KNOWLEDGE, ATTITUDE AND PRACTICE ON ORGAN DONATION AND TRANSPLANTATION AMONG DOCTORS IN ANESTHESIA AND INTENSIVE CARE UNIT: DESIGNING AND VALIDATION OF A NEW QUESTIONNAIRE STUDY

BY

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A dissertation submitted in fulfilment of the requirement for the degree of Master of Medicine (Anaesthesiology)

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ABSTRACT

Organ shortage remains the major concern not only in Malaysia but globally and the number of those who needs organ transplantation are increasing over the years. Healthcare professionals especially doctors play a pivotal role in early identification of potential organ donors and thus, the study aims to validate a newly construct questionnaire regarding knowledge, attitude and practice among doctors working in the Anesthesia and Intensive Care Department on organ donation and transplantation in order to gain a baseline information to which future improvement programmes could be planned. The constructed questionnaire had 3 main domains and a total of 38 items along with demographic questions. Three experts in the field of organ donation and transplantation were invited for content validity through reviews. Construct validity was established by exploratory factor analysis (EFA), whereas internal consistency was checked by Cronbach's Alpha. Statistical analysis was performed by SPSS version 25 (IBM, New York, USA) as well as using Microsoft Excel 2016. A total of 200 respondents of various demographic representations responded to the questionnaire. Three content experts deemed the questions to be valid in its content via reviews. Difficulty index was easy at 72.8% with the discrimination index at 0.31 showing good discriminant property of the questionnaire. The Kuder-Richardson 20 shows that the knowledge component is not reliable as the value was 0.34 carrying a standard deviation of 1.78 with a small margin of standard error of measurement at 1.44. Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett Test of Sphericity was 0.868 and $p<0.001$ respectively which merits the data to be suitable for exploratory factor analysis. Scree plot shows an existence of 2 distinct factors in the data set of interest. 3 question stems were deleted and the extracted data was divided into Attitude (5 stems) and Practice (16 stems) which carries commonalities of 0.158 – 0.259 and 0.124 – 0.658 respectively. The question stems showed good discriminant validity at 0.308. With regards to internal consistency, the attitude component had Cronbach Alpha of 0.56 (not reliable) and practice component had Cronbach Alpha of 0.91 (very reliable). This study has answered the research questions posed. The knowledge component of the study although was easy in nature and has good discriminating capability, it had a poor internal reliability but was confounded by many factors of which heterogeneity of the participants was the main issue. The attitude and practice question stems are found to be highly discriminant. The attitude did not have adequate internal consistency but it was confounded by the reduced number of question stems while the practice component was highly reliable. Further work would be needed to fine tune the questionnaire in the future to solve the issues highlighted.

APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a thesis for the degree of Master of Medicine (Anaesthesiology).

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I hereby declare that this dissertation is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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LIST OF ABBREVIATIONS

BTS	Bartlett's Test of Sphericity
EFA	Exploratory Factor Analysis
KMO	Kaiser-Meyer-Olkin
pmp	per million population
UDDA	Uniform Determination of Death Act

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Organ is a part of the body, made up of various types of tissues that performs a particular function; while transplantation is defined as transfer of an organ or tissue from one person's body into another person's body to replace a diseased or failed organ or tissue.

So, what is organ donation? It is a medical procedure which involves the process of donating organ or tissue from a living or deceased person and to be transplanted into living recipient whom organ or tissue have failed. After receiving on organ transplant, a person can proceed to live with a better quality of life. Therefore, it is a noble practice which provides hope not only to those in need but also their families and save lives. Organs and tissues which can be donated in Malaysia are the heart, lung, liver, kidney, heart valves, cornea, bone and skin (Riyanti et al., 2014).

Organ transplantation started more than half a century with the first successful kidney transplantation performed in Boston, USA. In Malaysia, the first organ transplantation was carried out in December 1975 where the recipient received a kidney from his brother and has survived for thirty years. This was then followed by the first liver and heart transplant in 1995 and 1997 respectively. The success rate of organ transplantation has improved considerably due to better control over the transplant patient's immune response with immunosuppression and greater skills among transplant surgeons (National Organ, Tissues and Cell Transplantation Policy, 2007).

