

Study on the Levels of Piousness and Empathy Affecting the Tolerance Towards Homosexuality Among Clinical Phase Students: A Cross Sectional Study

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Abstract

Background: Homosexuality has been accepted in many countries such as America, Australia and Germany, however it is still illegal in Malaysia. This study explores the relationship between age, academic year, gender, ethnic, religion, level of piousness and empathy affecting tolerance towards homosexuality among medical students. **Method:** There were 201 clinical phase students from a private medical college in Malaysia which were recruited into this study. Homosexual Attitude Scale was used to record the tolerance towards homosexuality, Duke University Religion Index to measure piousness and Toronto Empathy Scale to measure the empathy of an individual. **Results:** The result showed that males have higher tolerance towards homosexuality among medical students compared to females. Based on ethnicity, Indians have the highest tolerance towards homosexuality followed by Chinese and Malay. Based on religion, Hinduism had the highest tolerance towards homosexuality followed by Christianity, Buddhism and Islam. As for piousness, the higher the level of intrinsic religiosity the lower the tolerance towards homosexuality. On the other hand for empathy, the higher the level of empathy the higher the tolerance towards homosexuality. **Conclusion:** In conclusion, clinical practitioners are more empathetic towards homosexuals. Increased piousness and intrinsic religiosity in a clinical practitioner will have a more negative attitude towards homosexuals.

Keywords

Homosexuality, Empathy, Students, Survey

Received: May 3, 2018 / Accepted: June 19, 2018 / Published online: August 6, 2018

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1. Introduction

In recent years, homosexuality has become a topic of taboo, a controversy that potentially causes a lot of heat. Homosexuality refers to the type of behaviour in which a person gets attracted sexually, mentally and physically to another person of the same gender. Tolerance refers to the amount of patience a person has when someone else is carrying out an act that might or might not be accepting to you. [1] The outcome which is expected in this study is to see

if there is a high, low or no tolerance towards homosexual people and if piousness and the level of empathy of a medical student plays a role in their attitudes towards homosexuals. Currently, youth sexuality remains a concern, especially in a country such as Malaysia where sexual diversity is disregarded, and minorities are stigmatized against and ostracized. Due to this, non-heterosexual communities are usually hidden and marginalized, causing research regarding the non-heterosexual community to be overlooked. [2] It is important to include homosexuals in studies to ensure that when research is done within a community, there is proper

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representation of the population.

There has been an increase in number of countries that have legalised gay marriages in the past 10 years. It started in year 2000 with the Netherlands, and since then many other countries have followed suit. The most recent gay marriage legalization was done in year 2017 by Australia and Germany. [3] Similar research was conducted by Pew Research Centre, which revealed that many governments worldwide show an increased level of consideration towards homosexuality, especially countries such as the United States, Canada, most of the European Union as well as parts of Latin America. Spain (88%), Germany (87%), the Czech Republic (80%), France (77%), Britain (76%), and Italy (74%) share this view, as do more than half in Greece (53%). Poland is the only EU country surveyed where opinions are mixed; 42% say homosexuality should be recognised by society and 46% believe it should be rejected. [4] An analysis was done of the adult population in the United States by Williams School of Law stating that 3.5% of adults in America identify as homosexuals [5] and a study published in USA Today states that approximately 1 million American adults are in same sex relationships, which is noted to be a 33% rise since the Supreme Court ruled in favour of permitting gay marriages in June 2016. [6]

In the Asia/Pacific locality, however, there is a drastic difference in the acceptance of homosexuality. It is widely rejected in communities built in predominantly Muslim countries such as Malaysia (86%), Indonesia (93%), and Pakistan (87%) with just 9%, 3%, and 2% in favour of acceptance. China (57%) and South Korea (77%) are the two other countries where a majority of the population do not support homosexuality. [7]

Based on previous studies, homosexuals have always touched the outlines of normalcy and not having the freedom to not conform. This state of mind is influenced by the discrimination of society against those of a differing sexual orientation. Alienation and isolation from family members, co-workers and peers reinforces the comfort of 'staying in the closet' and living in a constant state of denial, leading to double lives and a stunted expression of one's true self. Social conformity has been a habit for generations to come, the usual cause of such beginnings are often peer pressure and the constant need to find a place one belongs. Being in the medical field, homosexuals are often chained to the concept of a disease, being carriers of HIV/AIDS thus often judged and mistreated [8] – which prevents them from having a non-resistant access to health care.

