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Attitude Towards Euthanasia Among Undergraduate Medical Students a Cross-Sectional Study

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Abstract

Introduction; Euthanasia, i.e. mercy killing, is a highly controversial topic and has grown remarkably over the past decade particularly with rapid medical advancement and the growing population of aging society. Objective; to study the factors affecting attitudes of medical students on euthanasia in Melaka Manipal Medical College. Methods; A pre-validated questionnaire based analytical cross-sectional design was used to conduct this research. The questionnaires were distributed to medical students in Semester 6, 7 and 8. 211 participants have answered the questionnaire. Attitude towards euthanasia were assessed in 5-point Likert Scale namely: 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, and 5 = strongly agree with case scenarios. Results; The mean score for attitude towards Euthanasia is 26.8 ± 6.4 (range from 10 to 43). There is significant positive correlation between empathy and attitude towards euthanasia (r=0.25 p=0.002.). As for religiosity, Non-Organizational Religious Activity there is significant positive correlation with attitude towards euthanasia (r=0.14, p=0.024). The next subscale under religiosity is Intrinsic Religiosity which has positive significant relation to attitude towards euthanasia (r=0.14, p=0.028). Conclusion; This study shows that empathy and religiosity play significant roles in attitude towards euthanasia.

Keywords

Attitude, Euthanasia, Medical Students, Survey

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1. Introduction

Euthanasia, i.e. mercy killing, is a highly controversial topic and has grown remarkably over the past decade particularly with rapid medical advancement and the growing population of aging society. It is derived from 2 Greek words, “eu” and “thanatos”, which means good death. [1] Being one of the most intriguing medical and law issue, euthanasia is defined as “A deliberate act undertaken by one person with the intention of either painlessly putting to death or failing to prevent death from natural causes in cases of terminal illness or irreversible coma of another person.” [2]

Euthanasia is further classify into different forms namely voluntary, non-voluntary and involuntary; active and passive euthanasia. Voluntary euthanasia is committed under patient’s request, under his own willingness. No external force or pressure affecting his wishes. Non-voluntary euthanasia occurs when the patient was unable to make informed consent, for example, he is comatose or mentally insufficient. Even baby born with congenital anomalies falls into this category. Involuntary euthanasia means to end one’s life without their knowledge or consent. From other aspect, when one’s directly cause the patient death is termed as active euthanasia. It includes injection of lethal drug.

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However, passive euthanasia does not have direct involvement, it happen by withdrawn necessary life support or withhold active treatment. [3]

In most western countries, euthanasia still remains illegal. Among the general population there is an increasing public awareness or acceptance of euthanasia in a few countries, such as The Netherlands [4], Australia [5], the United State of America [6, 7], and Canada. [8] This change in trend is due to increase individualization in the society that had reflected a movement of wave from the traditional perspectives toward a more liberal point of view. Instead, Switzerland has an unusual standpoint which "death-tourism" is currently at rising trend even with endorsement by non-physician. [9] This may be due to the Swiss laws that make the prescription and dispensary of drugs to foreigners possible, and thus the decriminalization of assisted suicide. [10]

Many surveys have been conducted in many countries in order to evaluate Public [11, 12], physician' [13, 14, 15], nurses' [16, 17], and patients' [18, 19] opinions about this blistering topic. However, the association between the sociological development and the change of attitudes toward euthanasia has never been thoroughly investigated. In addition, the studies reporting the increasing acceptance and change of attitude toward euthanasia have only been done in a few countries, and most of them is intensely debated in the society. Furthermore, different study designs and questionnaires are being used in different studies. Therefore, results can neither be generalized nor compared among countries. [20, 21, 22]

Euthanasia is not unheard of in Malaysia. However, it has not received enough attention from the public and medical fraternity. Therefore, there is a lack of data exploring the physicians, patients and their family's attitude towards euthanasia in Malaysia. A previous cross-sectional survey of 400 medical students of multicultural settings at the University of Malaya at 1998/1999, showed that the majority of respondents (52%) supported the withdrawal of active therapy in a patient suffering from a terminal illness. 48% of them were against it. Most of the respondents stated that they would neither practice euthanasia as a doctor nor would they performed it on themselves if or when it became legal. [23] As for now, Malaysia has not passed any legislation on euthanasia. [24]

There are a few factors that have been associated with the endorsement of mercy killing, such as age, gender, ethnicity, religion, academic year, parents' education, and parents' occupation. Certain religious beliefs and experience in palliative care plays a significant role that leads to the decisions of endorsing euthanasia. These ethical dilemmas are frequently faced in the clinical setting by physician and nurses, and are now transcending to medical students because they are slowly being exposed to the scenario of doctor-patient relationships. Another important issue here is the empathy in the doctor-patients relationship.

