

Original Research Article

Perceived professionalism and its relationship with communication skills, social interaction and attitude towards medical subjects among undergraduate medical students in Malaysia

M. Mizanur Rahman*, Daneish Raman, Elvyronna Anthony,
Nor Syamimi Hazwani, Nurul Iffah

Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia

Received: 21 December 2022

Accepted: 11 January 2023

*Correspondence:

Dr. M. Mizanur Rahman,

E-mail: rmmizanur@unimas.my, aniqm@hotmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Professionalism is an essential core competency in medical education in line with societal expectations. It is expected that the medical professionals show a specified set of behaviours and attitudes towards patients and society. This study assessed professionalism and its relationship with undergraduate medical students' communication competency skills, learning attitude, and social interaction.

Methods: This was a cross-sectional-correlation study conducted among undergraduate medical students irrespective of gender and nationality. A total of 319 students' data were collected using a validated self-administered questionnaire. The collected data were analysed using IBM SPSS version 27.0. Pearson's moment correlation and multiple linear regression analysis were done to identify the potential predictors of perceived medical professionalism. A p value of less than 0.05 was considered statistically significant.

Results: The study showed that professional relationship was significantly correlated with a positive attitude on communication skill ($p < 0.001$), environmental control ($p < 0.001$), interaction management ($p < 0.01$), immediacy ($p < 0.01$), attitude towards the medical subject ($p < 0.001$). However, no statistically significant correlation was found between perceived empathy and age, gender, year of study, parental education and previous CGPA ($p > 0.05$).

Conclusions: The study found an interrelationship between professionalism, communication skills, interpersonal communication, and attitude towards medical subjects. However, the multivariate analysis revealed different weightage of influence to professionalism. Further advanced analysis is warranted to get the impact of each of the contributing variables to academic achievement.

Keywords: Attitude, Communication skills, Medical students, Professionalism, Social interaction

INTRODUCTION

Medical students must develop communication skills and professionalism as future members of the medical profession to form effective relationships with patients.¹ Professionalism requires that the whole healthcare team serve the patients above their interests. For medical professionals to work effectively, every member must have the commitment to the practice of medicine in an era where the sharing of information is essential to

support the interaction with the patients and promote their welfare.² Patients have very high expectations of the medical profession in terms of their qualifications and work ethics to serve the patients and the community and not just to further their self-interests. Thus, it is very important to teach, develop and nurture professional values, ethics and skills among medical students. Those skills are best taught in clinical settings where the students can easily observe the physicians' behaviour towards their team members and the patients.³ Therefore,

the undergraduate medical student should grasp those interpersonal communication competencies and professionalism before graduating from medical school.^{4,5} Professionalism in healthcare is made up of attitudes, values, behaviour, and relationships. Apart from that, professionalism in health care is also influenced by the academic environment, learning attitude, social interaction, communication, and more.⁶ Other than learning attitude, social interaction and communication also play a pivotal role in professionalism.

Researchers have stressed the importance of using active methodologies and teaching approaches that stimulate analytical and reflective thought. It also focused on theoretical and functional integration in medicine to improve communication skills. Research on the perceived interpersonal communication skills and professionalism among medical students are very limited in Malaysia. The available literature consists primarily of studies on communication teaching-learning strategies, emphasising the need for further research into this problem. We wanted to know what levels of interpersonal communication skills and professionalism do medical students acquire and what socio-demographic and academic factors influence medical students' development in interpersonal communication and professionalism? Thus, this study was aimed at determining the interpersonal communication competencies and professionalism among medical students and compare their domains with academic variables and sociodemographics.

METHODS

Setting, participants, instruments

This was a cross-sectional study conducted among undergraduate students of a public university in Malaysia. The study was conducted from September 2020 to July 2021. All the undergraduate medical students, irrespective of gender, were included as the study population.