A Harvard psychologist named Gordon Allport did some key research in the 1950s on various kinds of human prejudice and came up with a definition of religiosity that is still in use

today. He says, there are two types of religious commitment - Extrinsic and Intrinsic. Extrinsic religiosity is defined by self centred-ness. For example, one goes to a place of worship for their benefit as well as to be seen, therefore representing the social norm of society and has now become a public convention. Here, religion is used as a way to belong to and prosper within a group. Intrinsic religiosity on the other hand, is reported as a more deeply committed act, where religion is made to be the organizing principle of life. Individuality has an opportunity to blossom here. In support of his research, Allport found that prejudice was more common in those individuals who scored highly for extrinsic religion. [9] Also it was found that there is a difference in views towards homosexuality based on different religions. Most religions do not accept homosexuals as it's against their religious scriptures. There are also some religions which freely accept homosexuals as alright as they believe what they should be against is sexual misconduct such as adultery, other non-consensual acts and not the existence of a third gender. [10, 11]

This study will be conducted to assess whether the level of piousness and empathy affects the tolerance towards homosexuality among medical students. The objective will be to evaluate the levels of piousness and empathy in medical students, then correlate the results with their attitude towards homosexuality. The study theories are that the higher the level of piousness of a medical student, the lower the tolerance towards homosexuality, as well as that the higher the level of empathy a medical student possesses, the higher their tolerance towards homosexuality.

Previous studies have been conducted on the reliability and validity of the Malay version of Attitudes towards Gay Men and Lesbians on medical students. [12] Another study was on the attitudes towards homosexuality among university students in Malaysia. This research focused on the educational factors, sex and religious views of the students. [13] However, both these investigations did not assess whether the level of piousness and empathy of the students affecting attitude towards homosexuality.

2. Methods

Study Design, Study Setting and Study Population

The study on the levels of piousness and empathy affecting the tolerance towards homosexuality among clinical phase students will be conducted in a private medical college which is in Muar and Melaka, Malaysia. It will be a cross sectional study which will be conducted from April 2018 till May 2018. The participants are comprised of students who have enrolled for the MBBS and BDS program. The number of students in the college who have enrolled for the MBBS and BDS

program is approximately 800 in both campuses.

Sample size and Sampling

Out of the total population of 800 students in the college, purposive sampling was done to obtain an adequate sample for the study. The sample size was calculated using the finite study proportion formula where a 0.07 error rate ($\alpha = 0.05$) is accepted and there would be a 93% confidence level.

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

The minimum sample size calculated was 221 with the help of a previous study in which there was a 40% neutral response to homosexual people, ($p = 0.4$). Estimating a 30% non-response rate the sample size changes to 336. [1]

Batches that will be participating in the study will be MBBS batch 34, 35, and 36, as well as BDS batch 6 and 7. Only the students who willingly consent to take part in our study will be participating. Those who do not consent or fail to complete the questionnaire will be excluded from the study.

