The Association of "First 1000 Days of Life" Training Program on Communication Skill and Empathy of Undergraduate Medical Students: A Cross-Sectional Study

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Abstract

Introduction: 1000 First Days of Life (1000FDL) training program is carried out for 2 years from the 3rd to 6th semester; in this program, students are asked to accompany pregnant women until their children are 2 years old. This study aimed to analyse undergraduate medical students' communication skills and empathy levels and determine the association between communication skills and empathy after the training program.

Methods: This is a cross-sectional study in which 176 undergraduate medical students in Hasanuddin University participated; they were enrolled in 1000FDL training program and selected using purposive sampling. Data were collected using Modified Arabic Version of the ABIM's Patient Assessment (MAV-ABIM) and Jefferson Scale of Empathy – Student Version (JSE-S) questionnaires to assess their level of communication skills and empathy. In this study, demographic data were obtained using a semi-open-ended questionnaire. Data were analysed using descriptive statistics, Chi-Square, and Spearman tests.

Results: Communication skill was very good (83.5%), good (15.9%), and inadequate (0.6%), while the empathy level was high (9.1%), medium (25%), and low (65.9%). There was no significant difference between the level of communication skills (P=0.168) and empathy (P=0.145) based on gender, but there was a significant difference between <12 or >12 times interaction with the empathy level (P<0.001). The association between the level of communication showed that the level of empathy was significant (P<0.001, r=0.399).

Conclusion: Undergraduate medical students had very good communication skills but low empathy levels. There was a positive association between communication skills and empathy level after the training program. The students' empathy level can be improved by increasing the frequency of interaction with patients in experiential learning through training programs.

Keywords: Communication; Empathy; Experiential learning

Introduction

1000 First Days of Life (1000FDL) training program is carried out for 2 years from the 3rd to 6th semester during the medical undergraduate program, in which students are asked to accompany pregnant women until their children reach the age of two (1). This training program aims to practice communication skills and empathy for medical students by interacting with pregnant women, healthcare staff, and their peers. The purpose of medical education is to produce medical graduates to become competent in providing healthcare services that meet societal needs (2), so that patient outcomes improve. The competency areas that medical students are expected to achieve include effective communication competence and professionalism. Professionalism competence areas can be acquired by showing empathy. Effective communication is the ability to build relationships, extract information, receive and exchange information, negotiate and persuade verbally and non-verbally, and demonstrate empathy for patients, family members, communities and peers in local and regional cultural diversity settings (3). Kataoka, et al. indicate that a communication skills training program which aims at enhancing empathy in medical students can be extremely effective (4). Several studies have shown that communication and empathy can improve patient outcomes and help clinicians obtain symptoms and determine diagnoses accurately. Based on this statement, medical students must apply good communication skills with patients (5). These communication skills competencies and capability of empathy can be acquired and learned in an effective learning environment (6).

Several studies have shown an increase in communication skills and empathy after attending training programs implemented by the faculty (6-9). The training program is expected to be a source for student experience learning, so that medical students can learn communication skills with patients as well as learn to understand the patient's condition directly to increase the students' empathy. In spite of being widely studied (4, 7, 8, 10-16), the training program conducted by us needs to be evaluated by a number of students who managed to accomplish the learning objective of this program by measuring the level of communication skills and empathy. Therefore, this study aimed to analyse undergraduate medical students' communication skills and empathy level and examine the association between communication skills and empathy after the training program.