The students from other faculties and those who were not willing to participate were excluded from this study. We assumed that the dependent and independent variables were continuous. We expected to test the relationships between the dependent and independent variables using the correlation coefficient. We based the calculation of the total sample size required to determine whether a correlation coefficient differs from zero on an expected correlation coefficient of 0.15. So, the initial sample size was 347, with the addition of a 20% non-response rate to give an adjusted sample size of 417. For the sampling procedure, a non-probability method was adopted. An email link was created against the set questionnaire. Then, group emails were sent to all medical students from year 1 to year 5 with administrative support from the faculty of medicine and health science. Afterwards, the

finalized questionnaires were emailed to the medical students.

Measurements

Perceived professionalism

Professionalism can be explained as a collection of attitudes and, more likely, behaviour. It is known that students entering medical school already possess some attitudes towards professionalism gained from previous experience with the medical system and physicians. We adapted the validated questionnaire from Klemenc-Ketis and Vrecko.⁶ It has 22 items with three domains viz. empathy and humanism (10-items), professional relationship and development (8-items) and responsibility (4-items). Each item of the question was assessed using Likert's scale with 'strongly disagree', 'disagree', 'neutral', 'agree', and 'strongly agree'. A domain-wise mean score was first calculated and converted into a mean percentage for easy comparison with other variables.

Perceived communication skill

Interpersonal communication is a communicative relationship between people involved.⁸ Having good interactive communication with people enhances the person's abilities in many things, including working well with others either in grouping via formally or informally. In this study, we adopted a 26-items communication skill questionnaire from Baharudin et al.⁹ It was a five-point Likert-scale questionnaire with 'strongly disagree', 'disagree', 'neutral', 'agree', and 'strongly agree' options. It has two domains viz. positive attitude scale (PAS) having 13-items and Negative attitude scale 10 having 13-items. we calculated the mean score followed by the mean percentage score for easy comparison.

Social interaction

Interacting with other people has proven to be very productive in helping learners organize their thoughts, focus on their understanding, and identify any gaps in their point of view.⁵ Many instances of learning processes occur via social interaction. It is crucial to have social interaction between students and lecturers, peers, and others in medical education.⁴ Medical students need to be as independent as possible upon graduating from medical school. A total of 17-items questions were used to assess the medical students' social interaction.¹¹ The answer options were a 5-point Likert scale ranging from 1 (almost never behave this way) to 5 (almost always interact in this way). There were five domains in social interaction. These were environmental control (4-items), self-disclosure (4-items), assertiveness (4-items), interaction management (2-items) and immediacy (3-items). A composite score was calculated and standardized into hundred per cent for interpretation.

Attitude towards medical subjects

Educational outcome is influenced by attitude. In this case, medical students' learning attitude towards the medical subjects could be the turning point between a successful and unsuccessful educational outcome. Four items of question were included with Likert's scale measuring 'very much interesting', 'somewhat interesting', 'little interesting', and 'not at all interesting'.

Statistical analysis

Data received from the respondents were automatically organized in Microsoft Excel. The data were then imported to the SPSS worksheet. An exploratory data analysis was done to determine any inconsistent or missing data. Upon validation, a descriptive analysis was done and presented with frequency tables. That was followed by Pearson's correlation test to determine the interrelationship between professionalism and communication competency skills, learning attitude, and social interaction. Factors and strength of association were measured using multivariate analysis.^{12,13} The analysis was done via IBM SPSS version 27.0.¹⁴ A p value less than 0.05 was considered statistically significant.

Ethical issues

The students participated on a voluntary basis in the study. We chose an online questionnaire survey instead of a face-to-face interview. All the guidelines and details about this study were explicitly mentioned in the online form to reduce misconceptions. Respondents had the role of checking the box/option that showed their acknowledgement and consent to participate in the study before responding to the questionnaires. Respondents were also notified that their engagement throughout this study was voluntary, and their information and identification would be kept confidential. Before starting the main study, we obtained ethics approval from the Institutional Ethics Committee (Ref: UNIMAS/NC-21.02/03-02 Jld.5(14); Dated 02 February 2021).

RESULTS

The data were collected from year-1 until year-5 medical students of Universiti Malaysia Sarawak. A total of 319 students responded, giving a response rate of 76.8%.