Using the aforementioned factors an inference can be constructed using the study material available and data collected and analysed. This study was performed to inquire the factors affecting, attitudes of medical students on euthanasia. As Euthanasia has gained worldwide attention, there is a pressing need to study the trend of attitude towards mercy killing especially among medical students.

This is to ascertain that the future promising medical practitioners, although have different views, will be able to make the decisions for themselves. [25] Thus, medical students need better knowledge of palliative interventions at the end-of-life, but also education on the perspectives of living with disabilities and diseases.

2. Methodology

2.1. Study Design, Settings, and Population

A questionnaire based analytical cross-sectional design was used to conduct this research. This study was held in Melaka Manipal Medical College (MMMC) both in Melaka and Muar campus. The duration of study dated from June 2018 to July 2018.

MMMC had three programmes which were Bachelor of Medicine and Bachelor of Surgery (MBBS), Bachelor of Dental Surgery (BDS), and Foundation in Science (FIS). There were approximately 800 students from MBBS course in MMMC. The students involved in this study were MBBS students from Melaka Manipal Medical College that were currently doing their clinical years.

2.2. Sample Size

The sample size for this research was calculated using the finite population proportion formula as shown below:

$$n = \frac{Np(1-p)z^2_{1-\frac{a}{2}}}{d^2(N-1)+p(1-p)z^2_{1-\frac{a}{2}}}$$

Where,

1 Population size, N = 800

2 Proportion, p = 0.52

3 Error, d = 0.07

4 Alpha, = 0.05

5 n = Sample size

6 Minimum number = 226

The formula used for adjustment for non-response was as follows:

$$n_{final} = \frac{n_{calculated}}{1 - nonresponse\%}$$

Calculations:

$$n = \frac{800 \times 0.52(1-0.52)z^2_{1-\frac{0.05}{2}}}{0.07^2(800-1) + 0.52(1-0.52)z^2_{1-\frac{0.05}{2}}} = 158$$

$$n_{final} = \frac{158}{1 - 30\%}$$

$$= 225.7 \approx 226$$

The previous study stated the prevalence of 52% which was used as the proportion in this formula as 0.52. [23] A level of error of 0.07 and the Alpha was 0.05. These values were then inserted and calculated through the Finite Population Proportion formula. The minimum sample size was 158 but calculated with a non-response rate of 30%. The final sample size selected for this study including the non-response was 226 which was rounded of to 230 as the final sample size. However, in order to ensure good response percentage, we circulated about 270 sets of self-administered questionnaire among medical student of batch 35, 36 and 37 in MMMC, Melaka and Muar campus.

2.3. Sampling

The sampling process used was purposive sampling, which was a non-probability sampling method, as we used volunteers for this study. 230 students that were underwent their clinical years from Melaka campus and Muar campus were recruited in this research.

There were few inclusion and exclusion criteria applied in the study. MBBS students who were currently underwent their clinical years were included in this study. All ethnic groups and races as well as both sexes were included. The students who were presented on the day of data collection filled up the questionnaire and were willing to give us their consent were included in this study as well. Students who were unable to complete the questions in Duke University Religion Index (DUREL) were still included in this study.

Studies targeting Year 1 and Year 2 students were excluded. Students who were unable to complete the questions from the Toronto Empathy Questionnaire (TEQ), and Attitudes Towards Euthanasia Scale (ATE scale) were excluded from this study. Students who were not present and not willing to give us their consent, were excluded from this study. The questionnaire was prepared solely in the English medium.

2.4. Data Collection

The questionnaire consists of four parts. Part one, socio-demographic details; part two, Duke University Religion Index (DUREL) by Koenig & Harold G, 2010; part three, Toronto Empathy Questionnaire (TEQ) by Spreng, McKinnon, Mar and Levine, 2009 and part four, Attitudes Towards Euthanasia scale (ATE scale) by Wasserman, Clair & Ritchey, 2005. The questionnaire was attached with an informed consent form. They were asked to fill in the questionnaire within a time limit of 15-20 minutes. Both open and closed ended questions were included in this questionnaire.