The survival rates of organ recipients are as such; liver transplantation 1 year: 80-85%, 5 year: 70-75%; heart transplantation 1year: 83%, 5 year: 63%; kidney transplantation 1 year: 85-90%, 5 year: >75%, 10 year: 60% (12th Report of the National

Transplant Registry, 2015).

However, despite the advancement of technology in the current era, organ shortage remains the major concern not only in Malaysia but globally. The number of patients who need organ transplants are increasing over the years and the demand for organs far outweigh the supply. Malaysia is still within the countries having the lowest deceased organ donation rates (1.0 donations per million populations in 2015) (12th Report of the National Transplant Registry, 2015) and similar scenario can be seen in countries like Myanmar (0.02), Guatemala (0.52), Bulgaria (1.14) and Thailand (1.26). This is in comparative with countries such as Spain (34.13), Belgium (25.61), France (25.31) and Austria (20.72) have all experienced better rates of organ donation (Nl, Noriza, & Tumin, 2014).

1.2 STATEMENT OF THE PROBLEM

Healthcare professionals especially doctors play a pivotal role in early identification of potential organ donors, taking a lead role in the ever-difficult counselling of the family members and to initiate the stabilization of the patient and to organize the complex task of organ procurement. Doctors must be equipped with the adequate knowledge in terms of screening and must be familiar with the protocol of organ donation to initiate a successful organ procurement. It is safe to say that without adequate exposure and base knowledge of such a topic, the rates of organ procurement will certainly be low because of poor screening and initiation processes.

It is a known fact that the topic of brain death and organ procurement is not covered extensively during medical school as it was deemed as a topic that is controversial and difficult to understand and it was not deemed as an essential part of the budding doctor knowledge repertoire before graduating. It is perhaps this

miscalculated step that renders doctors having poor knowledge in this field and that probably academicians would need to reconsider the approach to brain death as a topic worth covering in their syllabus.

From the literature review, we would be able to see what is the level of knowledge throughout the world and possibly that is the crux of the problem when it comes to a low organ procurement rate globally.

1.3 PURPOSE OF THE STUDY

The main bulk of doctors dealing with brain death and organ procurement would be those working in the Anaesthesiology and Intensive Care Unit. Since pre-school, the main method of assessment of knowledge has always been a formative assessment in the form of written examinations. Therefore, the study aims to validate a newly constructed questionnaire addressing the level of knowledge, the current attitude stand point and what's the current practice of medical doctors working in the Anaesthesiology and Intensive Care Department with regards to organ donation and transplantation.

We hope with this validated questionnaire; second phase study can be conducted in the near future to investigate the impact of knowledge on the attitude of the individual, the possible relationship of level of experience doctors have in relation to competency of the topic and to highlight potential problems of competency revolving around this topic if any and to perhaps suggest ways to improve it further.

1.4 RESEARCH OBJECTIVES

The study aimed to achieve the following objectives:

1. To construct and validate a survey-based questionnaire form to investigate the level of knowledge, attitude and practice viewpoints with regards to organ donation and transplantation amongst doctors.
2. To conduct difficulty index, discrimination index and reliability index for validity of the knowledge domain.
3. To conduct exploratory factor analysis (EFA) for construct validity of the attitude and practice domains.
4. To conduct internal consistency to examine the reliability of the attitude and practice domains.

1.5 RESEARCH QUESTIONS

This study was conducted to search for answers of the following questions:

1. Is the newly constructed self-administered questionnaire valid in assessing the knowledge, attitude and practice on organ donation and transplantation amongst doctors?
2. What would be the reliability of the newly constructed questionnaire in assessing the knowledge, attitude and practice on organ donation and transplantation amongst doctors?