Methods

Study Design and Subjects

A cross-sectional study was conducted among 176 undergraduate medical students of the Undergraduate Medical Doctor Study Program, Faculty of Medicine, Hasanuddin University in Makassar, Indonesia. This study was also associated with purposive sampling as a part of a descriptive and bivariate analysis conducted from January to May 2023. This research involves medical students who had gone through the 6th semester and had done The First 1000 Days of Life (1000 FDL) training program where one student will accompany one pregnant woman for 1000 days; this program starts from the first semester of the undergraduate program, but the final assessment of this program is only carried out in the 6th semester. Medical students are also accompanied by one supervisor from the beginning of the program to the completion of the mentoring process. During the program, medical students are asked to interact with pregnant women directly, visit the pregnant woman's home, collect demographic data and health data for pregnant women and families, conduct basic physical examinations, and accompany pregnant women to the community healthcare centre to do antenatal care; the pregnant women can also consult with medical students during the program. The data collected during the process is included on the program website (1000hpk.unhas.web.id). There is no limit to the number of visits, but medical students are advised to always follow the progress of pregnant women from the 1st trimester of pregnancy until their children reach 2 years old, in conjunction with the supervision of their supervisor. Purposive sampling was used to determine the sample for the study. The inclusion criteria were medical students who were registered as an active student in the 6th semester; had taken the character development course in the 2021/2022 academic year; had joined the training program since the beginning of their second year; had never been on academic leave; and were willing to fully participate in this study.

Study Instruments and Procedure

The Jefferson Scale of Empathy-Student version (JSE-S) questionnaire, Modified Arabic Version of the ABIM (MAV-ABIM) questionnaire, and open questions along with socio-demographic data including age, gender, frequency of visits pregnant women and frequency of mentoring with supervisors were distributed among 176 medical students who met the inclusion criteria. Both questionnaires had been standardized and used in previous studies

(10-12). The Indonesian version of JSE-S and MAV-ABIM questionnaires were used to suit the local context for this study. Both questionnaires have been validated to assess communication skills and empathy after the previous study that used both these questionnaires (17-19); they were translated into the Bahasa Indonesia version. The Indonesian version of both questionnaires shows good validity (r>0.148) and good internal reliability (Croncbach's α>0.77). Before data collection, the study background, including its purposes and potential impacts, were explained. Medical students' confidentiality and anonymity were also guaranteed. The JSE-S was used to assess clinical empathy in medical undergraduate students. The JSE-S is a self-administered inventory which contains 20 questions, half of which are negatively phrased, while the other half are positively phrased. The students have to mark one of the seven options provided as a Likert Scale in response to each item (1=strongly disagree, 7=strongly agree); in the case of the negatively phrased items, it is reversed (that is 1=strongly agree, 7=strongly disagree). It is a three-factor latent variable scale, with three factors icluding "Perspective taking", "Compassionate care", and "Standing in the patient's shoes". Interpretation of the findings was made according to the original study that suggested that the cut-off point should be separately calculated for men and women. Thus, the cut-off scores for identifying low and high scores in men were ≤96 and ≥127, respectively; they were ≤102 and ≥129, respectively, in women. The MAV ABIM questionnaire included 10 questions about different aspects of professionalism and communication skills. Students were asked to rate each of these aspects on a five-point Likert scale ranging from poor (being the lowest level of competency scored 1) to excellent (being the highest level scored 5). For the convenience of analysis, the five-point Likert scale was re-categorized into three groups: inadequate, good and very good, where the inadequate group combined the fair and poor scores and the very good group combined the very good and excellent scores.

Statistical Analyses

Data were analysed using Statistical Package for Social Sciences (SPSS) version 25. Descriptive statistics including percentages, median, minimum and maximum were used. Comparison and association of quantitative data were performed using Chi-Square and Spearman tests. A P<0.05 was considered statistically significant.

Ethical Consideration

Before conducting the research, permission was obtained from Hasanuddin University Institutional Review Board with the code of UH23020124. Participants were informed about the objectives and purpose of the study. They were invited to sign an informed consent if they agreed to participate in the study. The participant were assured that participation in the study was voluntary, and they could withdraw from the study whenever they wished.

Results

A total of 176 medical students filled out the online questionnaire form; 35.8% of them were men, and 64.2% were women. Their median age was 21 with a range of 19-24 years. The highest percentage of pregnant women visits, both by male and female students, was in the 3-time-visit category (26.7%). There was one female student who visited a pregnant woman once, and there was no male student who visited pregnant women more than twenty-four times (Table 1).

