

The Health Care Professional's Attitudes Towards Brain Death and Cadaveric Organ Transplantation: The Influence of Cadaveric Donor and Transplantation Programs - A Malaysian Survey

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Summary

One of the main reasons for poor response in organ donation is the lack of positive attitudes and knowledge present in health care professionals. Definite legislation, policies and programmes dealing with brain death and cadaveric organ transplantation have shown some favourable results in terms of increasing donor rates. These programmes are mainly Western based; therefore adopting such programmes to be used locally may not be adequate or proper. To address this issue, we decided to carry out a questionnaire in two tertiary hospitals in Malaysia, one with a well established brain death and cadaveric organ transplantation programme and one with none.

Key Words: Brain death, Organ transplantation, Health care professionals, Education, Health care programs

Introduction

As far back as the late 1950's, the advancement in medical organ support equipments and drugs allowed critically ill patients to be kept 'alive' indefinitely. Since then the acceptance of brain death and its implications such as discontinuing mechanical ventilation and cadaveric organ transplantation are generally well received by majority of health care professionals particularly those coming from Western medical communities and institutions¹⁻⁵. Such positive acceptance is generally the product of a structured, comprehensive cadaveric organ transplantation programme^{6,7,8}.

Most of these programmes were developed taking into account the cultural as well as social norms of that particular region where it is to be applied and were highly reflective of Western societies rather than Asian. Western culture and philosophy tended to focus on the individual rights and principle⁹, rather than family based decisions that are so predominate in Asian communities^{10,11}.

In this study we look at how such Western based programmes fair in Malaysia and whether such programs tended to contribute to higher acceptance and tolerance towards brain death and cadaveric organ transplantation in the Malaysian medical community.

We also review the current literature looking at how structured, comprehensive cadaveric organ transplantation programs influences the acceptance (or rejection) of brain death and cadaveric organ transplantation.

In our study we looked and compared the acceptance of brain death and cadaveric organ transplantation amongst Malaysian health care professionals (includes consultants, medical officers and registered staff nurses) working in two major tertiary hospitals with different policy addressing the issue.

Hospital A is a 1000 bed hospital that carries out brain death certification but no active transplantation programme and no active committee in charge of such affairs, while Hospital B is a 2000 bed hospital that has an ongoing active brain death and cadaveric organ transplantation program.

The three main areas that were studied are:

1. The concept of brain death.
2. Withdrawal and the discontinuation of life support in brain dead patients.
3. The acceptance of cadaveric organ donation and transplantation.

Materials and Methods

A questionnaire was given to 460 health care professionals working in two tertiary hospitals (260 questionnaire to Hospital A and 200 questionnaire to Hospital B). The questionnaire was given by hand to each health care professional and the answers were retrieved immediately after completion. No questionnaire was sent by post. A health care professional is defined for this study as a medical doctor and registered nurse who is registered with the Malaysian Medical Council and Malaysian Nursing Board respectively and is currently under the employment of a government type hospital.

Each question had its respective pre chosen responses and the answers required were confined to 'Yes', 'No' or 'Unsure' responses. No comments or subjective answers were required to be given by the respondents.

Statistics:

Answers of 'Unsure' were considered as a 'No' answer for the purpose of statistical analysis. Therefore all statistic testing only took into account 2 groups of answer, Yes and No.

Questions that require more than one response were not statistically analysed. These questions were mainly assessing each respondent's attitude or reasons.

Each question and answer were then analysed using a Chi square (MedCalc® Version 5.00.013 - Windows 95/98/NT Copyright©1993-1999 Frank Schooijans). Yates correction for continuity was used for 2 by 2 tables. A 'P value' of less than 0.05 ($P < 0.05$) was considered statistically significant.

Results

Out of 460 questionnaire given, 30 were rejected (6.5%) because of incomplete answers and another 4 respondents were excluded from the survey, as they did not know what brain death is, thus no further responses were required from them.

A total of 426 respondents from various disciplines were studied. Their demographics are in Table I. The percentage of males was 47% with a near equal mix of medical and nursing staff. There were 60% respondents from Hospital A (hospital with no cadaveric organ transplantation program) and 40% from Hospital B (hospital with a program).