Characteristics of the students

The mean age of the student was 21.6 years with a standard deviation of 1.4 years. More than three-fourths (76.2%) of the students were female, and the rest were male (23.8%). The majority of the students lived outside the campus (72.1%). Both median and mean last CGPA score was 3.2 with a standard deviation of 0.39. The highest percentage (34.5%) of the student's fathers had a secondary level of education followed by university-level

education (bachelor's degree), which accounted for 31.7%. Very few had a PhD (0.9%).

Table 1: Characteristics of the students (n=319).

Characteristics	N	%	Statistics
Age in years			
19-20	87	27.3	Mean=21.6 SD=1.4 Median=21
21-22	148	46.4	
2≥3	84	26.3	
Gender			
Male	76	23.8	
Female	243	76.2	
Year of study			
1	85	26.6	
2	93	29.2	
3	59	18.5	
4	48	15.0	
5	34	10.7	
Living status			
University	89	27.9	
Outside	230	72.1	
Last CGPA score			
<3.0	88	27.6	Mean=3.2 SD=0.39 Median=3.2
3.0-3.49	150	47.0	
≥3.5	81	25.4	
Father's education			
No formal education	7	2.2	
Primary	18	5.6	
Secondary	110	34.5	
Pre-university	52	16.3	
Degree	101	31.7	
Masters	28	8.8	
PhD	3	0.9	
Mother's education			
No formal education	6	1.9	
Primary	23	7.2	
Secondary	137	42.9	
Pre-university	28	8.8	
Degree	103	32.3	
Masters	16	5.0	
PhD	6	1.9	
Father's occupation			
Not working	55	17.4	
Self-employed	35	11.0	
Private	93	29.3	
Government job	96	30.3	
Business	21	6.6	
Workers	17	5.4	
Mother's occupation			
Not working	147	46.1	
Self-employed	15	4.7	
Private	36	11.3	
Government job	105	32.9	
Business	9	2.8	
Workers	7	2.2	

A similar pattern of education was observed among the student’s mothers, with the highest percentage (42.9%) having a secondary level of education followed by a bachelor degree (32.3%), and 8.8% had pre-university education. The highest percentage of the student’s fathers was doing government jobs (30.3%) followed by private jobs (29.3%) and not working (17.4%), while the highest percentage of the mother had no job, i.e., they are not working (46.1%) (Table 1).

Mean score of professionalism, communication, social interaction and attitude toward medical subjects

The overall mean percentage of social interaction was 72.47. The highest percentage score was a positive attitude (mean =91.56) followed by professionalism (mean =90.20) and attitude on medicine subjects (mean =83.56). The lowest mean percentage of the score was a negative attitude (mean =47.94) (Figure 1).

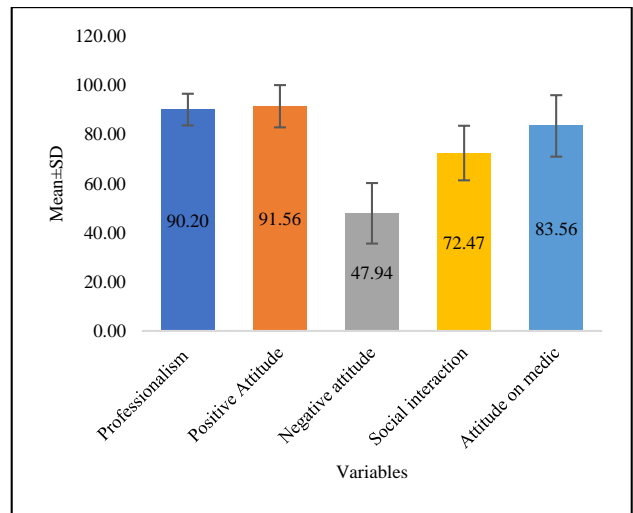


Figure 1: Mean percentage of variables of interest.

Table 2: Relationship between perceived professionalism with selected variables: multivariate analysis.