The levels of communication skills that resulted in very good, good, and inadequate were 83.5%, 15.9%, and 0.6%, respectively. While empathy level was categorized as high (9.1%), medium (25%), and low (65.9%). Female students were less likely than male students to rate the medical graduates' communication skills at a very good (87.3% vs. 81,4%), but this was not statistically significant (P=0.840) (Table 2). The empathy level was not seen significantly associated with the frequency of interaction with pregnant women (P=0.205).

While communication skill was seen significantly associated with the frequency of interaction with a pregnant woman (P<0.001, r=0.311). The association between communication skills and empathy level was seen to be significantly associated (P<0.001, r=0.399) (Table 3).

Comparison of empathy level with the interaction frequency of <12 times with >12 times showed a significant difference (P=0.001) (Table 4).

Discussion

The objective of the study was to analyse the level of communication skills and empathy of undergraduate medical students and determine if communication skill correlated with empathy after the training program. This research was conducted in a real-world setting. Medical students participate in the 1000FDL training program, carry out several learning objectives, and help the pregnant women. At the end of the

Table 1: Socio-demographic characteristics of medical students

Characteristic	Male (63)	Female (113)	Total (176)
	N (%)	N (%)	N (%)
Age			
19	0 (0)	1 (0.09)	1 (0.6)
20	5 (7.9)	14 (12.4)	19 (10.8)
21	21 (33.3)	43 (38.1)	64 (36.4)
22	27 (42.9)	43 (38.1)	70 (39.8)
23	10 (15.9)	10 (8.8)	20 (11.4)
24	0 (0)	2 (1.8)	2 (1.1)
Median (Min-Max)	22 (20-23)	21 (19-24)	21 (19-24)
Frequency of interaction			
1	0 (0)	1 (0.9)	1 (0.6)
2	6 (9.5)	16 (14.2)	22 (12.5)
3	16 (25.4)	31 (27.4)	47 (26.7)*
4	11 (17.5)	23 (20.4)	34 (19.3)
6	6 (9.5)	7 (6.2)	13 (7.4)
8	7 (11.1)	14 (12.4)	21 (11.9)
12	6 (9.5)	10 (8.8)	16 (9.1)
16	11 (17.5)	10 (8.8)	21 (11.9)
24	0 (0)	1 (0.9)	1 (0.6)
Median (Min-Max)	4 (2-16)	3 (1-24)	4 (1-24)
Frequency of mentoring			
0	16 (25.4)	41 (36.3)	57 (32.4)
1	18 (28.6)	26 (23)	44 (25)
2	8 (12.7)	28 (24.8)	36 (20.5)
3	12 (19)	14 (12.4)	26 (14.8)
4	2 (3.2)	2 (1.8)	4 (2.3)
5	7 (11.1)	2 (1.8)	9 (5.1)
Median (Min-Max)	1 (0-5)	0 (0-5)	1 (0-5)

Table 2: The capability of empathy and communication based on gender

			Gender		Total	P
			Males	Females		
Empathy	Low	n	44	72	116	0.145[a]
		%	69.8%	63.7%	65.9%	
	Medium	n	11	33	44	
		%	17.5%	29.2%	25.0%	
	High	n	8	8	16	
		%	12.7%	7.1%	9.1%	
Communication Skill	Inadequate	n	1	0	1	0.84[a]
		%	1.6%	0.0%	0.6%	
	Good	n	7	21	28	
		%	11.1%	18.6%	15.9%	
	Very Good	n	55	92	147	
		%	87.3%	81.4%	83.5%	

*a=Chi Square

Table 3: Association between the frequency of interaction with pregnant woman and mentoring with the number of communication skills and empathy, as well as association between communication skill and empathy

