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Empathy and Its Associated Factors Among Clinical Year Medical Students in Melaka-Manipal Medical College, Malaysia

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Abstract

In the medical field, clinical empathy describes the ability of a physician to identify and understand the patient's suffering, pain and perspective and initiate effective communication as well as an appropriate treatment. Empathy played an important role among medical students to the patient, someone who is completely dependent on doctors to help them heal and provide relief to their suffering. Our objective was to assess empathy among medical students in Melaka-Manipal Medical College (Malaysia) towards their patients by using an empathy scale named Davis' Interpersonal Reactivity Scale (DIRI) and assessed the association between empathy with age, gender, religion, ethnicity and nationality, as well as chronic illness in students themselves or among their family members. This cross-sectional study was conducted from March 2020 till April 2020 in our college. A study population of 750 medical students from Melaka Manipal Medical College Malaysia was selected. The data was collected through distribution of online questionnaires using Davis Interpersonal Reactivity Index (DIRI) empathy scale. The data was analysed with the help of Epi info version 7.2 ANOVA and unpaired T-test were used to calculate the association between dependent and independent variables. A total of 117 students participated. Empathy was measured using four subscales of DIRI, which were perspective taking, empathy concern, personal distress and fantasy. Participants obtained a highest mean score for empathic concern subscale (28.5), followed by perspective taking (27.0), fantasy (24.6) and lastly personal distress (22.4). From our study, gender difference for DIRI empathy score is especially prominent - female students mean total empathy score (104.44) was higher than male students (98.50). We also found that nationality has a significant association with empathy - Non-Malaysian students have a higher total empathy mean score (110.75) than Malaysian students (101.93). Not only that, students with a history of chronic illness obtained a higher total empathy mean score (111.50) compared to those without (102.05). In conclusion, instilling empathy in medical student's or healthcare practitioners towards patients is especially important as it is beneficial for both parties. It facilitates treatment and psychosocial outcomes and this complements one another. Thus, students need support in reflecting on their own communication with and treatment of patients. Medical educators should incorporate emotional intelligence in medical curriculum that eventually improve the patient-centred practice, patient's satisfaction and effective communication skills.

Keywords

Empathy, Medical Students, DIRI, Demographic Characteristics, Chronic Illness

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1. Introduction

The term "empathy" came into existence from the German word "Einfühlung" which literally means "feeling into". [1] It is hard to define as it involves ethics, expertise, communication skills and much more beyond these. Empathy could be an idea which has a different perspective depending on the context. It is commonly described as "the process of understanding a person's subjective experience by sharing that experience vicariously while maintaining an observant stance". [2] In simple words, "to put yourself in his or her shoes". It is an emotional experience that occurs between the observer and subject and in our case, it is the doctor and the patient themselves. In order to be empathetic, a doctor must be able to understand the feeling of their patients. Understanding of a person's feelings especially sorrow is very much needed in order to emphasize and this quality is crucial in order for a medical student to be a good doctor in the future. As it is always told, empathy comes from within. Some may never acquire this necessity of life but nurturing it from the beginning will help. "Every patient wants their doctor to be academically prepared - To know the medicine that they need to know, but equally important, they want their doctors to have personal attributes that contribute to their professionalism - What a patient might call their bedside manner", that is the point of view of Dr. Darrell G. Kirch, Association of American Medical (AAMC) President and CEO. [3, 4]

In the medical field, clinical empathy describes the ability of a physician to identify and understand the patient's suffering, pain and perspective and initiate effective communication as well as an appropriate treatment. It is said that empathy includes cognitive, psychomotor and affective components as it comprises a better understanding of alleviation of human suffering. [5] Doctors should be more empathetic, more of an active listener and has the capability to understand the patient's point of view and their own reactions as well as ability to handle stress in an appropriate way. [6] The American Association of Medical Colleges has identified the development and enhancement of empathy in medical students as a key goal. However, a longitudinal study conducted by Hojat et al. (2009) has reflected the decline in mean empathy scores in medical students as they advance through their medical school. [6] The reason for this decline is seen in a 2017 survey from the Schwartz Centre for Compassionate Care showed that 63% of physicians and nurses and 42% of patients believe that there is a significant decline in empathy. They believed that healthcare professionals declined in empathy even as medical students. The healthcare educators are responsible for this as they traditionally focus more on high test scores over interpersonal skills. [7]

"To attend those who suffer, a physician must possess not only the scientific knowledge and technical abilities, but also an understanding of human nature." The patient is a human being, someone who is completely dependent on doctors to help them heal and provide relief to their suffering. It is important to understand the intimacy of the doctor-patient relationship and how it exponentially helps in most cases, for better diagnosis and better outcomes. [8] As per quoted, it is a need to instil empathy in every health professional especially in medical students as they are the face and heart of the future medicine. Without empathy, patients will just be seen as an important or rare case study. They will be seen as a group of symptoms and some tests for them to succeed. Clinical empathy is an important and firm supporter to develop a good rapport with the patient. A good rapport is essential to develop a healthy doctor-patient relationship. It has also been reported to have positive correlation with high levels of patient contentment and comfort with healthcare consequences. [9]

Empathy is often confused with sympathy. There is a clear distinction between the terms 'empathy' and 'sympathy' and is summarized as thus: "empathetic physician shares their understanding, while sympathetic physician shares their emotions with their patients". [10] Researchers have done multiple researches discussing the benefit of empathy in medicine and have confronted various results. It is very evident that patient's value affective concern as much as, if not more than, technical competence. It is often heard in the description of a 'good doctor' by people around us that they have the quality of understanding the patients and are always a good listener. Regardless how chronic their symptoms are, they want to be treated as a human and given more importance than the disease they manifest. As a medical student, it is essential to understand this very concept of empathy and nurtured from the beginning itself. A medical student should be able to master this salient characteristic of empathy before even stepping foot in the medicine field as we are the front liners in the future of medicine. Every medical student must be assessed for their capability of being empathetic for the betterment of healthcare professionals. [11]

Empathy among the medical students has evolved and changed during their medical education. Clinical scenarios and technical expertise are understood as a necessity of medical education and to be a qualified health professional especially doctors. However, interpersonal skills and empathy are documented progressively as core clinical skills. [11] Multiple researches reported that clinical empathy levels decline as the students become more senior and are older. [12-17] Although, plenty research has proven that empathetic

doctors have better treatment related outcomes. [18, 19] It is also proven that medical students who are more stressed and has a poor wellbeing have declined significantly in empathy. [20] Another study proves that medical student burnout was higher and inversely proportional to the levels of empathy in the students themselves. [21] This study is mainly focused on the ethnicity, religion and the nationality of the medical students in Malaysia and is discussed if it affects the empathetic skills among the medical students. This research also improves the understanding of empathy by isolating the variable if empathy is affected when the member of the student's family is associated with chronic diseases. This is, however, to understand if the emotional contribution of the students helps them to empathize with patients better when they start seeing one of their own. To be able to feel the pain that the patients are going through is very important and hopefully this research not only identifies the problem but also spreads awareness of the importance of empathy among the medical students.