Data Collection

For this study, two independent variables will be used, that are (a) the levels of empathy and (b) one's piousness. These two factors will be measured using the scores of a standardized universal scales derived from previous published studies. The outcome that is going to be achieved here is the tolerance toward homosexuality among the subjects which will be our dependent variable. Questionnaires which are distributed will consist of 4 parts. The first part being the social demographic details (including ethnicity, age, gender, sexual orientation, and religion). Next is the assessment of attitudes towards homosexuals, which comprises of 21 questions. After that is the section on piousness, in which there will be 5 questions. The last portion will evaluate levels of empathy, which comprises of 16 questions. In total there would be 41 questions being asked to the participants, all comprising of questions that have been validated by Mary E. Kite, Deaux, K. for the Homosexuality Attitude Scale, Duke University for the Religion Index, and the R. Nathan Spreng, Margaret C. McKinnon, Raymond A. Mar, and Brian Levine of Toronto University for the Toronto Empathy Questionnaire.

The first part of the questionnaire is regarding the attitude towards homosexuals. A five point Likert scale will be used to measure their response. These scales range from a group of categories—least to most—asking people to indicate how much they agree or disagree, approve or disapprove. Five response categories are included, each response holding up a score: 'strongly agree' being 1 and 'strongly disagree' being 5. [2]

The second part of the questionnaire will evaluate piousness,

and is composed of items that assess three domains of piety. The first question which is 'How often do you attend religious meetings?' will evaluate level of organizational religious activity. The 2nd question which is "How often do you spend time in religious activities?" will show the non-organizational level of religiosity and the final 3 questions will review intrinsic type of religiosity. [3]

Lastly, for the questions regarding empathy, a five point Likert scale will also be used to measure their response. Under this part, multiple statements will be given to the participants and they have to select a response based on how often they feel or act in the manner described. The scale ranges from 0 for 'never' to 4 for 'always'.

Data Processing & Analysis

For the data analysis Microsoft Excel and Epi info software 7th version will be used for the calculation of data obtained. The standard level of significance which will be used is 0.07 ($p < 0.07$). Alongside that, mean and median will be used based on the responses for the scales for different parts as it will help to interpret the data well.

1) Homosexuality Attitude Scale

Item responses are scored based on the following: Strongly agree = 1, Agree = 2, Neutral = 3, Disagree = 4, Strongly disagree = 5. The responses obtained will be collapsed into condensed categories. The categories will be based on the total score calculated, and they are *Discomfort or Negative Attitude* (21-37), *Slight Discomfort or Negative Attitude* (38-54), *Neutral Attitude* (55-71), *Slightly Comfortable or Positive Attitude* (72-88) and *Comfortable or Positive Attitude* (89-105). Items 1, 2, 6, 8, 13, 14, 15, 18, 19, 20, and 21 are reverse scored. [2]

2) Duke University Religion Index (DUREL)

Each of the domains, Organisational Religious Activity (ORA), Non-organisational Religious Activity (NORA) and Intrinsic Religiosity (IR) will be assessed separately, and the scores will be correlated to scores obtained in the Homosexuality Attitude Scale. [3]

- a. For ORA, item responses are scored according to the following scale: Never = 1, Once a year or less = 2, A few times a year = 3, A few times a month = 4, Once a week = 5, More than once a week = 6. The lowest score that can be obtained is 0, the highest is 6.
- b. For NORA, item responses are scored according to the following scale: Rarely/Never = 1, A few times a month = 2, Once a week = 3, Two or more times a week = 4, Daily = 5, and More than once a day = 6. The lowest score that can be obtained is 1, and the highest is 6.
- c. For IR, item responses are scored according to the level of

agreement towards 3 statements. The scale is as follows: Definitely not true = 1, Tends not to be true = 2, Unsure = 3, Tends to be true = 4, Definitely true = 5. The total scores obtained from 3 questions will be added together. The lowest score that can be achieved is 3, and the highest is 15.

