The profile of body donors at the Otago School of Medical Sciences—has it changed?

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Abstract

Aims In 1992 the characteristics of individuals who bequeathed their bodies to Otago Medical School were reported. The aim of our study was to determine if the profile of bequestees has changed.

Methods An anonymous questionnaire was sent to 200 randomly selected donors who registered their bequest between 2000 and 2009. Questions focused on age, gender, marital status, occupation, reason for making the bequest, sources of information, the decision to choose whole body donation, and research.

Results There were 140 replies (response rate 70%). As in the previous study, most people bequeathed after the age of 50 years. Few respondents were in healthcare jobs and none was a medical doctor. Reasons for donation have changed slightly; the proportion bequeathing their body primarily to aid medical science and teaching has increased to 90%. Almost all respondents believe their body would be used for teaching and research. Word of mouth and literature continue to be the dominant methods of learning about body donation. Nearly 40% of bequestees come from families where other members have donated their bodies.

Conclusions The Otago School of Medical Sciences continues to depend on altruistic whole-body donation for anatomical teaching and research. The profile of our bequestees has changed slightly during the past 20 years. Although there has been no fundamental shift in donor attributes, bequestees appear to be better informed about how their body will be used.

The first official bequest to the Otago Medical School was recorded in 1943. Before then, the school was reliant on a supply of unclaimed bodies from psychiatric hospitals and The Benevolent Institution (poor house).¹

A survey published by Fennell and Jones in 1992 outlined for the first time the types of people who bequeathed their bodies to the School, and their reasons for doing so.² Their study sample consisted of individuals who had bequeathed their bodies during the 1960s, 1970s, and 1980s. They found that it was mainly people in their 50s, 60s, and 70s who donated their bodies, with the dominant reason being to aid medical science and teaching. Most had not considered organ donation, or felt that they were too old or ill for their organs to be of any value. At the time of the 1992 survey, cadavers were used wholly for teaching purposes yet 84% of respondents considered that their body would be used for medical research.

Today, our Department receives more than 100 registrations each year, and more than 40 bodies (cadavers). Bequests are accepted from Dunedin, Christchurch, and Nelson, and surrounding areas. A number of restrictions are applied to the acceptance of a
body at the time of death, including body weight, and cause of death. For example, the Department will not accept the body of a person who has displayed rapid onset of dementia, undergone recent complex surgery, or contracted an untreated contagious disease. A person who has lived in the United Kingdom, France or the Republic of Ireland between 1980 and 1996 for a cumulative period of 6 months or more is not able to become a body donor because of the remote possibility of transmitting variant Creutzfeldt-Jakob disease.

The aim of the current survey was to determine whether the profile of individuals bequeathing their body to the Otago School of Medical Sciences has changed since the survey published by Fennell and Jones in 1992.

Methods

The body bequest process—To understand the results of this survey it is important to understand how the bequest programme works. This has recently been described by McClea (2008) and only a brief summary of the process follows.

When a person first contacts the Department, they are sent information outlining the process of making a bequest, how cadavers are used in the Department, restrictions on acceptance at the time of death, and disposal following anatomical study. Potential donors are informed that the chief value of bequests continues to be for the teaching of anatomy to medical, dental, physiotherapy, physical education and science students and that human material is also used for research.

The bequest programme is governed by the New Zealand Human Tissue Act 2008 and the Department is answerable to an Inspector of Anatomy. Donors and a next-of-kin are required to complete a registration form accepting the terms of the bequest.

Donors are urged to talk openly with their family regarding their wish as, under current legislation, the Department is not able to accept a person’s body if any near relative objects to the bequest after death, even if the donor has previously registered with the Department.

The anatomical study of a cadaver extends throughout a teaching year and sometimes beyond. In some cases, human material is retained in the Department for an indefinite period of time.

Following the completion of study, the remains are cremated and the ashes scattered. When requested, the Department will arrange to return the ashes of the donor to the relatives but this limits our ability to retain material for long-term study. At the beginning of each teaching year, a whakawatea, or clearing of the way ceremony is held in the Dissecting Room to acknowledge the significance of the cadaver in our society. The Department also holds an annual Thanksgiving Service to which family and friends of donors are invited.

The survey—Donors were invited to participate in this survey using a similar selection process to the previous survey, namely by selecting those with a Christian name beginning with the letter ‘J’ who had registered their bequest between January 2000 and June 2009. This sample of 200 bequestees represents 24% of all individuals who completed the bequest registration process during this period (n=843) and 13% of all donors currently registered with the Department (n=1514).

Each questionnaire was anonymous and consisted of nine questions, eight of which were the same as in the previous survey (age; gender; marital status; occupation at the time of making the bequest; the main reason for making the bequest; the source of bequest information; the decision to choose whole body donation over organ donation; and whether they believed their body would be used in research). An additional question enquiring about other family members who had donated their body was included.

The study received institutional ethical approval from the University of Otago.

Results

From a total of 200 invited participants (94 [47%] female), 140 replies were received giving a response rate of 70% (68 [49%] females). Another 11 questionnaires were returned because the donor had changed their address and in 2 cases the donor had died without fulfilling their bequest. Thus, the true response rate was 75%. Many
respondents underlined their strong continuing desire to donate their body to the Department.