A) Where did the respondents first hear about brain death?

Nearly 75% of the respondents obtain information or knowledge regarding brain death during their professional training either in a medical or nursing school. Nearly 12% only knew about it once they started working. The remaining 13% had read or heard about it from journals, magazine or seminars and conferences.

B) Knowledge of the Consensus Statement on Brain Death, Malaysia 1993.

Respondents coming from Hospital B had better knowledge of the 'consensus statement' when compared to Hospital A (62.6% versus 40.8%; $P = 0.0005$). Majority of the respondents from Hospital A did not know about the existence of such a consensus (59.2% versus 40.8%; $P = 0.0044$) as compared to Hospital B where majority knew about the consensus (62.6% versus 37.4%; $P = 0.0017$).

C) Respondent's knowledge of hospital Brain Death Certification Policy.

There was a significant difference seen between the two hospitals where respondents from Hospital B were more likely to know about the existence of a policy in their hospital when compared to Hospital A (76% versus 55%; $P < 0.0005$).

D) Respondent's acceptance of brain death concept (see Table II).

Majority of respondents accepted the brain death concept (83.8%, $P < 0.0001$) with only a small minority of 8.5% who didn't and a further 7.7% who were unsure of the concept.

There was no differences seen between the two hospitals ($P^a = 0.1716$) as well as when respondent's were compared for each hospital respectively ($P^a < 0.0001$ and $P^b < 0.0001$).

E) We then proceeded to look into reasons why respondent's rejected the concept of brain death (see Figure 1).

We identified four main reasons, these were, religious-, own-, and custom-beliefs and the belief that there was still insufficient scientific and medical evidence to support the concept of brain death. Respondents were allowed to give more than one reason.

Overall, 51% thought there was insufficient evidence to support the concept while 30% attributed their rejection based on religious belief. Rejection based on religious beliefs mainly came from Hospital A (91% of total rejection based on religious belief). Such gross differences may be due to the differences seen in the

Table I
Demographics of Respondents.

Total number of respondents	430
Four respondents were excluded	426
Age:	
< 25 years old	70
26 - 30 years old	131
31 - 40 years old	198
> 41 years old	27
Sex:	
Male	202
Female	224
Medical staff	208
Nursing staff	218
Type of Hospital:	
Hospital A - without program	255
Hospital B - with program	171

Table II
Respondents acceptance of brain death concept according to hospital.

	Respondents (n = 426)	Hospital A (n = 255)	Hospital B (n = 171)
Yes to brain death, n (%)	357 (83.8%)	208 (81.6%)	149 (87%)
No to brain death, n (%)	36 (8.5%)	24 (9.4%)	12 (7%)
Unsure, n (%)	33 (7.7%)	23 (10%)	10 (6%)
$P^a = 0.1716$	$P^a < 0.0001$	$P^a < 0.0001$	$P^b < 0.0001$

The P value $P < 0.1716$ is comparing respondents from Hospital A and Hospital B who accepts against those who reject the concept of brain death. The P values, $P < 0.0001$ are comparing respondents who accepts against those who reject the concept of brain death.

The P values, $P^a < 0.0001$ and $P^b < 0.0001$ are comparing respondents from Hospital A and Hospital B respectively, who accepts against those who reject the concept of brain death.

Response of Unsure is considered a No response.

religious make-up of the hospitals where majority of respondents from Hospital A are Muslims (52 %), while Hospital B had only 26%. There was near equal numbers for the other reasons given for rejecting the concept.

F) We then proceeded to see whether the respondents agreed or disagreed to discontinue life support in patients diagnosed with brain death, provided these patients were not meant for cadaveric organ transplantation (see Table III).

Majority of the respondents (70.2%) agreed to discontinue life support in brain dead patients, but 14.5% were still unsure of what they would do when faced with such a scenario ($P^c = 0.0001$).

There was no difference seen when we compared Hospital A to Hospital B ($P^e = 0.1089$). Both were just as likely to discontinue life support in brain dead patients but with a higher percentage seen in respondents from Hospital B when compared to Hospital A (74.9% versus 67%).

G) How respondents would deal with brain death if any of their relatives were diagnosed brain dead (see Table IV).

