donor motivations that also report altruistic motivations “to be useful; to aid medical science and education; to help others”, as the primary motivation for body donation to science (Fennell and Jones, 1992; Richardson and Hurwitz, 1995). Nonetheless, one should realize that altruism is also the most ethically sound motivation for donation (Steele et al., 2008), which makes people more likely to particularly describe altruism as their primary motivation (Ferguson et al., 2008).

Is body donation really more than an altruistic act? Anthropological and sociological theories have frequently pointed out that gifts and solidarity are in some degree motivated by self-interest (Bailey, 1974; Komter, 2005; Mauss, 1925; Osteen, 2002). Such a view of body donation can be interesting for professionals engaged in anatomical donation programmes. Self-centred motivations were particularly visible in the dimension of negative attitude towards funerals. Respondents wrote, for example: “I do not like the fuss of organising a funeral”, or even: “I profoundly detest funeral services.”

However, self-centred motives are less noticeable in the dimensions of usefulness after death and expression of gratitude, for instance, “Partly thanks to medical science I was able to reach the ripe old age of 91.” Still, public interest and self-interest are intrinsic to the motives of usefulness and expressing gratitude. More egoistic or calculated aspects of this dimension are: to show kindness or enhance personal reputation and status, to make a statement, to be in control of what happens with one's body after death, or to enjoy personal emotional reward. For example, body donation makes it possible to conclude an egocentric life in a

more altruistic way: “It is a way to make up for not contributing positively during my life”. Or it can be an instrument in conflict: “I want to donate my body, because I have a quarrel with my daughter and she has let me down.”

Body donation arising from the need to be useful after death can be regarded as an act of contemporary solidarity. Theories explain a shift in attitudes of solidarity; individuals no longer need solidarity for survival, but it has become a conscious choice. Each person chooses when and how to contribute (Komter, 2005). Contemporary solidarity involves large groups and is abstract and anonymous. It manifests itself, for instance, in growing support for charities and humanitarian goals (Komter, 2005). This altered mode of solidarity is also evident in increased donation of bodies for dissection.

The outcomes of our survey contradict the notion that body donation stems from loneliness (Fennell and Jones, 1992; Bolt, 2008). Many donors have a supportive social network and meaningful social relationships: in effect people propagate body donation within their social networks. Word-of-mouth advertising strongly influences the information and decision making of the donors.

In 2008 58% of the adult Dutch population considered themselves church members (Arts, 2009). The body donors are distinctively less church oriented (21%) than the Dutch population as a whole. This suggests that many body donors interpret life and death outside the framework of institutionalised religion. Body donation offers a possibility to give an unconventional meaning and sense to death and dying. Our results imply that body donation can even be regarded as a personal conviction – moral, spiritual or otherwise. It is a very conscious personal decision. The body donor makes an individual, conscious choice which is often an expressive of autonomy and independence. They choose to be different; to make a nonconformist decision. In previous anthropological fieldwork among bereaved relatives of Dutch body donors the forceful personality of the donors was often emphasised. Body donors were described as independent, strong and self-determined (Bolt, 2008).

In conclusion, the increase in registered body donors reflects broader societal changes. The present survey suggests that body donation is more than an altruistic act, in that many body donors fulfil a wish to help others without completely effacing oneself.

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