Our objective was to assess empathy among medical students in Melaka-Manipal Medical College (Malaysia) towards their patients by using an empathy scale named Davis' Interpersonal Reactivity Scale (DIRI) which encompasses the relationships with measures of social functioning, self-pride, emotionality and sensitivity to others. Davis' Interpersonal Reactivity is mainly used to assess cognitive and affective empathy. [5] In our research project, we assessed the empathy in medical students by evaluating their association with age, gender, religion, ethnicity and nationality. Apart from that, we included the variables such as chronic illness in themselves or among their family members or relatives, which could play an important role in moulding them into an individual with good temperament and empathy.

2. Methodology

2.1. Study Design, Time, Setting and Population

A cross sectional study was conducted from March 2020 till April 2020 in our college, a private medical college, Melaka Manipal Medical College which is centred in Muar, Johor. Our college has two campuses in Malaysia, one based in Muar, Johor which offers Bachelor of Medicine and Surgery (MBBS) Semester 6 and 7, while the other campus is situated in Malacca which offers Bachelor of Dental Surgery (BDS), Foundation in Science (FIS) and Bachelor of Medicine and Surgery (MBBS) Semester 8, 9 and 10. Medical students from Semester 1 to 5 are based in a campus in Manipal, India. The aim of this study was to assess empathy skills in medical students of this college. Semester 6 students had not enrolled at Muar campus during the time of our study. Therefore, we had included students from Bachelor of Medicine and Surgery (MBBS) Semester 7, 8, 9, and 10 in Muar campus and Melaka campus.

2.2. Sample Size and Sampling Method

Non-probability sampling method was applied for the study by which a purposive sampling method was used. Students in Melaka Manipal Medical College (MMMC) are invited to complete the online questionnaires with their consent. The inclusion criteria included clinical year MBBS students who provided consent to participate in this study. Participation was voluntary with no inducements offered. Students from first semester to fifth semester were excluded as they are currently doing preclinical study in MMMC (Manipal campus, India) by which their clinical exposure is considered inadequate. In addition, Foundation in Science (FIS) and Bachelor of Dental Surgery (BDS) students were excluded. Respective student IDs of each participant are also required to avoid multiple participation and to reduce participation of unrequested groups.

A finite population mean was estimated by using following formula:

$$n = \frac{N\sigma^2 z^2_{1-\frac{\alpha}{2}}}{d^2(N-1)+\sigma^2 z^2_{1-\frac{\alpha}{2}}} \quad (1)$$

Where:

a) Population size (N) = 600

b) Standard deviation (σ) = 0.47

c) Error (d) = 0.1

d) Alpha (α) = 0.05

According to previous research regarding medical students' empathy [22], response rates were 68.8%. The population size which is the approximate number of medical students eligible to participate in the study in MMMC (Malaysia) was taken as 600 and the standard deviation was taken as 0.47. [22] After calculation, sample size of 75 was given as the result. A final sample size was calculated by taking 30% of non-response rate into consideration:

$$n(final) = \frac{n\ calculated}{1-non\ response\ rate\%} = \frac{75}{1-0.3} \quad (2)$$

Thus, the final sample size chosen was 108.

2.3. Data Collection

The data was collected using a distribution of online questionnaires with the help of google form. It is targeted towards undergraduate MBBS students in Melaka Manipal Medical College who are in the clinical years. Before answering the questionnaire, it mentioned that students have

the right to deny and/or withdraw from the study at any time and all information will be asked without breaking any anonymity. Independent variables of this study were age, gender, ethnicity, religion, nationality and year of study/stage of training and dependent variable of this study is empathy. Data was obtained using a self-administered questionnaire which is designed in English and employed the use of Davis Interpersonal Reactivity Index.

The questionnaire consists of 2 parts. The first part is the demographic data (age, gender, ethnicity, religion, nationality, roll number, current semester) and information on whether any family members or participants have chronic illness. The second part was Davis Interpersonal Reactivity Index (Davis's IRI) which consists of a 5- point Likert scale ranging from "*does not describe me well* (1)" to "*describe me very well* (5)". This questionnaire has a total of 28 components which are divided into 4 subscales and each made of 7 different items. These 4 subscales included Perspective Taking, Empathy concern, Personal Distress and Fantasy.

Perspective taking is the ability to adopt an individual alternative point of view spontaneously. For example, "I sometimes try to understand my friends better by imagining how things look from their perspective (perspective taking)". Empathy concern refers to compassion or concern of individual emotional response. For example, "I would describe myself as a pretty soft hearted person (empathic concern scale)". Personal Distress is a self-focused emotional response towards the feelings of another person. In Davis IRI, it can be assessed under the item "being in a tense situation scares me (personal distress scale)". In addition, Fantasy described the process of forming imagination to experience the feelings and actions of characters in creative works. For example, "I really get involved with the feelings of the characters in a novel (fantasy scale)" etc. Each participant needed to rate their level of agreement and the total score was calculated for each subscale as well as the overall Davis IRI with the score range from 28 to 140. To simplify, higher scores indicated better empathy among students.

2.4. Data Processing and Analysis

In this research project, the data were entered into Microsoft Excel. Then, the data was analyzed with the help of Epi info version 7.2 from the Centre for Disease Control and Prevention (CDC) website. There are two types of data collected in this study, which are quantitative and qualitative data. The qualitative data includes gender, nationality, ethnicity, religion, semester of study, chronic illness in family and in themselves among medical students in MMMC (Malaysia). These qualitative data were analyzed to obtain the frequency and percentage. While for quantitative data, it includes age and empathy, which they were analyzed to obtain the range and mean & standard deviation (SD). The level of significance was set at 0.05. The statistical tests that used to find out the association between independent and dependent variables were shown in the table below:

Table 1. Statistical tests for assessing the relationship between various independent variables and dependent variables.