1.6 THEORETICAL FRAMEWORK

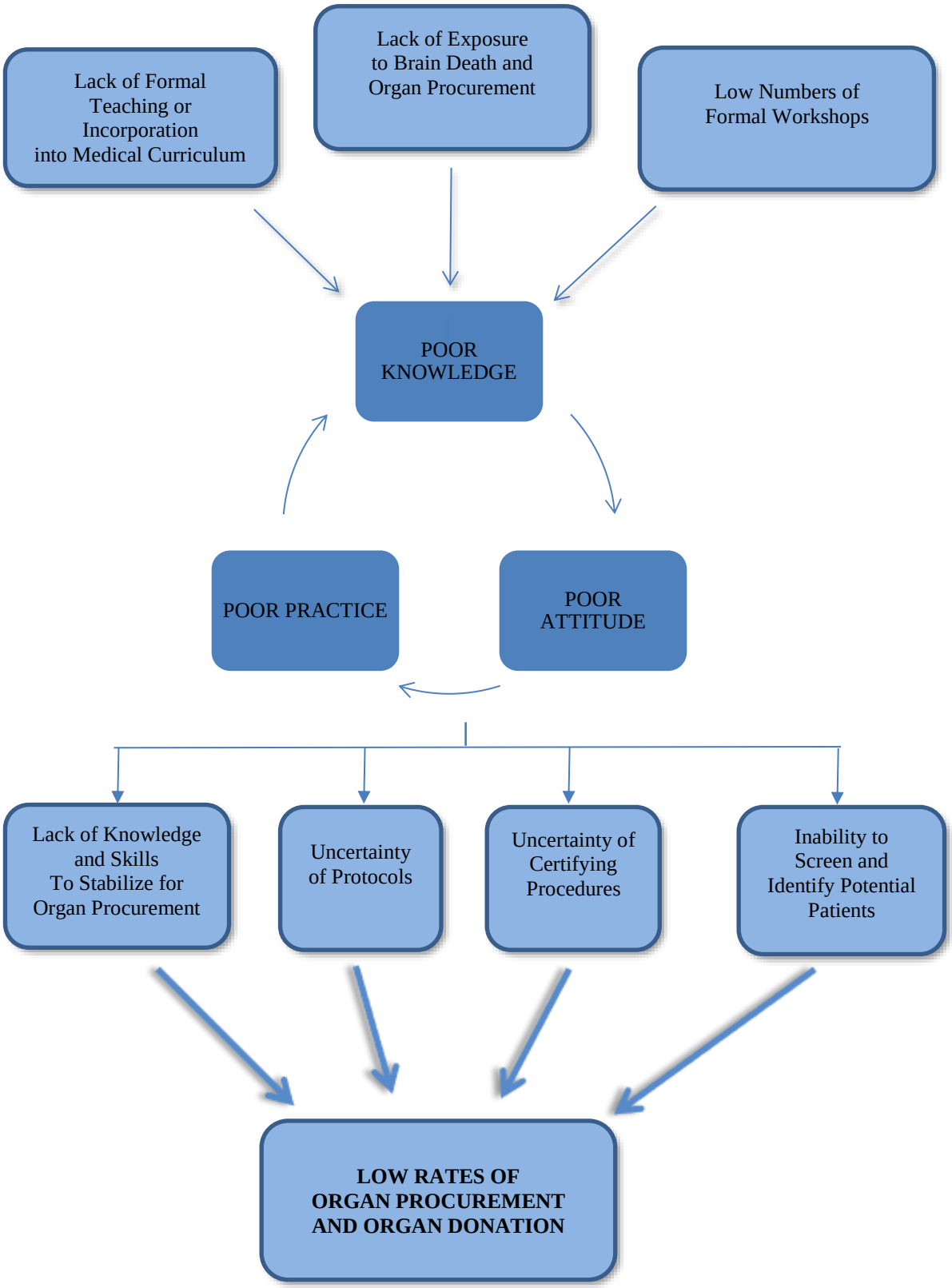

Figure 1.1 Theoretical Framework

1.7 RESEARCH HYPOTHESES

There is a strong signal towards a lack of knowledge level amongst the doctors of the Anaesthesiology and Intensive Care Unit but there is a lack of a validated questionnaire in order to investigate for it. Therefore, we hypothesized that this newly constructed questionnaire is valid to test for the level of knowledge, the level of attitude and practice amongst doctors of the Anaesthesiology and Intensive Care Department with regards to organ donation and transplantation.