We posed the question, "if any of your relative was diagnosed brain dead, would you discontinue life support?" Nearly 75% of the respondents said they would ($P^r < 0.0001$) with 18.6% still unsure what they would do and the remaining 7% outright refused to do so.

There was no difference between Hospital A and Hospital B ($P^t = 0.7804$). Both groups of respondents were likely to discontinue life support in relatives diagnosed brain dead (Hospital A 73.7% versus Hospital B 75.4%).

H) The reasons given by respondents on why they do not agree to discontinue life support in relatives diagnosed brain dead (see Figure 2).

Overall, the main reasons given by the respondents for their reluctance to discontinue life support were based on own beliefs (46%). Religious beliefs were the second largest reason given (45%). Respondents from Hospital

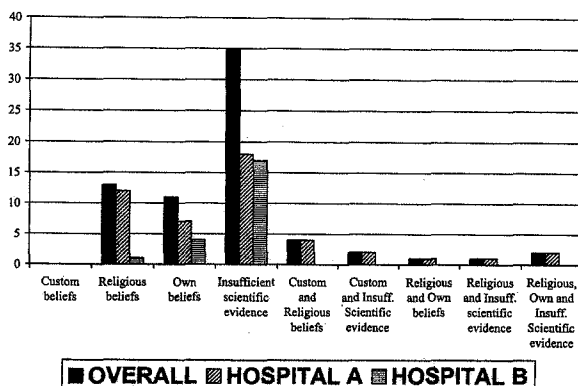


Fig 1 : The main reasons given by the respondents from Hospital A and Hospital B on why they did not accept brain death as equivalent to clinical death. Each respondent is not confined to only one response.

Table III
The number of respondents who agree that all life support should be discontinued in patient's diagnosed brain dead divided according to hospital

	Respondents (n=426)	Hospital A (n = 255)	Hospital B (n = 171)
Yes	299 (70.2%)	171 (67%)	128 (74.9%)
No	65 (15.3%)	48 (18.8%)	17 (9.9%)
Unsure	62 (14.5%)	36 (15%)	26 (15.2%)
$P^i = 0.1089$	$P^r = 0.0001$	$P^a < 0.0005$	$P^b < 0.0005$

The P value, $P^i = 0.1089$ is denoting respondents who answered Yes against those who answered No comparing the two hospitals.

The P value, $P^r = 0.0001$ is comparing respondents who answered Yes against those who answered No.

The P value, $P^a < 0.0005$ and $P^b < 0.0005$ is comparing respondents who answered Yes against those who answered No for each hospital respectively. Response of Unsure is considered a No response.

A mainly attributed religious beliefs for their reluctance to continue life support in brain dead relatives (51%).

I) Support for cadaveric organ/tissue donation and transplantation program (see Table V).

More than 86% of the respondents supported such a program. Only a small percentage didn't (4.2%) and another 9.8% who were still unsure and had doubts.

Respondents from Hospital A and B both supported a cadaveric organ transplantation program, with a higher percentage coming from Hospital B (95.9% versus 79.2%). The differences seen between the two hospitals were mainly in those that rejected a program. Nearly 20.8% of the respondents from Hospital A rejected such a program compared to only 4.1% rejection from Hospital B ($P < 0.0005$).

J) Reasons given by respondents on why they do not agree to support a cadaveric organ transplantation program (see Figure 3).

Majority of the respondents attributed religious beliefs as their reasons for rejecting a program (43%). A further 28% gave own beliefs as reasons for rejecting the program. These 2 reasons were also the main 2 reasons given by respondents from Hospital A in rejecting such a program. (Figure 3 near here)

K) Response in becoming cadaveric organ donors (see Table VI).

Less than 50% were willing to become donors. Nineteen percent outright rejected becoming one, and another 31% were still unsure. Hospital A only had less than 40% willing to become donors ($P^a < 0.0005$) as compared to Hospital B which had nearly 65% of the respondent's willing to be one ($P^b < 0.0005$). The difference between Hospital A and B was statistically significant ($P^c < 0.0005$).