Independent Variables	Dependent Variables	Statistical tests
Age	Empathy	ANOVA
Gender	Empathy	Unpaired T-test
Ethnicity	Empathy	ANOVA
Nationality	Empathy	Unpaired T-test
Religion	Empathy	ANOVA
Semester	Empathy	ANOVA
Chronic illness in themselves	Empathy	Unpaired T-test
Chronic illness in family	Empathy	Unpaired T-test

2.5. Ethical Consideration

The participants were given the option to take part in this study and none was forced to participate in this study. They were able to withdraw from the study at any time without any reason given. An informed consent is given to all the students that participated in this study. Participants' information was also kept completely confidential and was only used for the purpose of this study. This research was approved by the Research Committee, Faculty of Medicine, Melaka Manipal Medical College, Melaka, Malaysia.

3. Results

Table 2. Demographic characteristics among medical students (n = 117).

Variables	Frequencies (%)
Age	
18~21	10 (8.6)
22~25	102 (87.9)
>25	4 (3.5)
Mean (SD)	23.0 (1.2)
Minimum~Maximum	21.0~27.0
Gender	
Male	37 (31.9)
Female	79 (68.1)
Ethnicity	
Chinese	39 (33.6)
Indian	41 (35.3)
Malay	20 (17.2)
Others	16 (13.8)
Nationality	
Malaysian	108 (93.1)
Non-Malaysian	8 (6.9)
Religion	
Buddhist	32 (27.6)
Christian	21 (18.1)
Hindu	34 (29.3)
Islam	22 (19.0)
Others	7 (6.0)
Semester	
7	65 (56.0)

Variables	Frequencies (%)
8	13 (11.2)
9	16 (13.8)
10	22 (19.0)
Chronic illness (Self)	
No	110 (94.8)
Yes	6 (5.2)
Chronic illness (Family)	
Yes	71 (61.2)
No	45 (38.8)

A total of 117 responses were collected from the medical students in Melaka Manipal Medical College. Of those who responded, participants in the age group of 18- 21 were noted to be 10 students (8.6%), 102 students were in the age group of 22-25 and 4 students were in the age group of more than 25 years old. This gives rise to a mean of 22 years of age. Besides that, most of the participants were females with a total count of 79 (68.1%), leaving a total of 37 responses from male participants (31.9%). In terms of ethnicity that responded in our study, the highest response group came from Indian (35.3%), followed by Chinese community (33.6%) as the second highest community, Malay community (17.2%) as the third highest community, followed by others (13.8%). As for the religion, we had respondents who were Hindu (29.3%), Buddhist (27.6%), Islam (19.0%), Christian (18.1%) and others (7.0%). A large proportion of the participants were from the Semester 7 (56.0%), followed by Semester 10 (19%), Semester 9 (13.8) and the remaining were from Semester 8 (11.2%). Since this private college has a large number of foreigners as well, it was important for us to see the impact of nationality on the participant's awareness of patient's rights. A total of 108 of the participants were Malaysian (93.1%) and 8 of them were international students (6.9%). 110 of the participants claimed to not have any chronic illness (94.8%) whereas 6 of them claimed to have chronic illness (5.2%). Not only that, 71 of the responses had a history of chronic illness in the family (71%) and 45 of them claimed that there is no history of chronic illness in their family (38.8%).

Table 3. Empathy among medical students measured by using DIRI (n = 117).

Variables	Mean (SD)	Minimum ~ Maximum
Perspective Taking (PT)	27.0 (3.9)	19.0 ~ 35.0
Empathy Concern (EC)	28.5 (3.7)	18.0 ~ 35.0
Personal Distress (PD)	22.4 (3.9)	12.0 ~ 32.0
Fantasy (FS)	24.6 (4.9)	15.0 ~ 33.0
Total Empathy Score	102.5 (10.1)	73.0 ~ 125.0

Table 3 shows the measure of empathy in four variables using DIRI Perspective Taking (PT), Empathy Concern (EC), Personal Distress (PD), Fantasy (FS). Perspective Taking shows the tendency to spontaneously adopt the psychological point of view of others. Empathy concern helps to assess "other-oriented" feelings of sympathy and concern for unfortunate others. Personal distress measures "self-oriented" feelings of personal anxiety and unease in tense interpersonal settings whereas fantasy taps respondents' tendencies to transpose themselves imaginatively into the feelings and actions of fictitious characters in books, movies, and plays. As per stated in the Table 3, Perspective taking is ranged between 19.0 – 35.0 which has a mean of 27.0 and standard deviation of 3.9. Empathy concern is ranged between 18.0 – 35.0 with a mean of 28.5 and standard deviation of 3.7. Personal distress is ranged between 12.0 – 32.0 with a mean of 22.4 and standard deviation of 3.9. Finally, fantasy is ranged between 15.0 – 33.0 with a mean of 24.6 and standard deviation of 4.9. All of the above variables give a total range of 73.0 – 125.0 with a mean of 102.5 and standard deviation of 10.1.

Table 4. Association between demographic characteristics, chronic illness in themselves and family members with the total empathy score towards patients among medical students

Independent variables	Total Empathy Score Mean (SD)	Mean difference (95% CI)	P value
Age[a]		-	
18-21	104.70 (7.329)		0.097
22-25	102.73 (10.03)		
>25	92.25 (14.27)		
Gender[b]			
Female	104.44 (10.20)	5.98	0.003
Male	98.50 (8.67)	(2.14, 9.83)	
Ethnicity[a]		-	
Chinese	101.62 (9.39)		
Indian	102.15 (10.97)		0.744
Malay	103.40 (10.10)		
Others	104.69 (9.95)		
Nationality[b]			
Malaysian	101.93 (9.95)	-8.82	0.016
Non-malaysian	110.75 (8.84)	(-16.00, -1.65)	
Religion[a]		-	
Buddhist	103.13 (10.88)		
Christian	99.33 (8.21)		0.573
Hindu	103.65 (10.92)		
Islam	103.45 (9.92)		
Others	101.14 (8.13)		
Semester[a]		-	
7	101.71 (9.74)		
8	101.46 (11.41)		0.548
9	105.50 (8.59)		
10	103.45 (11.46)		
Chronic illness (Self)[b]			0.025
No	102.05 (9.99)	-9.45	
Yes	111.50 (8.12)	(-17.69, -1.22)	
Chronic illness (Family)[b]			0.956
No	102.60 (10.71)	0.11	
Yes	102.49 (9.76)	(-3.72, 3.93)	

[a]ANOVA; [b]Unpaired t-test

Table 4 shows the association between demographic characteristics, chronic illness in themselves and family members with the total empathy score towards patients among medical students. Students with the age of 18-21 has a total empathy score mean of 104.70 (SD=7.329), students

with the age of 22-25 has a total empathy score mean of 102.73 (SD=10.03) and students aged more than 25 years old has a total empathy score mean of 92.25 (SD=14.27). The p-value is 0.097 thus showing no significant association between the age of the participants with the total empathy score towards patients among medical students.