1.8 SIGNIFICANCE OF THE STUDY

The study is significant in that if this questionnaire is valid, the level of knowledge, attitude and practice can be thoroughly investigated nationwide. This will provide a baseline level of these aspects and thus investigators can then look and analyse the problematic areas that doctors are facing and able to plan remedial actions such as having more workshops with different levels of depth and also having simulated scenarios for doctors in each respective hospital to practice on. Thereafter by using the same questionnaire, the post intervention levels can be reassessed to look into the efficiency of the intervention done. If successful, the rate of organ donation nationwide based on the annual report will be looked at to see if any positive increment is seen. This questionnaire may also be used internationally where deemed fit and the proposed remedial measures may also be followed so that globally the rate of organ procurement may rise.

1.9 LIMITATIONS OF THE STUDY

There are few limitations to this study, which are:

1. Questions used may have omitted other areas of brain death and organ procurement that maybe of utmost importance.
2. The cohort investigated may not reflect the entirety of the doctors of Anesthesiology and Intensive Care nationwide.
3. Level of knowledge may not reflect the actual level as this questionnaire is passed onto the participant and collected later on. This is subjected to referring to books or electronic references in order to answer the questions.
4. Questionnaire maybe done in a hurry and does not reflect the intellect of the particular individual.

1.10 DEFINITIONS OF TERMS

Knowledge

- Acquaintance with or understanding of a science, art or technique (Merriam-Webster Dictionary)
- Awareness, understanding or information that has been obtained by experience or study, and that is either in a person's mind or possessed by people generally (Cambridge English Dictionary)
- Within the context of this study, knowledge refers to the understanding of the domains in the realm of organ procurement and transplantation which includes but not limited to patient selection, organ maintainence and also logistics of procurement.

Attitude

- A mental position, feeling or emotion towards a particular fact or state (Merriam-Webster Dictionary)
- A feeling or an opinion about something, especially when it shows in the behaviour (Cambridge English Dictionary)

Practice

- Act of actual performance or application (Merriam-Webster Dictionary)
- Something that is usually or regularly done, often as a habit, tradition or custom (Cambridge English Dictionary)

Brain Death

- Brain death is defined as the irreversible loss of all functions of the brain, including the brainstem. A patient determined to be brain dead is legally and clinically dead. Under the Uniform Determination of Death Act (UDDA), the act is used to provide a comprehensive and medically sound basis for determining death in all situations. “An individual who has sustained either irreversible cessation of circulatory or respiratory functions or irreversible cessation of all functions of the brain including the brain stem is dead”.

Organ Donation

- The act of a person giving permission for a part of their body to be taken, while they are alive or after they are dead, and to put it into someone else’s body to replace an organ that is not working correctly (Cambridge English Dictionary)

Organ Procurement

- The act of obtaining or retrieving organs from a donor with the intention of organ transplantation (Dorlands Medical Dictionary)

Questionnaire

- A set of questions used to obtain statistically useful information from individuals (Meriam-Webster Dictionary)
- A set of written questions used to collect information from a number of individuals (Cambridge English Dictionary)

Validity

- The quality of being well grounded, sound and correct (Meriam-Webster Dictionary)
- The quality of being based on truth or reason, or of being able to be accepted (Cambridge English Dictionary)