3) Empathy Questionnaire

Item responses are scored according to the following scale: Never = 0; Rarely = 1; Sometimes = 2; Often = 3; Always = 4. The following negatively worded items are reverse scored: 2, 4, 7, 10, 11, 12, 14, 15. Scores are summed to derive total, the lowest score that can be obtained being 0, and the highest being 64. A higher score indicates higher levels of empathy. [4]

Ethics

The objective of the study and instructions on answering the questions will be explained thoroughly in brief. An informed written consent will be prepared in which the participants will be putting down their signature to signify voluntary participation. They are assured that data collected will remain confidential and genuinely for the purpose of the study. Names and enrolment numbers of the participants will not be asked to maintain anonymity. Approval has been attained by the Department of Community Medicine, Melaka-Manipal Medical College and the ethics committee before proceeding this study.

3. Results

Table 1. Socio-demographic characteristics of the participants (n=201).

Variables	n (%)
Age	
Mean (SD)	23.1 (1.50)
Min-Max	20-31
Academic Year	
3	109 (54.20)
4	92 (45.77)
Gender	
Male	123 (61.20)
Female	78 (38.8)
Ethnic	
Malay	40 (19.9)
Chinese	70 (34.83)
Indian	75 (37.31)
Others	16 (7.96)
Religion	
Islam	45 (22.39)
Buddhism	56 (27.86)
Christianity	21 (10.45)
Hinduism	65 (32.34)
Others	14 (6.97)

A total of 201 students participated in the study. Table 1 shows that the mean age of the participants was 23.1. The range for the ages among the participants were from age 20-

31. Among the participants 54% of them was said to be in year 3 of the clinical phase which denotes 109 students and 45.77% of the students were in the 4th year of their clinical phase which denoted 92 students. Based on gender, the majority of participants were males as there were 123 males (61.2%) and 78 females (38.8%). Among these participants there were 40 Malays (19.9%), 70 Chinese (34.83%), 75 Indians (37.31%) and 16 Others (7.96%). Based on religion there were 45 Muslim participants (22.39%), 56 Buddhist participants (27.86), 21 Christian participants (10.45%), 65 Hindu participants (32.34%) and 14 others (6.97%)

Table 2. Levels of piousness based on Duke University Index Scale. Frequencies of each response.

^a Non Organizational Religious activities	n (%)
Never	20 (9.95)
Once a year or less	25 (12.44)
A few times a year	63 (31.34)
A few times a month	29 (14.43)
Once a week	41 (20.40)
More than once a week	23 (11.44)

^a Organizational religious activity	n (%)
Never	51 (25.4%)
A few times a month	39 (19.4%)
Two times a week	22 (11.0%)
Once a week	14 (7.0%)
Daily	54 (26.9%)

^b Intrinsic Religiosity	
Mean (SD)	10.7 (3.0)
Median (range)	11.0 (15.0-3.0)

^a Minimum – Maximum score: 1 - 6

^b Minimum – Maximum score: 3 – 15

Table 3. Toronto Empathy Scale score obtained for medical students.

Variables	
^a Empathy	
Mean (SD)	43.9 (7.9)
Median (Range)	44 (26 – 63)

^a Minimum-Maximum score: 0 - 64

The Duke University Religion Index has three components (R1, R2, R3). R1 represents the Organizational Religious Activity (ORA), R2 represents the Non-Organizational Religious Activity (NORA) and R3 represents the Intrinsic Religiosity (IR) in society. For R1, 10.5% attend religious activities more than once daily, 26.9% attend daily, 11.05% attend twice a week, 7.0% attend once a week, 19.4% attend a few times a month and 25.4% never attend these activities. For R2, 9.95% never spend time in private religious activities, 12.44% once a year or less, 31.34% a few times a year, 14.43% a few times a month, 20.40% once a week and 11.44% practice this more than once a week. The minimum score for the R3 section is 3 and maximum score of 15. With the sample size of 201, an average score of 10.7 and a median score of 11 was been achieved. As for empathy, the

Toronto Empathy Questionnaire was used and it consists of 16 statements where the participant of the study will be able to rate the frequency of feeling or acting similar to the statements. Ranging from never, rarely, sometimes, often and always each scoring zero, one, two, three and four respectively. The highest possible score that can be obtained is 64. Of the 201 participants, they have acquired a mean score of 43.9 out of 64 with a standard deviation of 7.9. The students have a median of 44 and a range from the lowest extreme, 26, and the highest being 63.