In part one, the socio-demographic details consists of 9 question comprising of age, gender, ethnicity, religion, MBBS batch, father's and mother's education, and father's and mother's occupation.

In part two, the Duke University Religion Index (DUREL) comprised of five-item measure of religious involvement and it was developed for use in large cross-sectional and longitudinal observational studies. Three major dimensions of religious involvement were accessed. They were organizational, non-organizational, and intrinsic or subjective religiosity. Studies have found that using the DUREL scores, beliefs regarding spirituality and religion towards health care among health professionals can be accessed. Organizational religious activity (ORA) involves public religious activities such as involving in religious services or participating in other group-related religious activity. Non-organizational religious activity (NORA) consists of religious activities performed out of religious places, such as reciting group prayer, scripture study, watching religious shows or listening to religious songs and getting input from the radio. Intrinsic religiosity (IR) assesses degree of their own personal religious commitments and contribution. However, since it measured three dimensions of religiosity, the DUREL really consists of three "subscales". [26]

In part three, Toronto Empathy Questionnaire (TEQ) was a self-report style, uni-dimensional, 16-item, five-point Likert type scale developed to assess the empathy levels of individuals. It had a strong psychometric property including a sturdy structure with good consistency, validity and test, re-test reliability. Using 16 questions, the TEQ comprised of a wide range of attributes associated with various theoretical components of empathy. Emotional contagion [27, 28], emotion comprehension [29], sycon-specific altruism [30], and sympathetic physiological arousal [31] were the phenomenon that had said to be the affective aspects of empathic responding. All these aspects were depicted in the TEQ items. The scale used in TEQ comprises of 5 different categories which were numbered from 0 to 4 where, 0 =

Never, 1 = Rarely, 2 = Sometimes, 3 = Often, and 4 = Always. Items 1 and 4, specifically targets the understanding of the emotional state in another and if it can stimulate the same emotion in oneself. In item 8, emotional comprehension was assessed. Other items such as items 2, 7, 10, 12, & 15 assessed the emotional states in others by indexing the frequency of behaviours demonstrating appropriate sensitivity. In addition, in items 3, 6, 9 and 11 the sympathetic physiological arousal was tapped and in items 5, 14, & 16 altruism was tested. Finally, item 13, calculates the frequency of behaviours pertaining higher-order empathic responding, such as social helping behaviours. Using negative scores items 2, 4, 7, 10, 11, 12, 14, 15, reflected the frequency of situational disregard towards another individual on the above described parameters. Summation of all the score derived the total for the TEQ, which can range from 0 to 64, with high scores indicating higher levels of empathy whereas low score indicating lower levels of empathy.

In part four, Attitude Towards Euthanasia scale (ATE scale) were used to access all dimensions of euthanasia, i.e. voluntary, non-voluntary and involuntary, active and passive. No dimensions discussed above can be isolated from each other. Each components were of great significance. Therefore, all questions represent every possible combinations of all these dimensions. ATE scale was valid and reliable with internal consistency of Cronbach's alpha=.871 reported. It exceptionally delineate all vital dimensions i.e. active and passive euthanasia, no chance for recovery and severe pain, and patient's autonomy and doctor's authority. It consists of 10 items that were scored on a 5-point Likert scale namely: 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, and 5 = strongly agree. Attitude unfavoured of euthanasia were assigned a lower score of 1 or 2 whereas attitude favoured of euthanasia were assigned higher score of 4 or 5. [32] Responses indicative of indecision or uncertainty were weighted 3. Scores were sum to derived total for the ATE, which can range from 5 to 50. The higher score indicate more positive attitude toward euthanasia whereas a lower score indicate unfavourable attitude. Items 6 and 9 were phrased negatively and require reverse coding. The methods (active or passive) were not specified here. The purpose of these items was to cross-check on response bias, the situation where a respondent simply checks responses without reading and understanding questions. If a respondent scored high on all other items, they should score low on the reversed items. Items 1 and 3 deal with circumstances of severe pain where the patient had requested to die. For these items, the method was passive in 1 and active in 3. Similarly, Items 8 and 10 deal with circumstances of no recovery where the patient had requested to die, but in item 8 the method was active whereas in item 10 it was passive. Items 5 and 7 deal with circumstances where the doctor thinks the patient's pain was too severe, but make no reference to the patient's desires. For these items, item 5 was active and item 7 was passive. Similarly, items 2 and 4 deal with circumstances where a doctor believed there was no chance of recovery, but make no reference to the patient's desires. The method was active in item 2 and passive in item 4. [33]