Females have a total empathy mean score of 104.44 (SD=10.20), slightly higher than males with a total empathy mean score of 98.50 (SD=8.67). The mean difference is 5.98 with 95% CI range from 2.14 to 9.83. The p-value is 0.003 thus showing that there is a significant association between gender and total empathy score towards patients among medical students.

Chinese have a total empathy mean score of 101.62 (SD=9.39), Indians have a total empathy mean score of 102.15 (SD=10.97), Malays have a total empathy mean score of 103.40 (SD=10.10) and other races such as Sinhalese have a total empathy mean score of 104.69 (SD=9.95). The p-value is 0.744 thus showing that there is no significant association between ethnicity and total empathy score towards patients among medical students.

Malaysians have a total empathy mean score of 101.93 (SD=9.95), whereas non-Malaysians have a total empathy mean score of 110.75 (SD=8.84). The mean difference is -8.82 with 95% CI range from -16.00 to -1.65. The p-value is 0.003 thus showing that there is a significant association between nationality and total empathy score towards patients among medical students.

Buddhist has a total empathy mean score of 103.413 (SD=10.88), Christians have a total empathy mean score of 99.33 (SD= 8.21), Hindus have a total empathy mean score of 103.65 (SD=10.92), Islam has a total empathy mean score of 103.45 (SD=9.92) and other religions have a total empathy mean score of 101.14 (SD=11.46). The p-value is 0.573 thus showing that there is no significant association between religion and total empathy score towards patients among medical students.

Participants from semester 9 have a high total empathy mean score of 105.50 (SD=8.59), followed by participants from semester 10 with a total empathy mean score of 103.45 (SD=11.46), participants from semester 8 with total empathy mean score of 101.46 (SD=11.41) and finally participants from semester 7 with total empathy mean score of 101.71 (SD=9.74). The p-value is 0.548 showing that there is no significant association with students from different semesters and total empathy score towards patients among medical students.

Participants with a history of chronic illness have a mean score of 102.05 (SD=9.99) while those without a history of chronic illness have a mean score of 111.50 (SD=8.12). The mean difference is -9.45 with 95% CI range of -17.69 to -1.22. The p-value is 0.025 showing that there is significant association between participants with history of chronic illness and total empathy score towards patients among medical students

Participants who had a history of chronic illness in the family have a mean score of 102.49 (SD=9.76) while those who didn't have a history of chronic illness in the family have a mean score of 102.60 (SD=10.71). The mean difference is 0.11 with 95% CI range from -3.72 to 3.93. The p-value is 0.956 showing that there is no significant association between participants with a history of chronic illness in the family and total empathy score towards patients among medical students.

Table 5. Association between demographic characteristics, chronic illness in themselves and family members with the perspective taking empathy score towards patients among medical students.

Independent variables	Perspective taking empathy score Mean (SD)	Mean difference (95% CI)	P value
Age[a]			
18-21	27.50 (3.81)	-	0.109
22-25	27.06 (3.81)		
>25	23.00 (4.69)		
Gender[b]			
Female	26.99 (4.01)	0.10	0.902
Male	26.89 (3.64)	(-1.44, 1.63)	
Ethnicity[a]			
Chinese	26.90 (2.89)		
Indian	26.85 (4.56)	-	0.963
Malay	26.90 (4.00)		
Others	27.44 (4.26)		
Nationality[b]			
Malaysian	26.75 (3.78)	-3.00	0.034
Non-Malaysian	29.75 (4.37)	(-5.77, -0.23)	
Religion[a]			
Buddhist	27.53 (3.39)		
Christian	25.76 (3.24)		
Hindu	27.50 (4.53)	-	
Islam	27.00 (3.93)		0.301
Others	25.14 (3.85)		
Semester[a]			
7	26.28 (3.65)		
8	28.85 (4.58)	-	0.107
9	27.88 (3.34)		
10	27.18 (4.19)		
Chronic illness (Self)[b]			
No	26.80 (3.86)	-3.03	0.062
Yes	29.83 (3.25)	(-6.22, 0.15)	
Chronic illness (Family)[b]			0.077
No	27.76 (3.26)	1.30	
Yes	26.45 (4.17)	(-0.15, 2.76)	

[a]ANOVA; [b]Unpaired t-test

Table 5 shows the demographic characteristics, chronic illness in themselves and family members with the perspective taking empathy score towards patients among medical students. Students with the age of 18-21 has a

perspective taking empathy score mean of 27.50 (SD=3.81), students with the age of 22-25 has a perspective taking empathy score mean of 27.06 (SD=3.81) and students aged more than 25 years old has a perspective taking empathy score mean of 23.00 (SD=4.69). The p-value is 0.109 thus showing no significant association between the age of the participants with the perspective taking empathy score towards patients among medical students.

Females have a perspective taking empathy mean score of 26.99 (SD=4.01), slightly higher than males with a total perspective taking empathy mean score of 26.89 (SD=3.64). The mean difference is 0.10 with 95% CI range from -1.44 to 1.63. The p-value is 0.902 thus showing that there is no significant association between gender and perspective taking empathy score towards patients among medical students.

Chinese have a perspective taking empathy mean score of 26.90 (SD=2.89), Indians have a perspective taking empathy mean score of 26.85 (SD=4.56), Malays have a perspective taking empathy mean score of 26.90 (SD=4.00) and other races such as Sinhalese have a perspective taking empathy mean score of 27.44 (SD=4.26). The p-value is 0.963 thus showing that there is no significant association between ethnicity and perspective taking empathy score towards patients among medical students.

Malaysians have a perspective taking empathy mean score of 26.75 (SD=3.78), whereas non-Malaysians have a perspective taking empathy mean score of 29.75 (SD=4.37). The mean difference is -3.00 with 95% CI range from -5.77 to -0.23. The p-value is 0.034 thus showing that there is a significant association between nationality and perspective taking empathy score towards patients among medical students.