Table 4. Tolerance towards homosexuality among medical students.

Variables	
^a Homosexual Attitude Scale	n (%)
Positive	51(25.37)
Slight Positive	76(37.81)
Neutral	63(31.34)
Slight Negative	11(5.47)

Variables	
^a Homosexual Attitude Scale	n (%)
Negative	0
Total	100
Mean (SD)	76.86 (15.55)
Min-Max	38-105

^a Minimum-Maximum score: 21 - 105

^{*}HAS – Homosexuality Attitude Scale

Tolerance towards homosexuality among medical students is measured using the HAS scale as a method to calculate scores. 63 of the students have a neutral attitude representing 31.34% of the sample and 11 students (5.47%) have a slight negative attitude toward homosexuality. 51 students (25.37%) have a positive attitude and 76 of them (37.81%) with a slight positive attitude. The average score of HAS of the entire 201 samples hold a value of 76.86 (15.55%). The range of scores lies between 38-105.

Table 5. Association between academic year, gender, ethnicity and religion, and the attitude toward homosexuality among medical students.

Variable	Mean (SD)	T (df)/F (df1, df2)	P value
^a Academic Year		0.13 (199)	0.894
3	77.0 (16.5)		
4	76.7 (14.5)		
^a Gender		-3.17 (199)	0.002
Female	72.6 (14.7)		
Male	79.6 (15.5)		
^b Ethnicity		20.47 (3,197)	<0.001
Malay	63.1 (13.2)		
Chinese	76.2 (11.9)		
Indian	83.1 (15.5)		
Others	84.6 (12.5)		
^b Religion		11.57 (4,196)	<0.001
Islam	65.2 (14.7)		
Buddhism	76.5 (11.2)		
Christianity	80.1 (15.7)		
Hinduism	82.9 (15.6)		
Others	82.8 (12.5)		
^b Organisational Religious Activity		2.62 (5,195)	0.025
Never	79.1 (16.8)		
Once a year or less	73.4 (12.3)		
A few times a year	81.4 (14.0)		
A few times a month	77.2 (17.4)		
Once a week	74.3 (14.6)		
More than once a week	70.1 (18.1)		
^b Non-Organisational Religious Activity		3.65 (5,195)	0.004
Rarely/ Never	80.2 (13.6)		
A few times a month	79.7 (13.5)		
Once a week	80.5 (17.0)		
Two or more times week	80.4 (17.3)		
Daily	72.9 (15.3)		
More than once a day	67.2 (16.7)		

^a Measured using unpaired t-test

^b Measured using ANOVA (Analyses Of Variance)

The clinical years that assessed were students in 3rd and 4th year. Table shows the association between academic year and the attitudes towards homosexuality by using unpaired T test, with a significance level of 0.05. The mean homosexuality attitude score obtained for 3rd year students was 77.0 (SD 16.5). For 4th year students, the mean homosexuality attitude

score was 76.7 (SD 14.5). The t value obtained was 0.13 and the value for degree of freedom was 199. The mean homosexuality attitude score obtained for females was 72.6 (SD 14.7), and for males the mean homosexuality attitude score was 79.6 (SD 15.5). The t value obtained was -3.17, and degree of freedom was 199.

Table 5 shows association ethnicity with attitude towards homosexuality among medical students by using ANOVA test with significance level of 0.05 and the degree of freedom is 3 & 197. It shows that Malay students had a mean attitude of 63.1 (SD13.2), Chinese students had a mean attitude of 76.2 (SD 11.9), Indian students had a mean attitude of 83.1 (SD15.5) and Others had a mean attitude of 84.6 (SD12.5). There is significant association between ethnicity and attitude as the p-value is <0.001.