2.5. Data Processing and Analysis

The data was tabulated by using Microsoft excel and analysed using Epi Info™ 7th version from Centers for disease control and prevention (CDC) website. Microsoft Excel was used to summarise the descriptive data.

Frequency and percentage were used to represent qualitative variables under the socio-demographic column. Measure of central tendency (mean) and dispersion (standard deviation) were applied on continuous variable like age, TEQ scores and ATE scores. Once descriptive statistics for personal demographic details and various key variables were calculated and tabulated, appropriate statistical test were used to answer the research questions accordingly. This included unpaired t-test, ANOVA, and correlation test. The level of statistical significance was set at 0.050, whichever more than this value was considered as not significant. Visual tools like mean plot and scatter plot were also included with the aid of software, GraphPad version 6.0.2.

2.6 Ethical Consideration

The participants were briefed on the objectives of the study. The study was approved by the Institutional Ethics Committee of Melaka Manipal Medical College. Voluntary participation was taken into consideration. The participants had the free will to withdraw from this study at any given time. All the data were collected anonymously and their details were kept confidential.

3. Results

Table 1. Socio-demographic characteristics of undergraduate student (n = 211).

Variables	n	(%)
Age		
>22	94	(44.6)
≤22	117	(55.5)
Mean (SD)	22	(1.2)
Gender		
Female	128	(60.7)
Male	83	(39.3)
Ethnicity		
Chinese	66	(31.3)
Indian	84	(39.8)
Malay	38	(18.0)

Variables	n	(%)
Others	23	(10.9)
Batch		
35 (Semester 8)	34	(16.1)
36 (Semester 7)	59	(28.0)
37 (Semester 6)	118	(55.9)
Father's Education		
Primary	7	(3.3)
Secondary	47	(22.3)
Diploma	34	(16.1)
Degree	74	(35.1)
Masters	49	(23.2)
Mother's Education		
Primary	10	(4.8)
Secondary	60	(28.6)
Diploma	38	(18.1)
Degree	65	(31.0)
Masters	37	(17.6)
Father's Occupation		
Medical	27	(12.8)
Non-medical	184	(87.2)
Mother's Occupation		
Medical	18	(8.5)
Non-medical	118	(55.9)
Housewife	75	(35.6)

There was a total of 211 participants. The response rate was 78.1%. The age of the participants were between 18-31 years old. Among the total 211 participants 117 (55.5%) of them were below or aged 22, the remaining 94 (44.6%) of them were above the age of 22. The mean score for age calculated was 22 ± 1.2. 128 (60.7%) were female participants and 83 (39.3%) were male participants.

For ethnicity, the highest number of participants were Indians which was 84 (39.8%) followed by Chinese which was 66 (31.3%) and then Malays 38 (18.0%) and lastly other ethnicities were 23 (10.9%). The questionnaires were distributed to three batches from Semester 6 (Batch 37), 7 (Batch 36) and 8 (Batch 35). From batch 35, 34 (16.1%) of them responded to the questionnaires, from batch 36 there were 59 (28.0%) respondents and there were 118 (55.9%) respondents from batch 37. As for the father's education of the participants it were categorised it into primary with a frequency of 7 (3.3%), secondary with 47 (22.3), diploma with 38 (18%), degree with 74 (35.1%) and followed by masters with 49 (23.3%) number of participants. Besides that, in the aspect of the participant's mothers education 10 (4.8%) of them have primary education, 60 (28.6%) of them have secondary education, 38 (18.1%) have a diploma, 65 (31.0%) did their degree, and followed by 37 (17.6%) completed their masters. In addition, as for the participants father's occupation 27 (12.8%) of them were in the Medical field and 184 (87.2%) of them were not in the medical field. Finally, in the aspect of the participants mother's occupation 18 (8.5%) were in the medical field, 118 (55.9%) of them are in the non-medical field, followed by 75 (35.6%) of them were housewives.