Parameters	Empathy		Professional development		Professional relationship	
	β (95% CI)	Part	β (95% CI)	Part	β (95% CI)	Part
(Constant)	0.35 (-1.37, 0.68)		0.26 (-0.81, 1.32)		-0.73 (-1.87, 0.41)	
Year of study	0.052 (-0.04, 0.11)	0.05	0.10 (-0.02, 0.14)	0.09	0.12 (0.00, 0.17)*	0.12
Gender (0, 1)	0.095 (-0.05, 0.42)	0.09	0.04 (-0.16, 0.33)	0.04	-0.08 (-0.44, 0.08)	-0.08
Father’s education	-0.016 (-0.09, 0.07)	-0.02	0.01 (-0.08, 0.09)	0.01	-0.05 (-0.12, 0.05)	0-0.05
CGPA	0.032 (-.20,.34)	0.03	-0.05 (-0.40, 0.16)	-0.05	0.10 (-0.06, 0.54)	0.09
(Constant)	-0.62 (-1.48,.24)		(-0.31, 1.66)		-0.80 (-1.79, 0.19)	
Year of study	0.049(-0.04, 0.10)	0.04	0.03 (-0.06, 0.09)	0.02	0.15 (0.03, 0.18)***	0.14
Gender (0, 1)	0.056 (-0.08, 0.31)	0.05	-0.03 (-0.29, 0.16)	-0.03	-0.09 (-0.43, 0.03)	-0.09
Father’s education	-0.060 (-0.11, 0.03)	-0.06	-0.02 (-0.09, 0.06)	-0.02	-0.02 (-0.09, 0.06)	-0.02
CGPA	0.087 (-0.04,0.42)	0.08	-0.08 (-0.44, 0.08)	-0.07	0.09(-0.04, 0.49)	0.08
PAS	0.476 (0.32, 0.54)***	0.36	0.00 (-0.13, 0.13)	0.00	0.45(0.33, 0.59)***	0.34
NAS	-0.237 (-0.36, -0.12)***	-0.19	-0.439 (-0.59, -0.33)***	-0.36	-0.03(-0.17, 0.10)	-0.03
Environmental control	-0.011 (-0.12, 0.10)	-0.01	0.07 (-0.06, 0.19)	0.05	-0.03(-0.15, 0.10)	-0.02
Self-disclosure	-0.101 (-0.20, 0.03)	-0.07	0.09 (-0.05, 0.22)	0.07	-0.02(-0.16, 0.11)	-0.02
Assertiveness	-0.065 (-0.16, 0.05)	-0.05	-0.05 (-0.16, 0.08)	-0.04	-0.05(-0.16, 0.08)	-0.04
Interaction management	0.013 (-0.10, 0.12)	0.01	0.03 (-0.10, 0.15)	0.02	0.12 (-0.01, 0.24)	0.09
Immediacy	0.009 (-0.11, 0.12)	0.01	0.04 (-0.10, 0.17)	0.03	0.06 (-0.07, 0.20)	0.05
Attitude medic	0.013 (-0.08, 0.10)	0.01	0.08 (-0.03, 0.18)	0.07	0.08 (-0.03, 0.19)	0.07
Model-1 R ²	0.011		0.017		0.030	
Model-1 R ²	0.374***		0.243***		0.344	
Model-1 F-ratio	0.773 (4, 280)		1.197 (4, 280)		2.129 (4, 280)	
Model-1 F-ratio	13.531 (4, 272)***		7.294 (4, 272)***		11.894 (4, 272)***	

*p<0.05, **p<0.01, ***p<0.001; N=285

Relationship between perceived professionalism with selected variables: multivariate analysis

A hierarchical multiple linear regression analysis was done to determine the factors associated with perceived professionalism. The dependent variable was perceived professionalism with three domains. In the present

analysis, domain-wise multiple linear regression analysis was done. The potential outliers were excluded from the final analysis after exploratory data analysis (EDA). Univariate and multivariate outliers were determined using Mahalanobis distance, Cook’s distance and studentized residuals.¹⁵⁻¹⁷ A total of 31 data were removed due to them being outliers. Age and year of study were highly

correlated. According to importance, age was removed from the final analysis. The education level of the parents was also highly correlated; the mother's level of education was removed due to multicollinearity. Another reason was that the mother's education did not have any significant impact on other variables. So, two multicollinear variables, such as mother's education and age, were excluded from the final analysis. Apart from this, any variables with a variance inflation factor (VIF) greater than 3.3 were also removed. Before interpreting the results, collinearity diagnostics were examined for any coefficient value greater than 0.9.¹⁸