**Age and marital status at time of making bequest**—The ages of men and women at the time of making their bequest were remarkably similar (Figure 1); the majority of individuals were in their 60s (32% females; 35% males) and 70s (29% females; 26% males). The youngest bequest recorded in this survey was a male in his 20s and the oldest a female in her 90s.

**Figure 1. Age at time of making bequest**

![Figure 1](image)

The majority of donors (53% females; 69% males) were married or in a long-term relationship when they decided to donate their body. A smaller proportion were widowed (26% females; 13% males), divorced/separated (13% both sexes), or single (7% female; 6% male).

**Occupation**—Occupations of donors at the time of making their bequest varied widely. Of the women, nine had retired, seven did not state an occupation and nine described themselves as housewives. Forty-three female respondents were in paid employment at the time of making their bequest: office/clerical work (12); healthcare-related jobs such as nursing, pharmacy assistant, and community carer (6); teaching (6); factory work (5); retail work (3); laboratory technician (2); and catering or hairdressing (6). Three women were managers.

Of the males, five had retired (two ex-military), two did not state an employment and one was unemployed at the time of making the bequest. Of the remaining 64, 28 (39%) were in manual jobs such as gardening, building, carpentry, electrical engineering and farming and three were in health care related jobs: a psychiatric nurse, first-aid tutor, and an Officer in the Royal New Zealand Army Medical Corps.
Other occupations included engineering and surveying (3), teaching (4), driver/retail worker (8), and hospitality industry worker (3). There were seven managers and one of each of the following: overseas missionary, ship’s captain, solicitor, and accountant. Two men were members of the New Zealand armed services at the time of making their bequest.

**Prime reason for making bequest**—Respondents cited 209 main reasons for bequeathing their body, some individuals offering more than one reason (Figure 2). 126 (90%) respondents considered that aiding medical science and teaching was the main reason for bequeathing their body.

Next in frequency (22% of respondents) was gratitude to the medical profession for treatment received by the respondent, or by relatives and friends. As in the previous survey, many respondents commented that their medical conditions might be of interest to students; these included joint replacements, arterial bypass operations, cancer, multiple sclerosis, and emphysema.

All the comments in this section reflected a sincere appreciation for medical treatment received and an unselfish desire to give something back to the medical profession. Four female respondents considered that their experience as a health professional was a major factor in their decision.

**Figure 2. Prime reason for bequeathing**

Twenty-five (18%) respondents referred to a dislike of funerals as a prime reason for bequeathing but only 9 (6%) considered the cost of a funeral as a main factor. One donor indicated that her prime reason for bequeathing her body was the death of her
daughter from cancer in her 40s and another commented that donation was “a cleaner and more useful conclusion than burial.”

Overall, there were no significant differences in responses between men and women.

**Sources of information**—Seventeen respondents became aware of the bequest programme through more than one source, resulting in 160 sources among 140 respondents (Figure 3). Fifty-two respondents (37%) first became aware of the opportunity to bequeath their body through family or friends.

Thirteen percent cited their family doctor as their prime source of information. Many others learnt of the bequest programme through literature (e.g. bequest pamphlets in doctors surgeries, funeral homes, and hospitals) including newspapers (articles and death notices), or television. The “other” category included 14 donors who could not remember where they had first heard about body donation but had been aware of it for many years; six attributed this knowledge to working in hospitals and others had learned about bequeathing from the Kidney Foundation, from a parent who was a surgeon, and after studying anatomy as a physical education student.

Only one respondent had mainly become aware of body donation through an application for a driver’s licence among other sources.

**Figure 3. Main source of bequest information**

Fifty-four respondents (39%) were aware of other family members who had donated their bodies, mainly to institutions in New Zealand and Australia but in three cases to medical schools in the UK and India. The relationship to these family members varied from next-of-kin (mother, father, partner, sibling), to in-laws, aunts, uncles and cousins.
Organ donation—Bequestees were asked why they had chosen whole body donation rather than organ donation. Responses fell into four main categories:

- To benefit medical research (53 respondents [33 male]).
- To assist training medical students to become doctors (44 respondents [24 male]).
- A belief that their organs would be unsuitable for donation (mostly because of old age but in some cases diabetes was specifically mentioned) (29 respondents [9 male]).
- And a belief that their medical condition(s) would be of particular interest (injuries, diseases and/or surgical procedures) (20 respondents [10 male]).

Thirty-one respondents explicitly stated that whole body donation maximised the opportunities for both teaching and research, whereas organ donation had more limited applications. Eleven respondents commented that they were previously or concurrently registered as organ donors. The rationale for not donating organs because of old age was summed up wonderfully by one donor who wrote “You wouldn’t like to have model T Ford parts put into a Ford Falcon would you!”

Use of bodies for research and teaching—Information given to donors at the time of registration explains that bodies are used for research as well as teaching, and an overwhelming 96% of respondents thought their body would be used in this way. Three respondents chose not to answer this question, two considered that their bodies would be used for research only, and one for teaching only.