Table 2. Components of religion in undergraduate student (n = 211).

Variables	n	(%)
Religion		
Buddhism	57	(27.0)
Christian	29	(13.7)
Hindu	73	(34.6)
Islam	45	(21.3)
Others	7	(3.3)
DUREL Index		
Organizational Religious Activity (ORA)[a]	3.4	(1.3)
Non-organizational Religious Activity (NORA)[a]	3.0	(1.9)
Intrinsic Religiosity (IR)[a]	3.4	(1.3)

[a]Mean (SD)

A majority of the participants were Hindu, 73 (34.6%), followed by Buddhist, 57 (27%), Islam, 45 (21.3%) and Christian, 29 (13.7%). Minority of participants practice other religion, 7 (3.3%). The DUREL Index had three major sub scales (ranges from 5 to 27) which were Organizational Religious Activity (ORA), Non-organizational Religious Activity (NORA), and Intrinsic Religiosity (IR). The ORA sub scale comprised of the first question, where the students scored an average of 3.4 ± 1.3, the NORA sub scale comprised of the second question, where the students scored an average of 3.0 ± 1.9, and IR sub scale finally constitutes the last three questions with an average of 3.4 ± 1.3.

Table 3. Empathy score (TEQ) and Attitude towards Euthanasia score (ATE) among undergraduate student (n = 211).

Variables	Mean (SD)
Empathy score	33.3 (5.3)
Attitude Towards Euthanasia score	26.8 (6.4)

The mean empathy score amongst undergraduate students were 33.3 ± 5.3. The mean score for Attitude towards Euthanasia was 26.8 ± 6.4 (range from 10 to 43).

Table 4. Association between age, gender, ethnicity, religion, batch, father's education, mother's education, father's occupation, mother's occupation and attitude towards euthanasia. (n=211).

Independent Variables	Attitude towards Euthanasia Mean (SD)	*t* (df) / F (df_1, df_2)	*p*-value
Age			
>22	26.5 (5.7)	-0.48 (209)	0.630[b]
≤22	26.9 (6.9)		
Gender			

Independent Variables	Attitude towards Euthanasia Mean (SD)	*t* (df) / F (df_1, df_2)	*p*-value
Female	26.6 (6.7)	-0.44 (209)	0.659[b]
Male	27.0 (5.9)		
Ethnicity			
Chinese	26.7 (6.0)		
Indian	27.5 (5.8)	1.0 (3, 207)	0.410[c]
Malay	25.5 (7.8)		
Others	26.2 (7.0)		
Religion			
Buddhist	27.3 (6.0)		
Christian	27.8 (5.4)		
Hindu	26.8 (5.9)	1.3 (4, 206)	0.282[c]
Islam	25.0 (7.8)		
Others	28.9 (7.0)		
Semester			
Batch 35 (Semester 8)	25.9 (6.8)		
Batch 36 (Semester 7)	27.3 (5.6)	0.5 (2, 208)	0.600[c]
Batch 37 (Semester 6)	26.7 (6.6)		
Father's Education			
Primary	22.7 (9.4)		
Secondary	25.7 (5.9)		
Diploma	25.1 (5.8)	2.9 (4, 206)	0.020[c]
Degree	28.4 (6.8)		
Masters	27.0 (5.5)		
Mother's Education			
Primary	27.2 (7.6)		
Secondary	25.4 (7.0)		
Diploma	25.9 (5.8)	2.0 (4, 205)	0.098[c]
Degree	28.4 (6.4)		
Masters	27.0 (4.7)		
Father's Occupation			
Medical	27.6 (6.9)	0.69 (209)	0.489[b]
Non-medical	26.6 (6.3)		
Mother's Occupation			
Medical	25.9 (5.4)		
Non-medical	27.0 (6.1)	0.2 (2, 208)	0.787[c]
Housewife	26.6 (7.1)		