The association of religion and the attitude of medical students towards homosexuality is shown to be a significant association with a P value of less than 0.001. The degree of freedom here is 4 & 197. This indicates that students practicing the Islamic faith has the lowest mean score of attitude at 65.2 with a standard deviation of 14.7, followed by Buddhism with a mean score and standard deviation of 76.5 and 11.2 respectively, next Christianity with a mean score of 80.1 with a standard deviation of 15.7, then 82.8 and 12.5 standard deviation as Others and lastly with the highest mean score, Hinduism with 82.9 as mean score and 15.6 as the standard deviation.

Table shows association between Organizational Religious Activity (ORA) with attitude towards homosexuality, among medical students by using ANOVA test with a significance level of 0.05. The degree of freedom here is 5 & 195. It shows that students who attending ORA once per week has the highest average score of 81.4 (SD 14.0), followed by those who never attended at 79.1 (SD 16.8), then those attending a few times a month with a mean of 77.2 (SD 17.4), weekly once attendees at 74.3 (SD 14.6), once a year or less at 73.4 (SD 12.3) and lastly those who attend more than once in a week 70.1 (SD 18.1). There is significant association

between ORA and attitude toward homosexuality as the P-value of 0.004.

Table shows association between non-organisational religious activity (NORA) with attitude towards homosexuality among medical students by using ANOVA test with significance level of 0.05. The degree of freedom here is 5 & 195. It shows that students who attending NORA once per week has the highest mean attitude score of 80.5 (SD 17.0), followed by attending two or more times a week with mean score of 80.04 (SD 17.3), then rarely/never 80.2 (SD 13.6), Daily 72.9 (SD 15.3) and a few times a month 79.72 (SD 13.5), students who attend NORA more than once a week scored the least which is 67.2 (SD 16.7). There is significant association between NORA and attitude as the p-value is 0.004.

Table 6. Association between intrinsic religiosity and empathy, and the attitude towards homosexuality among medical students.

Variable	Regression Coefficient	Standard error	P value
Intrinsic Religiosity	-1.10	0.25	0.002
Empathy	0.79	0.13	<0.001

Association between intrinsic religiosity, empathy and attitude towards homosexuality is measured by simple linear regression. Intrinsic religiosity score has a regression coefficient of -1.10 and a significant association with a P value of 0.002, indicating that the high score in intrinsic religiosity has a lower tolerance towards homosexuals. Empathy score has regression coefficient of 0.79, hence, medical students with a high score in empathy based on the Toronto Empathy Questionnaire have more tolerance towards homosexuals with a significant association and a P value of less than 0.001.

Table 7. Multiple Linear Regression analysis of relationship between gender, ethnicity, piousness, empathy and attitude towards homosexuals.

Variable	Attitudes towards Homosexuals, Regression coefficient, b	Std Error	P-Value
Gender			
Male (ref)			
Female	4.896	1.993	0.014
Ethnicity			
Malay (ref)			
Chinese	10.073	3.146	0.002
Indian	15.868	2.873	<0.001
Others	17.663	3.803	<0.001
Organizational religious activities			
Never (ref)			
Few times a month	-0.153	3.989	0.969
Few times a year	1.463	3.366	0.664
More than once a week	-1.348	4.367	0.758
Once a week	-2.544	3.935	0.519
Once a year	-1.877	3.754	0.618
Non- Organizational religious activities			
Never (ref)			
Daily	-3.334	3.072	0.279
Few times a month	0.129	2.840	0.964
More than once daily	-3.695	4.076	0.366
Once a week	-0.988	4.257	0.817

Variable	Attitudes towards Homosexuals, Regression coefficient, b	Std Error	P-Value
Two or more times a week	0.565	3.838	0.883
Intrinsic Religiosity	-0.848	0.370	0.023
Empathy	0.609	0.119	<0.001

In this multiple linear regression the variables included were those that were significant in the bivariate analysis to multivariate analysis. After adjusting the co-variables for gender, Females have a higher score than males which indicates that females have a better attitude towards Homosexuals. The regression coefficient for gender was 4.896 and the P value was 0.015 which shows a significant association.