Two-step hierarchical regression analysis was done in which year of study, gender, father's education, and previous CGPA score were in the first step followed by all the domains of communication skills, social interaction, and attitude towards medical subjects model. The model fitting information included R^2 changes, F-ratio, part correlation-efficient (percentage of contribution) were reported in each model.^{12,13} Analysis revealed that positive communication skills significantly influenced empathy with professionalism ($p<0.001$). It contributed 36% to the model. Negative communication skills had a significant impact on empathy ($p<0.001$). This indicated that a negative attitude deterred empathy. However, no demographic characteristics, social interaction and attitude towards medical subjects substantially impacted empathy ($p>0.05$). It was also found that negative communication had an impact on professional development ($p<0.001$). Similar to empathy, negative communication deterred professional development. On the other hand, professional development was significantly influenced by the year of study ($p<0.001$) and positive communication skills ($p<0.001$).

DISCUSSION

Our analysis did not find any statistically significant association between empathy and gender, year of study, parental education, and previous CGPA ($p>0.05$). The correlation with gender was insignificant in a previous study, which showed that females demonstrated higher scores than male medical students.¹⁹ Several theories have been proposed to explain gender differences in empathy, but none has proven conclusive. Females are said to be more responsive to feelings and emotions than males, which would lead to better understanding and, as a result, a more empathic relationship.¹⁰ However, the analysis showed that perceived empathy had a substantial correlation with professional development ($r=0.33$, $p<0.001$), professional relationship ($r=0.54$, $p<0.001$), and positive attitude on communication skills ($r=0.55$, $p<0.001$). The correlation between empathy and professional development is consistent with the previous study that was conducted at the University of Western Sydney's School of Medicine.¹⁹ Some earlier studies in the Southern Illinois University School of Medicine suggested that focused educational interventions such as

communication and interpersonal skills workshops, literature and medicine, patient shadowing, and spirituality and wellness courses may effectively nurture undergraduate medical students' empathy.²⁰ The correlation between empathy and a positive attitude on communication skills is consistent with the previous study conducted at Copenhagen medical school.²¹ Communication with patients allowed physicians to see things from the perspective of their patients, appreciate the diversity of their requirements, and grasp the need of aligning the perspectives of patients and doctors. As a result, the doctor demonstrated emotional responses to the challenges of completing the position in interaction with patients.²² Multivariate analysis identified that positive communication skills significantly influenced empathy with professionalism ($p<0.001$). It contributed to 36% of the respondent. Simultaneously, there were correlations between the variables other than with empathy. For instance, the professional relationship was significantly correlated with a positive attitude on communication skill ($r=0.27$, $p<0.001$), environmental control ($r=0.17$, $p<0.001$), interaction management ($r=0.20$, $p<0.01$), and attitude towards the medical subject ($r=0.13$, $p<0.001$). The correlation of professional relationships and environmental control is consistent with the findings from a systematic review of ten studies.²³ Physicians who respect one another's abilities and needs, communicate, consult effectively, and interact as a team to improve care and professional development have the highest chance of succeeding in restructured environments.²⁴ Besides, the significant positive correlation between a professional relationship and attitude towards the medical subject is also one of the key components in defining the students' professionalism. Professionalism is shown in one's attitude. The actions of professionals are both cooperative and regimented. Whether negative or positive, any profession's performance and degree of goal realisation are influenced by one's learning attitude.²⁵ Other than empathy and professional relationship, our study found a significant correlation between professional development and self-disclosure ($r=0.18$, $p<0.01$), assertiveness ($r=0.14$, $p<0.01$), interaction management ($r=0.33$, $p<0.001$), immediacy ($r=0.27$, $p<0.01$), attitude towards the medical subject ($r=0.29$, $p<0.001$) and age of the students ($r=0.12$, $p<0.01$). The positive correlation between assertiveness and professional development is significant with the previous study in Romania.²⁶ Generally, assertiveness is taking full responsibility for one's demands while also respecting the dignity of others. People feel at ease in the presence of assertive individuals because they are aware of how these people present themselves.²⁷ The correlation between professional development and a positive attitude on self-disclosure did affect professionalism. If implemented correctly, self-disclosure can have a good impact on interpersonal relationships. Self-disclosure that cannot go well, on the other hand, can lead to humiliation, lowered self-esteem, and relationship deterioration or discontinuation.²⁸ The correlation of professional development and the age of the students is