Buddhist has a perspective taking empathy mean score of 27.53 (SD=3.39), Christians have a total perspective taking empathy mean score of 25.75 (SD= 3.24), Hindus have a perspective taking empathy mean score of 27.50 (SD=4.53), Islam has a perspective taking empathy mean score of 27.00 (SD=3.93) and other religions have a perspective taking empathy mean score of 25.14 (SD=3.85). The p-value is 0.301 thus showing that there is no significant association between religion and perspective taking empathy score towards patients among medical students.

Participants from semester 8 have a high perspective taking empathy mean score of 28.85 (SD=4.58), followed by participants from semester 9 with a perspective taking empathy mean score of 27.88 (SD=3.34), participants from semester 10 with perspective taking empathy mean score of 27.18 (SD=4.19) and finally participants from semester 7 with perspective taking empathy mean score of 26.28 (SD=3.65). The p-value is 0.107 showing that there is no significant association with students from different semesters and perspective taking empathy scores towards patients among medical students.

Participants with a history of chronic illness have a perspective taking empathy mean score of 29.83 (SD=3.25) while those without a history of chronic illness have a perspective taking empathy mean score of 26.80 (SD=3.86). The mean difference is -3.03 with 95% CI range of -6.22 to 0.15. The p-value is 0.062 showing that there is no significant association between participants with a history of chronic illness and perspective taking empathy score towards patients among medical students.

Participants who had a history of chronic illness in the family have a perspective taking empathy mean score of 26.45 (SD=4.17) while those who didn't have a history of chronic illness in the family have a perspective taking empathy mean score of 27.76 (SD=3.26). The mean difference is 1.30 with 95% CI range from -0.15 to 2.76. The p-value is 0.077 showing that there is no significant association between participants with a history of chronic illness in the family and perspective taking empathy scores towards patients among medical students.

Table 6. Association between demographic characteristics, chronic illness in themselves and family members with the empathy concern empathy score towards patients among medical students.

Independent variables	Empathy Concern Score Mean (SD)	Mean difference (95% CI)	P value
Age[a]			
18-21	25.00 (6.63)	-	0.103
22-25	29.60 (2.22)		
>25	28.58 (3.61)		
Gender[b]			
Female	29.06 (3.92)	1.63	0.025
Male	27.43 (2.84)	(0.20, 3.06)	
Ethnicity[a]			
Chinese	27.51 (3.30)		
Indian	29.12 (3.82)	-	0.199
Malay	29.00 (3.95)		
Others	29.00 (3.67)		
Nationality[b]			
Malaysian	28.39 (3.67)	-2.24	0.097
Non-malaysian	30.63 (3.34)	(-4.89, 0.41)	
Religion[a]			
Buddhist	28.09 (3.57)		
Christian	27.00 (3.67)		
Hindu	29.53 (3.35)	-	0.128
Islam	29.09 (3.96)		
Others	28.71 (3.99)		
Semester[a]			
7	28.34 (3.55)		
8	28.38 (3.99)	-	0.874
9	29.06 (3.32)		
10	28.86 (4.29)		
Chronic illness (Self)[b]			0.223
No	28.45 (3.73)	-1.89	
Yes	30.33 (2.16)	(-4.94, 1.16)	
Chronic illness			

Independent variables	Empathy Concern Score Mean (SD)	Mean difference (95% CI)	P value
(Family)[b]			
No	28.31 (3.57)	-0.38	0.591
Yes	28.69 (3.77)	(-1.77, 1.01)	

[a]ANOVA; [b]Unpaired t-test

Table 6 shows the association between demographic characteristics, chronic illness in themselves and family members with the empathy concern empathy score towards patients among medical students. Students with the age of 18-21 has empathy score mean of 25.00 (SD=6.63), students with the age of 22-25 has a total empathy score mean of 29.60 (SD=2.22) and students aged more than 25 years old has an empathy score mean of 28.58 (SD=3.61). The p-value is 0.103 thus showing no significant association between the age of the participants with the empathy concern empathy score towards patients among medical students.

Females have an empathy mean score of 29.06 (SD=3.92), slightly higher than males with empathy mean score of 27.43 (SD=2.84). The mean difference is 1.63 with 95% CI range from 0.20 to 3.06. The p-value is 0.025 thus showing that there is a significant association between gender and empathy concerning empathy score towards patients among medical students.

Chinese have empathy concern empathy mean score of 27.51 (SD=3.30), Indians have empathy concern empathy mean score of 29.12 (SD=3.82), Malays have empathy concern empathy mean score of 29.00 (SD=3.95) and other races such as Sinhalese have empathy concern empathy mean score of 29.00 (SD=3.67). The p-value is 0.199 thus showing that there is no significant association between ethnicity and empathy concerning empathy score towards patients among medical students.

Malaysians have an empathy concern empathy mean score of 28.39 (SD=3.67), whereas non-Malaysians have empathy concern empathy mean score of 30.63 (SD=3.34). The mean difference is -2.24 with 95% CI range from -4.89 to 0.41. The p-value is 0.097 thus showing that there is no significant association between nationality and empathy concerning empathy score towards patients among medical students.

Buddhist has empathy concern empathy mean score of 28.09 (SD=3.57), Christians have empathy concern empathy mean score of 27.00 (SD= 3.67), Hindus have empathy mean score of 29.53 (SD=3.35), Islam has empathy concern empathy mean score of 29.09 (SD=3.96) and other religions have empathy concern empathy mean score of 28.71 (SD=3.99). The p-value is 0.128 thus showing that there is no significant association between religion and empathy concerning empathy score towards patients among medical students.

Participants from semester 9 have a high empathy concern empathy mean score of 29.06 (SD=3.32), followed by participants from semester 10 with an empathy concern empathy mean score of 28.86 (SD=4.29), participants from semester 8 with empathy concern empathy mean score of 28.38 (SD=3.99) and finally participants from semester 7 with empathy concern empathy mean score of 28.34 (SD=3.55). The p-value is 0.874 showing that there is no significant association with students from different semesters and empathy concerns empathy score towards patients among medical students.

Participants with a history of chronic illness have empathy concern empathy mean score of 30.33 (SD=2.16) while those without history of chronic illness have an empathy concern empathy mean score of 28.45 (SD=3.73). The mean difference is -1.89 with 95% CI range of -4.94 to -1.16. The p-value is 0.223 showing that there is no significant association between participants with a history of chronic illness and empathy concerning empathy score towards patients among medical students.