Discussion

The 1992 survey by Fennell and Jones was the first to examine the characteristics of individuals who bequeathed their bodies to science. Only two similar studies have since been published: the first surveyed individuals expressing an interest in whole body donation in the UK and the second retrospectively reviewed actual body donors in the USA. No previous study has investigated changes in the profile of bequestees over time.

The previous Otago survey related to individuals who had bequeathed their bodies during the 1960s, 70s and 80s, whereas the current survey relates to bequestees who had registered since January 2000. We had a gratifying response rate of 70% (compared to 38% in 1992). Numerous similarities and differences between the two surveys are apparent. As in the previous study, most people decided to bequeath after the age of 50 years and a greater proportion of women than men were single at the time of making their bequest. Relatively few respondents were in health care jobs and none was a medical doctor. The broad range of occupations spans the whole spectrum of society and socioeconomic strata.

Reasons for donation have changed slightly. In the 1992 report, two-thirds of respondents bequeathed their body primarily to aid medical science and teaching. Recently, this figure has increased to 90%. Encouragingly, from the aspect of informed consent, almost all respondents now acknowledge that their bodies will be used for teaching and research, although the type of research, which tends to focus
more on structure and function rather than specific diseases, may not be fully appreciated.

About one-fifth of respondents, a similar proportion to the previous study, cited gratitude to the medical profession as a main reason for bequeathing. Nearly one in five respondents cited dislike of the ritual of a funeral as a main reason for bequeathing their body. Reassuringly, only 6% of individuals considered that funeral expenses were a factor, compared with 10% in 1992. The average cost of a funeral in New Zealand is currently around $8,500 (personal communication, The Funeral Directors Association of New Zealand).

There is no doubt that altruism is the dominant motivation behind most bequests. The willingness to bequeath one’s body to medical science varies between societies and may be influenced by ethnicity, religion, and education among other factors. In a random telephone survey of 385 households in Maryland, USA conducted in 2000 half of all individuals reported they would consider whole body donation, although willingness to consider this was more likely among Caucasian individuals and in those with a more advanced level of educational achievement. In contrast, from a random sample of 1,950 adults in Sweden in 1990 only 15% were receptive to whole body donation for dissection.

We are very fortunate in having such an altruistic community of donors prepared to gift their bodies. In this context, it is interesting to note that New Zealand also has an unusually high rate of non-directed (neither genetically or emotionally related) living kidney donation. In 2008, figures for non-directed living donor kidney transplants were 8 of 69 (12%) nationally and 4 of 28 (14%) in Christchurch. This compares with Australia where only 0.6% of such transplants have been non-directed.

Not surprisingly, the sources of information about the bequest programme have changed a little since the previous survey. Word of mouth and printed literature continue to be the most common methods of learning about body donation but, in contrast to the 1992 report, television is now a significant factor and solicitors are no longer a prominent source. Only one respondent became aware of the bequest facility through the internet, perhaps reflecting the computer usage of our study sample. As in 1992, a higher proportion of men than women relied on printed matter for information but the greater reliance by women on family and friends for information was no longer apparent.

It was interesting to discover that almost 40% of our bequestees had other family members who had donated, suggesting that this form of altruistic behaviour is not only a feature of individuals but, in some cases, families.

Many respondents regard bequeathing their body as being more useful than organ donation although this is confounded by the perception that organs from elderly donors are not likely to be so useful. Unlike the previous survey, no respondents made negative comments about organ transplantation or brain death, probably reflecting how much transplantation has advanced in the last 20 years and how it has become accepted by the public as part of routine medical practice.

We did not explore the reasons for whole body donation rather than organ donation but it is possible that some bequestees believe that whole body donation is more compatible with keeping body parts together; this is certainly a major reason why
some family members object to organ donation from a deceased relative, even if that relative expressed the desire to be an organ donor when they were alive.9

Our survey has several limitations. Because we were interested in how things have changed, our questionnaire remained very similar to that used in the 1992 survey. Neither survey collected data on religious affiliation or ethnicity. Whilst we have had donors from Māori and other ethnic groups, it is our impression that the vast majority of bequestees are of New Zealand European descent.

The Otago School of Medical Sciences continues to depend on and benefit from a robust body bequest programme. Body donations have enabled us to develop a wide range of training courses for both undergraduate and postgraduate health professionals.10 Several universities in the United States temporarily withdrew their undergraduate dissection programmes, only to reinstate them when they found that the standard of anatomical knowledge in their students was adversely affected.11 Moreover, it is well known that the experience gained from cadaver dissection encompasses much more than learning anatomy.11–13 Body donation also greatly facilitates research in clinical anatomy.

Like Jones et al (2002),14 we continue to believe that a research ethos is important since it encourages a more critical evidence-based approach to teaching and counteracts the diminishing status of anatomy as a research-led discipline.15 To ensure this research ethos is not only maintained, but developed, a body bequest programme is vital. However, the maintenance of high ethical standards is essential, particularly in view of notable high-profile scandals surrounding the misuse of body parts.16

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