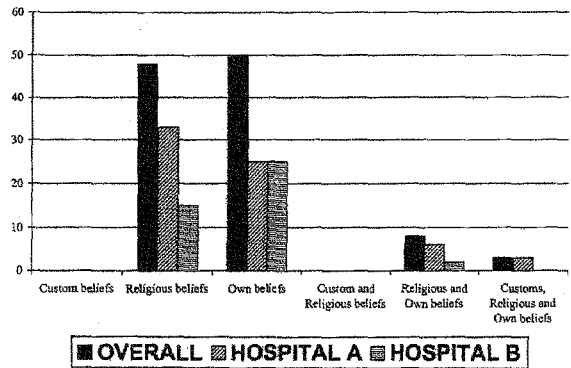


Fig 2 : The main reasons why respondents do not agree to withdraw or stop any form of life support in any of their relatives' diagnosed brain dead divided according to the respondent's hospital. There were no responses for custom, and custom and religious beliefs

Table IV
Discontinuation of life support in relatives diagnosed brain dead.

	Respondents (n = 426)	Hospital A (n = 255)	Hospital B (n = 171)
Yes, n (%)	317 (74.4%)	188(73.7%)	129(75.4%)
No, n(%)	30(7%)	17(6.7%)	13(7.6%)
Unsure, n(%)	79(18.6%)	50 (19.6%)	29(17%)
$P^c = 0.7804$	$P^c < 0.0001$	$P^a < 0.0001$	$P^b < 0.0005$

The P value, $P^c = 0.7804$ is comparing respondents from Hospital A and Hospital B who agrees or disagrees to discontinue life support in relatives diagnosed brain dead.

The P value, $P^c < 0.0001$ is comparing respondents who agrees or disagrees to discontinue life support in relatives diagnosed brain dead.

The P value, $P^a < 0.0001$ and $P^b < 0.0005$ is comparing respondents who agrees or disagrees to discontinue life support in relatives diagnosed brain dead from Hospital A and Hospital B respectively.

Response of Unsure is considered a No response.

Table V
Respondents supporting cadaveric organ transplantation program.

	Respondents (n = 426)	Hospital A (n = 255)	Hospital B (n = 171)
Supports program, n (%)	366 (86.0%)	202 (79.2%)	164 (95.9%)
Rejects program, n (%)	18 (4.2%)	17 (6.7%)	1 (0.6%)
Unsure, n (%)	42 (9.8%)	36 (14.1%)	6 (3.5%)
P < 0.0005	P < 0.0001	P ^a < 0.0001	P ^b < 0.0001

The percentage is reflecting each category in itself.

The P value, P < 0.0005 is comparing respondents from Hospital A and Hospital B who supports or rejects a cadaveric organ transplantation program.

The P value, P < 0.0001 is comparing respondents from who supports or rejects a cadaveric organ transplantation program.

The P value, P^a < 0.0001 and P^b < 0.0001 is comparing respondents from Hospital A and Hospital B who supports or rejects a cadaveric organ transplantation program respectively.

Response of Unsure is considered a No response.

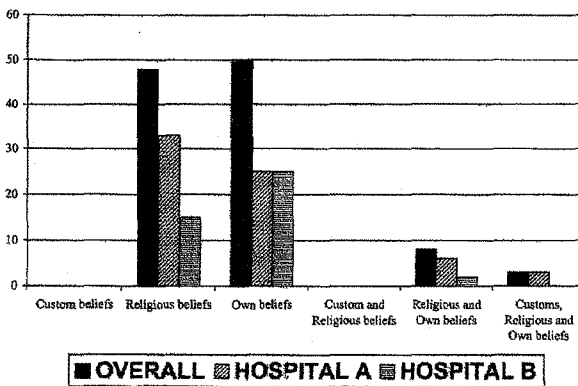


Fig 3 : The main reasons why respondents do not support a cadaveric organ transplantation program divided according to the respondent's hospital. There were no responses for custom and religious beliefs only.

Table VI
Respondents who are willing to become cadaveric organ donors.

	Respondents (n = 426)	Hospital A (n = 255)	Hospital B (n = 171)
Yes, n (%)	211 (49.5%)	98 (38.4%)	111 (65%)
No, n (%)	82 (19.2%)	69 (27%)	15 (8.8%)
Unsure, n (%)	133 (31.3%)	88 (34.6%)	45 (26.2%)
P < 0.0005	P ^r = 0.8890	P ^a < 0.0005	P ^b < 0.0005

The P value, P < 0.0005 is comparing respondents from Hospital A and Hospital B who are willing to become donors (Yes) to those who do not want to. (No and Unsure group).