Participants who had a history of chronic illness in the family have a mean empathy concern empathy score of 28.69 (SD=3.77) while those who didn't have a history of chronic illness in the family have empathy concern empathy mean score of 28.31 (SD=3.57). The mean difference is -0.38 with 95% CI range from -1.77 to 1.01. The p-value is 0.591 showing that there is no significant association between participants with a history of chronic illness in the family and empathy concerning empathy score towards patients among medical students.

Table 7. Association between demographic characteristics, chronic illness in themselves and family members with the personal distress empathy score towards patients among medical students.

Independent variables	Personal Distress empathy score Mean (SD)	Mean difference (95% CI)	P value
Age[a]		-	
18-21	21.00 (2.50)		0.693
22-25	22.50 (4.01)		
>25	21.25 (3.59)		
Gender[b]			
Female	22.84 (3.77)	1.40	0.069
Male	21.43 (3.99)	(-0.11, 2.92)	
Ethnicity[a]		-	
Chinese	23.03 (3.38)		
Indian	21.85 (4.37)		0.242
Malay	23.20 (3.44)		
Others	21.19 (4.05)		
Nationality[b]			0.184
Malaysian	22.52 (3.78)	1.89	1
Non-Malaysian	20.63 (4.98)	(-0.91, 4.70)	
Religion[a]		-	
Buddhist	22.78 (4.06)		
Christian	22.33 (3.14)		0.420
Hindu	21.79 (4.52)		
Islam	22.77 (3.56)		
Others	22.43 (3.26)		

Independent variables	Personal Distress empathy score Mean (SD)	Mean difference (95% CI)	P value
Semester[a]			
7	22.63 (3.96)		
8	20.46 (4.25)		
9	23.19 (3.37)		
10	22.23 (3.65)	-	0.248
Chronic illness (Self)[b]			
No	22.25 (3.85)	-2.58	0.113
Yes	24.83 (4.02)	(-5.78, 0.62)	
Chronic illness (Family)[b]			0.979
No	22.40 (4.17)	0.02	
Yes	22.38 (3.72)	(-1.45, 1.49)	

[a]ANOVA; [b]Unpaired t-test

Table 7 shows the association between demographic characteristics, chronic illness in themselves and family members with personal distress empathy score towards patients among medical students. Students with the age of 18-21 has personal distress empathy score mean of 21.00 (SD=2.50), students with the age of 22-25 has personal distress empathy score mean of 22.50 (SD=4.01) and students aged more than 25 years old has personal distress empathy score mean of 21.25 (SD=3.59). The p-value is 0.693 thus showing no significant association between the age of the participants with personal distress empathy score towards patients among medical students.

Females have personal distress empathy mean score of 22.84 (SD=3.77), slightly higher than males with a total Personal distress empathy mean score of 21.43 (SD=3.99). The mean difference is 1.40 with 95% CI range from -0.11 to 2.92. The p-value is 0.069 thus showing that there is no significant association between gender and personal distress empathy score towards patients among medical students.

Chinese have personal distress empathy mean score of 23.03 (SD=3383), Indians have a personal distress empathy mean score of 21.85 (SD=4.37), Malays have personal distress empathy mean score of 23.20 (SD=3.44) and other races such as Sinhalese have personal distress empathy mean score of 21.19 (SD=4.05). The p-value is 0.242 thus showing that there is no significant association between ethnicity and personal distress empathy score towards patients among medical students.

Malaysians have personal distress empathy mean score of 22.52 (SD=3.78), whereas non-Malaysians have personal distress empathy mean score of 20.63 (SD=4.98). The mean difference is 1.89 with 95% CI range from -0.91 to 4.70. The p-value is 0.1841 thus showing that there is no significant association between nationality and personal distress empathy score towards patients among medical students.

Buddhist has personal distress empathy mean score of 22.78 (SD=4.06), Christians have personal distress empathy mean score of 22.33 (SD= 3.14), Hindus have personal distress empathy mean score of 21.79 (SD=4.52), Islam has personal distress empathy mean score of 22.77 (SD=3.56) and other religions have personal distress empathy mean score of 22.43 (SD=3.26). The p-value is 0.420 thus showing that there is no significant association between religion and personal distress empathy score towards patients among medical students.

Participants from semester 9 have a high personal distress empathy mean score of 23.19 (SD=3.37), followed by participants from semester 7 with a personal distress empathy mean score of 22.63 (SD=3.96), participants from semester 10 with personal distress empathy mean score of 22.23 (SD=3.65) and finally participants from semester 8 with personal distress empathy mean score of 20.46 (SD=4.25). The p-value is 0.248 showing that there is no significant association with students from different semesters and personal distress empathy score towards patients among medical students.

Participants with a history of chronic illness have a mean personal distress empathy score of 24.83 (SD=4.02) while those without a history of chronic illness have a mean score of 22.25 (SD=3.85). The mean difference is -2.58 with 95% CI range of -5.78 to 0.62. The p-value is 0.113 showing that there is no significant association between participants with a history of chronic illness and personal distress empathy score towards patients among medical students.

Participants who had a history of chronic illness in the family have a mean personal distress empathy score of 22.48 (SD=3,72) while those who didn't have a history of chronic illness in the family have a mean personal distress empathy score of 22.40 (SD=4.17). The mean difference is 0.02 with 95% CI range from -1.45 to 1.49. The p-value is 0.979 showing that there is no significant association between participants with a history of chronic illness in the family and personal distress empathy score towards patients among medical students.