After adjusting the co-variables for Ethnicity. Chinese participants had a higher score than males with the regression coefficient of 10.07 and the P value was 0.0016 which shows a significant association. Indian participants had a higher score than Malays with a regression coefficient of 15.87 and a P-value of 0.001 which was significant. Participants with other ethnicity had a higher score than males with the regression coefficient of 17.66 and the P-value was 0.0006.

After adjusting the co-variants, participants who attended organizational religious activities few times a month, more than once a week, once a week and once a year had a lower score with regression coefficient of -0.15,-1.35,-2.54 and -1.88 respectively. However it was not significant as P values were not <0.05. Participants who attended organizational religious activities few times a year had a higher score with regression coefficient of 0.129 but the P value was also not significant as it was not <0.05. After adjusting the covariates, Participants who attended non-organizational religious activities daily, more than once a week and once a week had a lower score with regression coefficient of -3.3,-3.70 and -0.99 however they all had not significant P-values. Participants who attended non-organizational religious activities few times a month and two or more times a week had a higher score with regression coefficient of 0.13 and 0.57 respectively. However they had non-significant P-values. After adjusting the co-variants, there was a lower score for intrinsic religion with regression coefficient of -0.85 and the P-value was 0.02 which was significant. Lastly after adjusting the covariates for Empathy, the score was high with regression coefficient of 0.61 and P-value of 0.001.

4. Discussion

This study was done to assess the levels of piousness and empathy affecting the tolerance towards homosexuality among clinical phase students. It was important to know the attitude towards homosexuals among students in clinical phase as they might be encountering homosexuals in their

daily lives as doctors in the future.

The majority of the clinical phase students have been found to have slight positive or a positive attitude towards homosexuals. Some students also had Neutral attitudes towards homosexuals, and the least was seen for slight negative attitudes towards homosexuals. This result is consistent with the previous study done by Dr. Fatbardha in the University of Shkoder Albania, where students in the bachelor of degree of Psychology in University Shkodër, Albania, had more positive attitudes towards homosexuality. [28] There was also another study conducted by Gerd Rondahl in Sweden where nurses in the infectious disease clinic were studied to see their attitude towards homosexuals. Majority of nurses had positive attitudes towards homosexuals, which is consistent with the results obtained from our study. [21]

In this study, it was found that males have higher Homosexual Attitude Score (HAS) scores compared to females, thus males have higher tolerance towards homosexuality. The result was also in line with the study done by using Heterosexual Attitudes towards Homosexuality Scale (HATH) in medical student in Zagreb, which show that males' attitudes are more positive towards gay men and lesbian women. [22] Moreover, research done on medical student in Municipal Medical College India using Attitude towards Homosexuals Questionnaire (AHQ) and medical students in University of California using web-based anonymous survey also proves that males score significantly higher on tolerance towards homosexual behaviour. [15, 29] However the results obtained in this study don't tally with a study done by Herek (1984), who found that heterosexual females tended to exhibit equally positive or negative attitudes toward gay men and lesbians. The heterosexual males on the other hand, tended to respond more negatively. [27]

The participants of this study were Malays, Chinese, Indians as well as a few others that identify as Other ethnic groups. Malays scored the lowest in their attitude towards homosexuality whilst Others scored the highest. Malaysian culture is diverse and shared among many ethnic groups, the majority being Malays, Chinese and Indians, and this results in many cultural barriers and stigma that surround sexuality. [27] An article was published by Lisa J. Schulte and Juan Battle done among college students among various campuses in the United States, where Asians reported more conservative sexual attitudes than did their Hispanic and

Euro-American peers. Hispanics reported sexual attitudes similar to that of Euro-Americans. [11] Unfortunately, previous studies regarding the particular ethnic groups in Malaysia have not been done.