The P value, P^r = 0.8890 is comparing respondents who are willing to become donors to those who do not want to.

The P value, P^a < 0.0005 and P^b < 0.0005 is comparing respondents from Hospital A and Hospital B respectively who are willing to become donors to those who do not want to.

Response of Unsure is considered a No response.

Discussion

The study showed that Western based programs dealing with brain death certification and cadaveric organ transplantation can be successfully implemented in Malaysian hospitals. The acceptance of the concept of brain death and its implication such as the discontinuation of organ support did not differ between the respondents from the two hospitals but when we looked at issues related to cadaveric organ transplantation, there were statistical difference between the two hospitals, with respondents from Hospital B (the hospital with a program) having better acceptance and attitude towards such issues. This could be related to the respondent's religious background and beliefs.

Malaysia's foray into organ transplantation started as early as the 1970s, but it was in 1997 when Malaysia performed its first heart transplant that interest in brain death and cadaveric organ donation and transplantation was revived. This led to the establishment of 'Transplant Organ Procurement' Teams or TOPS as they are referred to in various government hospitals throughout Malaysia. Presently approximately 400 livers, 450 hearts, 1,200 kidneys and 700 corneas are

needed by patients in Malaysia with only a small number of cadaveric organs available to meet such demand. [Personal communication: Dr Zaki Morad Mohamad Zaher, senior consultant and Head of the Department of Nephrology, Hospital Kuala Lumpur]. Such imbalances of demand and supplies for organs reflect a similar picture in Western countries^{12,13}. Up to the year 1992, the United States of America had around 12000 potential cadaveric donors¹⁴ as opposed to about 31,303 people needing organ transplant¹².

These numbers did not improve despite extensive public awareness campaigns and the introduction of 'required request' laws^{15,16}. One of the main reasons attributing to such dismal numbers are the lack of positive attitudes and knowledge present in health care professional directly dealing with brain death and organ transplantation¹⁷. Such deficiencies resulted in public lack of confidence and distrust for such health care professionals and the failure of the programs^{7,18}. In our study, we clearly pointed out that a well informed health care professional coupled with a comprehensive, structured brain death and cadaveric organ transplantation program can make a difference in meeting the imbalances seen between supply and demand for cadaveric organs from brain dead patients. Other similar studies to this have shown that with better education and training for health care professionals dealing directly with issues of brain death and cadaveric organ donation and transplantation, an increase in donor rates can be achieved¹⁸.

Good comprehensive programs coupled with ongoing medical education and training have been shown to further contribute to better attitudes and responses involving such issues amongst health care professionals^{6,7,8}. Such programs was designed to meet the training needs of the health care professionals when dealing with brain death and potential cadaveric organ donors by teaching hospital staff on how to break bad news, care for the bereaved and request donation from such patients and their relatives. One such program is the European Donor Hospital Education Program (EDHEP)⁷. Several countries after implementing the EDHEP have reported increases in donation rates. Nurses with previous experience, involvement and training with organ donation were more knowledgeable and were more likely to have positive attitudes to such

issues when compared to nurses without such benefits¹⁹.

Centres that lack such programs have revealed that many of their health care professionals were unable to recognize potential donors and when did recognize failed in their approach and dealings with the potential donor family members¹⁷.

Conclusion

The need for continuous and ongoing education and training programs for all levels of health care professionals together with a comprehensive structured brain death and cadaveric organ transplantation program cannot be overemphasized in bringing about better health care professional attitudes towards such issues.

Such programs will help inculcate better understanding and response amongst the health care professional when dealing with issues pertaining to brain death and cadaveric organ transplantation. Most of the existing program available are Western based and are presumed to be reasonably sufficient for use locally (supported by this study), but an 'Asian' based program catered for the local settings would probably be better suited. Religious issues still posed a major stumbling block in accepting cadaveric organ transplantation thus transplant coordinators and The Malaysian Society of Transplantation should get together with the various religious groups and organisation to work together addressing such misconceptions and confusion with regards to brain death and cadaveric organ donation and transplantation. The formulation of these 'Asian' based programs should include input from the major religious groups, medical and nursing schools, as well as various non-governmental organisations.