also significant with the previous study.²⁹ Age-related attitudes, including intergenerational collaboration and perceptions of older and younger co-workers' capabilities, play a crucial role.³⁰ Meanwhile, a positive correlation between immediacy and interaction management supports the correlation between communication skills and professional development. However, demographic characteristics such as parental education and previous CGPA did not influence professionalism ($p>0.05$). Our analysis showed an interrelationship between the variables. They are very reliant on one another, which are a good sign that the students perceived professionalism and another factor associated with it.

There were several limitations encountered during this study. As the data collected was only from undergraduate medical students, the findings from this research are only applicable among medical students. It does not represent other medical-related students, i.e., postgraduate medical students from other public or private universities or the general population. The respondents' data were obtained through a self-administered questionnaire, which means that the responses depended solely on the respondents' memories. The possibility of underreporting could not be ruled out. The temporal association could not be established as the study was cross-sectional by design.

CONCLUSION

Although the study was a cross-sectional one, it provides an inexpensive method to assess professionalism among medical students. Multiple exposures and outcomes could be linked and studied at one time. The data and findings would be helpful in planning and allocating programs to enhance medical students' professionalism. As this study finds an association between communication competency skills, learning attitudes towards medical subjects, social interaction in medical education, socio-demographic characteristics and perceived professionalism, longitudinal studies could be conducted to study the cause and effect relationship.

ACKNOWLEDGEMENTS

We gratefully acknowledge the support from UNIMAS for conducting the study. We acknowledge the support and help of the dean, faculty of medicine and health sciences, UNIMAS. We are also indebted to the students who had kindly participated in this study. We are thankful to Prof Andrew Kiyu, faculty of medicine and health sciences, UNIMAS, for his comments and for editing the manuscript.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Ethical clearance was also obtained from the Faculty of Medicine and Health Sciences, UNIMAS (Ref: UNIMAS/NC-21.02/03-02 Jld.5(14); Dated 02 February 2021)

REFERENCES

- Salimi M, Peyman H, Sadeghifar J, Toloui Rakhshan S, Alizadeh M, Yamani N. Assessment of interpersonal communication skills and associated factors among students of allied medicine school in tehran university of medical sciences. *Iran J Med Educ.* 2013;12:895-902.
- Post SG, Puchalski CM, Larson DB. Physicians and patient spirituality: professional boundaries, competency, and ethics. *Ann Intern Med.* 2000;132:578-83.
- Birden H, Glass N, Wilson I, Harrison M, Usherwood T. Teaching professionalism in medical education: A best evidence medical education (BEME) systematic review (BEME). *Med Teach* 2013;35:e1252-66.
- Keren D, Lockyer J, Ellaway RH. Social studying and learning among medical students: A scoping review. *Perspect Med Educ.* 2017;6:311-8.
- Okita SY. Social interactions and learning. In: Seel NM, ed. *Encyclopedia of the sciences of learning.* Boston, MA: Springer US; 2012:3104-3107.
- Klemenc-Ketis Z, Vrecko H. Development and validation of a professionalism assessment scale for medical students. *Int J Med Educ* 2014;5:205.
- Hulley SB, Cummings SR, Browner WS, Grady DG, Newman TB, eds. *Designing clinical research: An epidemiologic approach.* 4th edn. City: Philadelphia: PA: Lippincott Williams and Wilkins; 2013:75.
- Lane SD. *Interpersonal communication: Competence and contexts.* London: Routledge; 2016.
- Baharudin N, Mohamed Yassin MS, Sham S, Yusof Z, Ramli A. Validation of the communication skills attitude scale (CSAS) questionnaire in a cohort of Malaysian medical students. *J Clin Health Sci.* 2017;2:46.
- Hojat M, Gonnella JS, Mangione S, Nasca TJ, Magee M. Physician empathy in medical education and practice: Experience with the Jefferson scale of physician empathy. *Semin Integr Med.* 2003;25-41.
- Puggina AC, Silva MJP. Interpersonal communication competence scale: Brazilian translation, validation and cultural adaptation. *Acta Paulista de Enfermagem* 2014;27:108-14.
- Hair JF, Black WC, Babin BJ, Anderson RE. *Multivariate data analysis.* 8th edn. United Kingdom: Pearson Education Ltd; 2019.
- Tabachnick BG, Fidell LS. *Using multivariate statistics.* 7th edn. United States: Pearson Education, Inc; 2019.
- IBM SPSS. *IBM SPSS statistics for windows.* 27 edn. Armonk, NY, USA: IBM SPSS; 2020.
- Sharma A. Understanding Mahalanobis distance and its use cases. *Analytics India magazine.* India, 2018.
- Díaz-García JA, González-Farías G. A note on the cook's distance. *J Stat Plan Infer.* 2004;120:119-36.