[b] Unpaired *t*-test
[c] One-way ANOVA

The mean of attitude towards euthanasia among those who were above 22 years old was 26.5 ± 5.7 and those who were 22 years old and below was 26.9 ± 6.9. *p* value was 0.630 which is not significant. The mean of attitude towards euthanasia among female was 26.6 ± 6.7 meanwhile among male the mean was 27.0 ± 5.9 and the *p* value was 0.659 which is not significant. The mean of attitude towards euthanasia among different ethnicities were also calculated. For Chinese it was 26.7 ± 6.0, for Indian it was 27.5 ± 5.8, for Malay it was 25.5 ± 7.8 and for Others were 26.2 ± 7.0. The *p* value was 0.410, which is not significant. The mean of attitude towards euthanasia among religion were calculated. For Buddhist it was 27.3 ± 6.0, for Christian it was 27.8 ± 5.4, for Hindu it was 26.8 ± 5.9, for Islam it was 25.0 ± 7.8 and for Others it was 28.9 ± 7.0. The *p* value was 0.282 and not significant. The mean of attitude towards euthanasia among three batches were recorded. Firstly, from semester 8 students 25.9 ± 6.8, semester 7 students were 27.3 ± 5.6 and lastly semester 6 students were 26.7 ± 6.6. The *p* value was 0.600, which is not significant. Next variable would be father's education which was categorised as primary, secondary, diploma, degree and masters. The mean for primary was 22.7 ± 9.4, for secondary was 25.7 ± 5.9, for diploma was 25.1 ± 5.8, for degree was 28.4 ± 6.8 and for masters was 27.0 ± 5.5. The *p* value was 0.02 and it is significant. Next variable would be mother's education which was categorised as primary, secondary, diploma, degree and masters. The mean for primary was 27.2 ± 7.6, for secondary was 25.4 ± 7.0, for diploma was 25.9 ± 5.8, for degree was 28.4 ± 6.5 and masters was 27.0 ± 4.7. The *p* value was 0.098, and it is not significant. As for father's occupation it has been categorised into medical and non-medical. The mean of attitude towards euthanasia among fathers from medical profession were 27.6 ± 6.9 and fathers from non-medical profession were 26.6 ± 6.3. The *p* value was 0.489 and it is not significant. As for mother's occupation it was categorised into medical, non-medical and housewife. The mean of attitude towards euthanasia among mothers from medical profession were 25.9 ± 5.4, for non-medical profession were 27.0 ± 6.1 and for housewife were 26.6 ± 7.1. The *p* value was 0.787 and is not significant.

Table 5. Association between empathy and attitude towards euthanasia among undergraduate students (n=211).

Variables	*r* Value	*p*-Value
Empathy	0.25	0.002

The Pearson's correlation coefficient (*r*), is 0.25 which indicates a little positive correlation between empathy and attitude towards euthanasia amongst undergraduates. Therefore, there is significant positive and little correlation between empathy and attitude towards euthanasia (p=0.002). When empathy score increases, favourability towards euthanasia increases.

Table 6. Association between religiosity and attitude towards euthanasia among undergraduate students (n=211).

Variables	*r* Value	*p*-Value
DUREL	index	
ORA	0.00	0.673
NORA	0.14	0.024
IR	0.14	0.028

Correlation test revealed that ORA component has little correlation to that of attitude towards euthanasia, and the *p* value is not significant. As for NORA, according to the *r* value, it has little correlation to the attitude towards euthanasia and the *p* value is significant. For the subscale IR, the *r* value has little correlation as well with the attitude towards euthanasia and the *p* value is significant.

4. Discussion

There are a few studies that have been done regarding euthanasia. Euthanasia have been associated with several factors to know what affects the legalization of euthanasia in a specific country and also people's view regarding euthanasia. One of the study that has been done in Malaysia was in University Malaya in 2005. The topic was Attitude of Medical Students towards Euthanasia in a Multicultural setting. It was a cross-sectional survey of students of multicultural backgrounds at University of Malaya was conducted to understand their attitudes towards euthanasia and factors related to medical decision and ethical reasoning concerning the prolongation of life, right to die and euthanasia. In this study 61% of them would not wish euthanasia to perform on them to be legal and 38% of then wish they would. Besides, 39% agreed to perform euthanasia as a physician and 61% would not agree to perform euthanasia. [23]

The next study that was done in Pakistan was about Attitude of Pakistani and Indian doctors to euthanasia and physician-assisted suicide in 2008. They have used a questionnaire survey that included one case history of a patient with cancer and another of one suffering from motor neuron disease (MND). So according to their study, 15.3% agreed with the concept of euthanasia being an acceptable option for the patient with MND. 11.5% supported euthanasia can be performed on cancer patient. From India, 26.6% doctors agreed to euthanasia for patient with MND. 25% supported euthanasia for cancer patient. [34]