Based on the findings gathered, students practicing the Islamic faith scored the lowest in terms of tolerance towards homosexuality, followed by Buddhism, Christianity and Others. Hinduism had the highest score. Malaysia's population consists of many different religions, a majority of the population practice faith in Islam, Buddhism, Christianity and Hinduism. The various types of religion may cause a restriction in the acceptance of homosexuality in Malaysia due to the fact that homosexuality is seen as sinful to a majority of religions, such as Islam and Christianity. [10, 11]

However, despite obtaining lower scores, the tolerance scores still fall within the range of slight negative, neutral or positive attitude in the homosexuality attitude scale. None of the participants scored 'negative'. This suggests that despite a 'common' culture of homophobia, it seems that Asians are slowly, but surely, catching up to the West. From the results gathered, it can be concluded that differences in attitude towards homosexuality is a result of difference in cultures that surround each ethnic group, which correlates to a study that was done by Pew Research Centre that described Asia's divide in views regarding homosexuality; countries that were of a predominantly Muslim population had a higher tendency of rejection. [7]

Based on the Duke University Index Scale, in this study, Extrinsic Religiosity (ER) of a medical student had a significance in their attitude towards homosexuality. There is also an association between ORA (organisational religious activity), NORA (non organisational religious activity) and their tolerance scores. The table shows that students who attend ORA once a week had the highest scores, and those who attend more than once a week had the lowest score. On the other hand, students who attend NORA once a week scored the highest, whereas students who attend NORA more than once a week scored the least. These results, however, do not tally with previous studies done by Harvard psychologist Gordon Allport, whose research showed that those with higher ER scores are more prejudiced. [9] Intrinsic Religiosity (IR) however, was not significant in our study.

It was found that empathy plays a major role in shaping the perspective of medical students – participants who had a greater amount of empathy had more positive attitudes towards homosexuals and there were more acceptance of homosexuals in the society. Previous studies were not found based on empathy affecting attitudes towards homosexuals as it has not been studied before. However there was an experimental study done by Gordon Hudson where he found

that empathy which a component of the affective path played a role in the views of the participants towards homosexuals. [20]

Unfortunately data from different colleges with clinical phase students could not be obtained, and this study was limited to MMMC students only. There was also a time constraint as this study was done within a 6 week period only. Purposive sampling was the method of selection used, therefore there is a risk of selection bias. This also resulted in a small sample size, of which there were more male participants than female participants, therefore the result may not represent the general population. The questionnaires used were self-administered which could possibly lead to response bias. Moreover, the sensitivity nature of the topic causes some students to refuse to participate or give a socially accepted answer.

In case further studies on this topic are done, a larger and more diverse sample size should be assessed to obtain a more accurate result of the relationship between piousness and empathy with the attitudes towards homosexuals. Other aspects of empathy such as 'emotional empathy' and 'empathic concern' could also be further studied in correlation to the tolerance of homosexuality.

5. Conclusion

From this study, it can be concluded that males seem to be more tolerant and have a positive attitude toward homosexuality in comparison to females. As for ethnicity and religion, Malays and Muslim students seem to be least tolerant towards homosexuals in our study. But with social attitudes in general, religious attitudes towards homosexuality vary between and among religions and their adherents. Negative attitudes towards homosexuals correlate significantly with those who have high religiosity scores. As for empathy, higher scores were associated to increased levels of tolerance to homosexuality.

Acknowledgements

We would like to thank the Dean of MMMC Professor Dr Adinegara Lutfi Abas, as well as our lecturers Professor Dr Htoo Htoo Kyaw Soe and Dr Sujatha Khobragade. We would also like to thank the Research and Ethics committee for approving our study.

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