17. Gray JB, Woodall WH. The maximum size of standardized and internally studentized residuals in regression analysis. *Am Stat* 1994;48:111-3.
18. Regorz A. How to interpret a collinearity diagnostics table in SPSS. 2020. Available from: http://www.regorz-statistik.de/en/collinearity_diagnostics_table_SPSS.html. Accessed on 28 September 2021.
19. Hegazi I, Wilson I. Maintaining empathy in medical school: It is possible. *Med Teac.* 2013;35:1002-8.
20. Hull SK, DiLalla LF, Dorsey JK. Student attitudes toward wellness, empathy, and spirituality in the curriculum. *Acad Med.* 2001;76(5):520.
21. Rieffestahl AM, Risør T, Mogensen HO, Reventlow S, Morcke AM. Ignitions of empathy. Medical students feel touched and shaken by interacting with patients with chronic conditions in communication skills training. *Patient Educ Counsel.* 2021;104:1668-73.
22. Forbes R, Clasper B, Ilango A, Kan H, Peng J, Mandrusiak A. Effectiveness of patient education training on health professional student performance: A systematic review. *Patient Educ Counsel.* 2021;104(10):2453-66.
23. Copanitsanou P, Fotos N, Brokalaki H. Effects of work environment on patient and nurse outcomes. *Br J Nurs.* 2017;26:172-6.
24. Severinsson E, Sand A. Evaluation of the clinical supervision and professional development of student nurses. *J Nurs Manage.* 2010;18:669-77.
25. Lampert M, Ball D. *Aligning teacher education with contemporary k-12 reform visions.* San Fransisco: Jossey-Bass; 1999.
26. Oana J, Ona AI. Assertiveness in self-fulfilment and professional success. *Interpersonal dynamics in the didactic relation. Psychology.* 2019;10:1235-47.
27. Speed BC, Goldstein BL, Goldfried MR. Assertiveness training: a forgotten evidence-based treatment. *Clin Psychol Sci Pract.* 2018;25:e12216.
28. Sprecher S, Treger S, Wondra JD. Effects of self-disclosure role on liking, closeness, and other impressions in get-acquainted interactions. *J Soc Person Relat.* 2013;30:497-514.
29. Gellert FJ, Schalk R. Age-related attitudes: the influence on relationships and performance at work. *J Health Organ Manage.* 2012;26:98-117.
30. van Knippenberg D, Schippers MC. Work group diversity. *Ann Rev Psychol.* 2006;58:515-41.

Cite this article as: Rahman MM, Raman D, Anthony E, Hazwani NS, Iffah N. Perceived professionalism and its relationship with communication skills, social interaction and attitude towards medical subjects among undergraduate medical students in Malaysia. *Int J Res Med Sci* 2023;11:446-52.