1.11 CHAPTER SUMMARY

This chapter introduces the reader regarding the rationale and thinking process behind the work of this study and also the questions we hope to be able to answer from the results of the study. Also, the chapter highlights the limitations of this research study and outlines the theoretical framework for better understanding of issues addressed by this study. Apart from that, the chapter outlines significance of performing such a study and also a list of terms with their definitions in order for the reader to get a better understanding and clarity as we move on.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

As this study was aimed to validate a newly constructed questionnaire on the knowledge, attitude and practice on organ donation and transplantation amongst doctors, few subtopics need to be well understood. This literature review covers basic knowledge on organ donors, landscape of deceased (Cadaveric) organ and tissue donation in Malaysia, and lastly the knowledge and attitude of healthcare professionals with regards to organ donation and transplantation.

2.2 ORGAN DONORS

Organ transplantation is the only therapeutic option for terminal organ failures. So far, all other treatment modalities are utilized to extend the patient's life expectancy with the aim of getting them towards having an organ transplanted. Generally speaking, an organ for transplantation can be obtained from a deceased person (deceased donor) or from a living individual (living donor).

2.2.1 Category of Organ Donors

As was elucidated earlier, there are two categories with regards to the type of donors which are deceased and living donors. Within the category of living donors, it is subdivided into different categories. First, we have living donor with genetic relationship with the prospective patient. This encompasses living donors who have

proportion of their genes shared between them and the patient. This group can be further subdivided to first degree, second degree and third-degree relationships with the patient.

Second, we have the living donors with emotional relationship with the prospective patient. These are individuals that have a close relationship with the patient but share no genetic similarities like legal wife, fiancé, adopted children and close friends. Lastly, there is a category for living donors without any relationship with the prospective patient. These are individuals that have no genetic nor emotional relationship with the patient.

The second major category of donors belong to deceased individuals. These patients are those highlighted as potentially brain dead with no emotional or genetic relationship with the recipient. The donors would have undergone a thorough evaluation of their clinical state and once a patient is declared as brain dead by the medical practitioners, the organs and tissues can be procured for transplantation pending approval from the next of kin. There are very strict regulations with regards to the criteria of declaration of a brain death state as well as strict protocols to adhere to when it comes to donor stabilization, organ procurement, organ preservation and organ transplantation.

In accordance to the National Organ Tissue and Cell Transplantation Policy of Malaysia 2007, organs and tissues from deceased donors are preferable than living donors in the clinical setting of our country. This stand may differ across different nations across the world as the practice of organ donation and transplantation is governed by a special body comprising of many individuals taking into account the many aspects that is pertinent to our country.

2.2.2 Deceased (Cadaveric) Organ and Tissue Donors

In our country Malaysia, organ and tissues from cadaveric donors are preferable than of from living donors. Since the first edition in 2004, the Report of National Transplant Registry has been published annually. Within the report, the summary of deceased donors was captured. As the years go by, with the increase of education activities and hospital awareness projects, there seem to be an increase in the number of referrals for brain death evaluation. The number of successful donors is also on the rise in line with the rise of case referrals but the conversion rate remains rather static.

Table 2.1 Summary of the data of cadaveric organ and tissue donation from the annual reports.

Year	Referrals	Successful Donors	Conversion Rate (%)	Brain Death	Donation Rate (pmp)	Trauma	Medical	Donor Card Holder
2004	-	16	-	-	0.67	-	-	-
2005	-	13	-	5	0.53	3	9	3
2006	-	25	-	14	1.01	10	6	1
2007	-	25	-	15	0.99	16	8	6
2008	-	26	-	13	0.94	10	16	2
2009	143	39	27	18	1.38	19	13	3
2010	151	38	25	18	1.34	20	10	7
2011	174	47	27	24	1.64	19	20	10
2012	154	44	29	18	1.50	23	21	10
2013	123	44	36	19	1.48	23	21	3
2014	270	56	21	23	1.77	27	29	9
2015	303	71	23	32	2.37	38	33	14
2016	293	39	14.1	64	1.38	15	24	10

Note. Data extracted from the Reports of National Transplant Registry