In this study regarding Attitude Toward Euthanasia among Undergraduate Medical Students, it has been found that the mean score for Toronto Empathy Questionnaire (TEQ) was 33.3 ± 5.3 and the mean score for Attitude towards Euthanasia (ATE) scale was 26.8 ± 6.4. The association of independent variables with Attitude towards Euthanasia was also done. Age, gender, ethnicity, religion, batch, mother's education, father's education, mother's occupation had no significant association with attitude towards euthanasia. However, father's occupation of the students had significant association with the attitude towards euthanasia.

Besides that, association between empathy and attitude towards euthanasia among undergraduate students was also calculated. The Pearson's correlation coefficient (*r*), has little positive correlation and significant association between empathy and attitude towards euthanasia. As for the association between religiosity and attitude towards euthanasia among undergraduate students, it was categorized as Organizational Religious Activity (ORA), Non-organizational Religious Activity (NORA), and Intrinsic Religiosity (IR) according to the Duke University Religion Index (DUREL). For ORA, the correlation coefficient has little positive correlation to that of attitude towards euthanasia and does not have any significant association. As for NORA, there is little positive correlation and has significant association to that of attitude towards euthanasia. IR has little positive correlation and has significant association to that of attitude towards euthanasia.

4.1. Implication

In this study, the objective was to analyze the factors affecting the attitudes towards euthanasia and the trend of attitudes towards euthanasia amongst undergraduate medical students in Melaka Manipal Medical College (MMMC). This study has shown under religiosity using the DUREL scale, NORA and IR have significant association with attitude towards euthanasia. We have studied that students prefer private religiosity such as prayers, watching religious television shows and listening to religious radio stations. In the aspect of Intrinsic Religiosity, it is their own personal religious commitment they have without other peoples' influence. Since empathy has a significant association to that of attitude towards euthanasia in our study, if health professionals can improve empathy towards patients, the attitude towards euthanasia might differ. Health professionals should learn on how to interact and socialize with patients

and get to know their problems, not just physical problems but the emotional struggle the patients go through as well. Health professionals should also always be positive towards patients as well as make them feel as comfortable as possible so that they do not give up easily when they are terminally ill. Euthanasia mostly is opted when the patient is terminally ill such as cancer or any other psychiatric disorders that make the patient lose their interest to live anymore as they wish to end their life. This is where health professional play an important role by having good doctor-patient relationship. Health professionals should be taught good communication skills and a workshop could to be done on palliative care and treatment of mentally-ill patients with empathy.

4.2. Limitations

There were a few limitations that was faced during this research. Firstly, the ATE scale does not measure every possible variation in context to where a respondent might agree or disagree regarding euthanasia. The questionnaire also does not discuss certain terminologies such as the term euthanasia itself. There was no patient based scenarios given in the questionnaire and this limited the study to prove in what kind of situation euthanasia may be possibly accepted. Besides that, this study was carried out among students from Semester 6, 7 and 8 of Melaka Manipal Medical College (MMMC). Therefore, these results do not represent the attitude towards euthanasia among undergraduate medical students of other medical school students. These results will not represent the general population as well.

4.3. Recommendation

As for recommendations, more than one scale can be used to assess attitudes towards euthanasia to provide a more in depth evaluation of the students' attitudes towards euthanasia. Patient based scenarios can be used in further studies as well. This may allow a better insight towards the students' on where euthanasia may be done. Furthermore, if patient based scenarios were to be given, students' may have better knowledge on illnesses which is relevant in our aging society. These situations are complex and has to be handled and investigated separately. The study could also be carried out in students from other semesters as their knowledge on diseases and illnesses are different especially students from semester 9 and 10 who have had more experience with patients in a clinical setting.

5. Conclusion

The objective of this study is to find out the factors affecting attitudes of undergraduate medical students on euthanasia in MMMC. Based on the study, father's occupation, empathy and religiosity were recognized to be significant variables in attitudes of euthanasia among undergraduate medical students of MMMC. More research in various settings should be done to understand the attitude towards euthanasia among the society. This research can be used as reference for further researches by expanding the scenarios of patients to make decisions regarding euthanasia.

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