Table 8. Association between demographic characteristics, chronic illness in themselves and family members with the fantasy empathy score towards patients among medical students

Independent variables	Fantasy Empathy Score Mean (SD)	Mean difference (95% CI)	P value
Age[a]			
18-21	25.90 (4.51))	-	0.573
22-25	24.59 (4.94)		
>25	23.00 (4.97)		
Gender[b]			
Female	25.56 (4.71)	2.85	0.003
Male	22.70 (4.73)	(0.99, 4.72)	
Ethnicity[a]			
Chinese	24.18 (4.90)		0.210
Indian	24.32 (5.20)	-	
Malay	24.30 (5.06)		

Independent variables	Fantasy Empathy Score Mean (SD)	Mean difference (95% CI)	P value
Others	27.06 (3.21)		
Nationality[b]			
Malaysian	24.27 (4.84)	-5.48	0.002
Non-malaysian	29.75 (1.49)	(-8.89, -2.07)	
Religion[a]			
Buddhist	24.72 (5.41)		
Christian	24.24 (4.35)		0.995
Hindu	24.82 (5.29)	-	
Islam	24.59 (4.92)		
Others	24.86 (1.86)		
Semester[a]			
7	24.46 (4.90)		
8	23.77 (5.63)	-	0.774
9	25.38 (4.24)		
10	25.18 (5.03)		
Chronic illness (Self)[b]			0.342
No	24.55 (4.94)	-1.95	
Yes	26.50 (3.62)	(-6.01, 2.10)	
Chronic illness (Family)[b]			0.370
No	24.13 (5.25)	-0.84	
Yes	24.97 (4.65)	(-2.68, 1.01)	

[a]ANOVA; [b]Unpaired t-test

Table 8 shows the association between demographic characteristics, chronic illness in themselves and family members with the total fantasy empathy score towards patients among medical students. Students with the age of 18-21 has a fantasy empathy score mean of 25.90 (SD=4.51), students with the age of 22-25 has a fantasy empathy score mean of 24.59 (SD=4.94) and students aged more than 25 years old has a fantasy empathy score mean of 23.00 (SD=4.97). The p-value is 0.573 thus showing no significant association between the age of the participants with the fantasy empathy score towards patients among medical students.

Females have a fantasy empathy mean score of 25.56 (SD=4.71), slightly higher than males with a fantasy empathy mean score of 22.70 (SD=4.73). The mean difference is 2.85 with 95% CI range from 0.99 to 4.72. The p-value is 0.003 thus showing that there is a significant association between gender and fantasy empathy score towards patients among medical students.

Chinese have a fantasy empathy mean score of 24.18 (SD=4.90), Indians have a fantasy empathy mean score of 24.32 (SD=5.20), Malays have fantasy empathy mean score of 24.30 (SD=5.06) and other races such as Sinhalese have fantasy empathy mean score of 27.06 (SD=3.21). The p-value is 0.210 thus showing that there is no significant association between ethnicity and fantasy empathy empathy score towards patients among medical students.

Malaysians have a fantasy empathy mean score of 24.27 (SD=4.84), whereas non-Malaysians have a fantasy empathy mean score of 29.75 (SD=1.49). The mean difference is -5.48 with 95% CI range from -8.89 to -2.07. The p-value is 0.02 thus showing that there is a significant association between nationality and fantasy empathy empathy score towards patients among medical students.

Buddhist has a fantasy empathy mean score of 24.72 (SD=5.41), Christians have a fantasy empathy mean score of 24.24 (SD= 4.35), Hindus have a fantasy empathy mean score of 24.82 (SD=5.29), Islam has a fantasy empathy mean score of 24.59 (SD=4.92) and other religions have a fantasy empathy mean score of 24.86 (SD=1.86). The p-value is 0.995 thus showing that there is no significant association between religion and fantasy empathy score towards patients among medical students.

Participants from semester 9 have a high fantasy empathy mean score of 25.38 (SD=4.24), followed by participants from semester 10 with a Fantasy empathy mean score of 25.18 (SD=5.03), participants from semester 7 with fantasy empathy mean score of 24.46 (SD=4.90) and finally participants from semester 8 with fantasy empathy mean score of 23.77 (SD=5.63). The p-value is 0.774 showing that there is no significant association with students from different semesters and fantasy empathy score towards patients among medical students.

Participants with a history of chronic illness have a mean fantasy empathy score of 26.50 (SD=4.94) while those without a history of chronic illness have a mean fantasy empathy score of 26.50 (SD=3.62). The mean difference is -1.95 with 95% CI range of -6.01 to 2.10. The p-value is 0.342 showing that there is no significant association between participants with history of chronic illness and fantasy empathy score towards patients among medical students

Participants who had a history of chronic illness in the family have a mean fantasy empathy score of 24.97 (SD=4.65) while those who didn't have a history of chronic illness in the family have a mean fantasy empathy score of 24.13 (SD=5.25). The mean difference is -0.84 with 95% CI range from -2.68 to 1.01. The p-value is 0.370 showing that there is no significant association between participants with a history of chronic illness in the family and fantasy empathy score towards patients among medical students.

4. Discussion

A cross sectional study on empathy was conducted among medical students in Melaka Manipal Medical College (Malaysia). Since the interpersonal skills and empathy are documented progressively as a core clinical skills despite the other necessity like technical expertise and clinical scenario,

the objective of our study is to assess empathy among medical students in Melaka-Manipal Medical College (Malaysia) towards their patients by using an empathy scale, Davis' Interpersonal Reactivity Scale (DIRI) which encompasses the relationships with measures of social functioning, self-pride, emotionality and sensitivity to others. In our research, we measured the empathy in medical students and correlates their association with age, gender, religion, ethnicity, nationality and respective semester of medical students. Furthermore, our research also assessed whether empathy among medical students are affected when students themselves or their family members are facing any chronic disease. Doubtlessly, empathy offers valuable insights into doctor-patient relationships and moulds our students into more compassionate and higher quality healthcare providers in future medical settings.

Our study measured empathy using four subscales of DIRI, which are perspective taking, empathy concern, personal distress and fantasy. From our study, we measured that empathy concern among the medical students has the highest mean score which is 28.5 compared to the other subscales followed by perspective taking had a mean of 27.0, fantasy with a mean of 24.6 and personal distress at a mean of 22.4. All the subscales gave a total empathy mean score of 102.5. When compared to a previous cross-sectional study on empathy among medical students in Lahore, Pakistan, their sequence of the mean empathy score for each subscale was parallel to our research project. [23] They have the highest mean score for empathic concern subscale (20.0), followed by perspective taking subscale (15.6), and lastly the personal distress subscale (15.0). However, in their research project, they did not include the fantasy empathy subscale. [23] Apart from that, we also noticed that our medical students in Melaka-Manipal Medical College obtained an overall higher mean total empathy score for each subscale compared to this previous study. According to their research, it stated that medical education in Pakistan traditionally emphasizes physician's biomedical knowledge while less on interpersonal skills and ability to relate to the patients. There were also differences in cultural normative values between Malaysia and Pakistan that might influence empathy. Moreover, moral education has been employed in the Malaysian education system for more than two decades. The historical, religious, and sociocultural aspects of Malaysia have been of concern for construction of moral education syllabus. Moral education is unique and dynamic within a multicultural setting, which invisibly implements the concepts of empathy since the beginning.