To further increase the health care professional's knowledge in such matters, the Malaysian Society of Transplantation should get together with the various medical and nursing schools in Malaysia and try to get such topics into the undergraduate curriculum. Awareness amongst the lay public via public forums and mass media can further contribute to a successful program. Those with interest on formulating such a program should refer to a paper by Randhawa²⁰ that addresses this issue very well.

References

1. Younger SJ, Landefeld CS, Coulton CJ, Juknialis BW, Leary M. Brain death and organ retrieval. A cross-sectional survey of knowledge and concepts among health professionals. *JAMA* 1989; 261(15): 2205-10.
2. Pearson IY, Zurynski Y. A survey of professional and professional attitudes of intensivists to organ donation and transplantation. *Anaesthesia & Intensive Care* 1995; 23(1): 68 - 74.
3. Evanisko MJ, Beasley CL, Brigham LE. et al. Readiness of critical care physicians and nurses to handle requests for organ donation. *American Journal of Critical Care* 1998; 7(1): 4 - 12.
4. Bidigare SA, Oermann MH. Attitudes and knowledge of nurses regarding organ procurement. *Heart and Lung* 1991; 20(1): 20 - 24.
5. Stoeckle ML. Attitudes of critical care nurses toward organ donation. *Critical Care Nursing* 1990; 9(6): 354 - 61.
6. Cohen B, Wight C. A European perspective on organ procurement: breaking down the barriers to organ donation. *Transplantation* 1999; 68(7): 985-90.
7. Blok GA, van Dalen J, Jager KJ, Ryan M, Wijnen RM, Wight C, Morton JM, Morley M, Coehn B. The European Donor Hospital Education Programme (EDHEP): addressing the training needs of doctors and nurses who break bad news, care for the bereaved, and request donation. *Transplant International* 1999; 12(3): 161-67.
8. Watkinson, GE. A study of the perception and experiences of critical care nurses in caring for potential and actual organ donors: implications for nurse education. *Journal of Advanced Nursing* 1995; 22(5): 929-40.
9. Marshall PA. Anthropology and bioethics. *MedicalAnthropology Quarterly* 1992; 6: 49-73.
10. Chae M: Older Asians. *J Gerontol Nurs.* 1987; 13: 10-17.
11. Yeo G: Ethical considerations in Asian and Pacific Island elders. *Clin Geriatr Med.* 1995; 11: 139-52.
12. UNOS 1996 1997 SR & OPTN Annual Report and Critical Data. Available at: <http://www.unos.org/Data/>.
13. National Kidney Foundation. Americans recognize organ shortage, support animal-to-human transplants, new survey says. Available at: <http://www.kidney.org/news/animzman.shtml>.
14. Evans RW, Orians CE, Ascher NL. The potential supply of organ donors: an assessment of the efficiency of organ procurement efforts in the United States. *JAMA* 1992; 267: 239 - 46.
15. Caplan AL, Siminoff L, Arnold R, Vernig B. Increasing organ and tissue donation: what are the obstacles, what are our options? In: Novello A ed. *Surgeon General's Workshop on Increasing Organ Donation*. Washington, DC: Dept. of Health and Human Services, 1992; 199 - 232.
16. Caplan AL, Welvang P. Are required request laws working? *Clin Transplant.* 1989; 3: 170-76.
17. Gibson V. The factors influencing organ donation: a review of the research. *Journal of Advanced Nursing* 1996; 23(2): 353-56.
18. Von Pohle WR. Obtaining organ donation: Who should ask? *Heart & Lung The Journal of Acute & Critical Care* 1996; 25(4): 304-09.
19. Bidigare SA, Oermann MH. Attitudes and knowledge of nurses regarding organ procurement. *Heart and Lung* 1991; 20(1): 20-24.
20. Randhawa G. Specialist nurse training programme: dealing with asking for organ donation. *Journal of Advanced Nursing* 1998; 28(2): 405-08.