When we correlated the total empathy score with demographic characteristics, chronic illness in themselves and family members, we found that gender and nationality of the students, as well as the students with a history of chronic illness had a significant association. From our study, female students had a high total empathy score with a mean of 104.44 while male students were slightly lower with a mean of 98.50. Non- Malaysian students also have a higher total empathy mean score which is 110.75 compared to Malaysian which is 101.93. Not only that, students with a history of chronic illness had a higher total empathy mean score of 111.50 compared to students without any history of chronic illness which was a mean score of 102.05. Other than that, there is no significance between the age, ethnicity, religion, students from different semesters in their medical year and students with a history of chronic illness in their family with the total empathy score towards patients among medical students. In association between demographic characteristics, chronic illness in themselves and family members with perspective taking empathy score towards patients among medical students, the nationality of the students showed a significant association where non-Malaysian has a total mean score of 29.75 which is higher than Malaysian who has a total mean score of 26.75. Gender of the participants had a significant association between demographic characteristics, chronic illness in themselves and family members with empathy concerning empathy score towards patients among medical students. Female students had an empathy concerning empathy mean empathy score of 29.06 which is higher than male students with a mean empathy score of 27.43. In our study, there was no significant association between demographic characteristics, chronic illness in themselves and family members with the personal distress empathy score towards patients among medical students. However, gender and nationality of the students had a significant association with the fantasy empathy score towards patients among medical students. Female students gave a higher fantasy mean score of 25.56 compared to male students with a mean score of 22.70. Not only that non-Malaysian students also had a higher mean fantasy empathy score of 29.75 compared to Malaysian students with a mean score of 24.27.

According to a cross sectional study conducted among physicians, medical students and candidates in Silesian Medical University, Katowice, Poland, they stated a hypothesis where the mean empathy score among female respondents will be higher compared to male respondents. [24] This hypothesis in their research project was confirmed as the mean empathy score of female respondents was 59.83 while male students were 51.16, where there was a prominent and positive association between gender and empathy score. [24] Interestingly, this was in line with our research too. In our research, we found that the mean total empathy score measured using DIRI among female respondents is 104.44,

which is higher than the male respondents that have a mean total empathy score of 98.50, and this has led to a statistically significant association between gender and empathy. The difference remained statistically significant when divided into the four subscales of DIRI, which is fantasy and empathic concern. However, the association between gender and empathy was not significant for personal distress subscale and perspective taking subscale. This positive finding is showing the same result with the research project in Silesian Medical University, Katowice, Poland, except that their perspective taking subscale is showing significant association. In another cross-sectional study conducted among medical students in two medical institutions in Lahore, Pakistan, their research project also showed a statistically significant association between gender and empathy. [23] The mean empathic concern score of female students in Lahore is higher (20.2) than the male students (19.2). Their perspective taking empathy score was showing a p value of 0.67 which was not significant, and this was the same as our result in our research project.

Next, we assessed the association between semesters of study with empathy, and we found that they were statistically insignificant in total empathy score or even after divided into four subscales of DIRI. The mean empathy score is fluctuating throughout the semester of study, but there was no significant rise or decline in empathy score among the semester 7, 8, 9, and 10 students. This result was in conjunction with both the cross-sectional study conducted among medical students in Poland and Pakistan, where their mean empathy score is almost the same between first year and final year students. [23, 24] This has shown that the empathy among medical students does not change over time throughout their medical course. There was also another cross-sectional study that conducted among undergraduate medical students in the United Kingdom proved that there was no significant relation between semester of study and empathy. The researchers found that the empathic concern empathy score was not statistically significant with academic years which was similar to our study. [12]

In this study, we also assessed the relationship between chronic illness among medical students as well as their family members and empathy. We found that the chronic illness in students themselves has a positive and significant association with empathy. The students that were facing chronic illness had obtained a higher mean total empathy score (111.50) compared to those without chronic illness (102.05). This may be considered as a student with chronic illness has better understanding and was able to relate themselves more to the patient's suffering. However, there was no significance between chronic illness and empathy in each subscale of DIRI.

Unfortunately, we were facing some limitations in this research project too. The first limitation of our studies was the small sample size. This is because semester 6 students were not included in our studies as they have yet to join the clinical year. Furthermore, for this research, we used an online questionnaire which resulted in a low response rate. Since our studies were cross-sectional studies, we can only observe the empathy among undergraduate medical students at one point of time. As for the changes in the future, we cannot observe them. Moreover, our studies were done at Melaka-Manipal Medical College only. The findings cannot be generalized to other settings or institutions. Finally, our studies were only applied on undergraduate students. It cannot be applied to other populations such as postgraduate, medical officers, specialists and consultants.

Empathy is often perceived as an important soft skill in medical settings, it should always be considered as a part of clinical skills education for medical students. Empathy can be trained and can be improved by exposing students to more varieties of patients with different types of clinical scenarios during their regular clinical practice, which will make them become more competent and understanding in real-time situations. This clinical scenario exposure and training can be done through virtual simulation using video clips, and also by implementing high-order-thinking questions in the exam. Furthermore, workshops or training courses can also be organized to improve the student's empathy by teaching them how to handle the real-time situations using different types of difficult clinical scenarios. For future study, a larger sample size with a higher response rate should be considered so that the research findings can be generalized to a larger population. This can be improved by recruiting different batches in a university or even different medical institutions. In our research, the number of participants from semester 7, which is the early stage of clinical practice, were much higher than the final year students. The future research should recruit more final year and shadow houseman medical students so that the findings can be equally related. Lastly, as empathy is a subjective value of which it varies according to individuals with different insights, experiences, attitude, background and etc, the future research should include stress, mental wellbeing, quality of life, and burnout that might associate or affect the level of empathy.

5. Conclusion

In a nutshell, our research had shown a positive association between empathy with gender, nationality, and chronic illness in students themselves. Gender difference in DIRI

empathy score is especially prominent where Female students obtained a higher empathy score than male students. Apart from that, non-Malaysian students and students with a history of chronic illness also had a higher mean empathy score. Among all the independent variables, the association between empathy with age, ethnicity, religion, semester, and chronic illness in family members were small and statistically insignificant. The quality of treatment and care of tomorrow's medical setting are depending on the quality of empathy among medical students. Students with a higher empathy undeniably have a higher quality of soft skills in clinical practice. Thus, instilling empathy into students are undelayable as this facilitates treatment and psychosocial outcomes which complements one another.

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