	Frequency of interaction with pregnant woman P-value (r-value)	Frequency of mentoring P-value (r-value)	Communication skill and empathy level
Communication skill	0.000 (0.311)	0.173 (0.103)	0.000 (0.399)
Empathy	0.205 (0.096)	0.409 (0.063)	

*Spearman

Table 4: Empathy results of medical students based on the frequency of interaction <12 times and >12 times

Interaction		Empathy			Total	P
		Low	Medium	High		
<12	n	101	41	9	151	<0.001*
	%	66.9	27.2	6.0	100.0	
>12	n	15	3	7	25	
	%	60.0	12.0	28.0	100.0	
Total	n	116	44	16	176	
	%	65.9	25.0	9.0	100.0	

*a= Chi Square

program, each student is assessed through his/her competence in communication skills and empathy by himself/herself. Self-assessment is guiding future learning, provides reassurance, and promotes reflection which helps them to perform appropriately in examinations (20, 21). It has the capacity to elevate students' innate desire to learn and encourage them to establish loftier benchmarks for their own performance (22). Undergraduate medical students had very good communication skills, but a low level of empathy. Effective communication skills are essential for medical students to become a healthcare team in future. To become an effective doctor, medical students need more than just clinical and scientific knowledge; they also need excellent communication skills to establish and maintain a positive doctor-patient relationship (23). Effective communication skills is one of the nine competency areas to be achieved as the graduates acquire national standards of medical education in Indonesia. In general, students of both genders rated their communication skills in all dimensions as very good. There was no significant difference in communication skills between the females and males. This result is in the same line with the findings of other studies (24). In other studies, it was observed that female students assessed their own communication skills more favorably than their male counterparts in all four dimensions (23). Similar to the results of another study, female patients were less likely than male patients to rate the medical graduates' communication skills as very good (35.2% versus 37.1%), but this was not statistically significant (19). This variation in the findings might be explained by the fact that males are easier to communicate with anyone than women in terms of interacting with patients; Other studies have validated this finding by showing that male students tend to have a greater tendency to overestimate their communication skills compared to females (25). Students of both genders rated their empathy level as low. We compared the empathy level based on gender, which showed no significant difference. This finding is similar to those of Prima et Al.'s study, indicating no

significant difference in empathy level based on gender distribution (7). This finding is in contrast with another study result, showing significant gender differences in the students' empathy levels. Initially, there was a decrease in empathy scores, followed by a subsequent increase over time. The average levels of empathy observed in this study are comparatively lower than those reported in similar studies globally. Hence, it is imperative to conduct further research to examine and resolve the underlying factors contributing to this trend (17). While our findings are in agreement with other research demonstrating that female students typically score higher in empathy compared to male students (26, 27). Previous research has not documented gender variations across all four communication aspects outlined above (empathy, structure, verbal expression, and non-verbal expression). However, it is widely acknowledged that gender is a significant factor when evaluating communication skills (28, 29). In Tuebingen, medical students displayed commendable communication skills across four key dimensions: empathy, content structure, verbal expression, and non-verbal expression. Notably, female students outperformed their male counterparts in all dimensions. Given the consistent underperformance of male students in these areas, it is imperative to prioritize the development of gender-specific teaching methods (29).

Communication Skill

Effective doctor-patient communication is an essential aspect of clinical practice. Beyond their expertise in different medical fields, healthcare professionals must also cultivate strong doctor-patient communication skills to establish positive relationships with patients (30). A high score in communication skills is associated with better interactions with pregnant women in the 1000FDL training program. The results regarding communication with patients are similar to those mentioned in a study on self-efficacy showing improved communication skills after training. Training methods used significantly contributed

to the result of the study. The course was structured to guarantee that the acquired skills could be promptly put into practice in clinical settings, aligning with the principles of adult learning. Communication skills could be more effective with experiential learning (6). Program continuity should be regarded as a viable long-term strategy that yields favorable outcomes. According to Ammentorp et al.'s research, it was highlighted that communication abilities persisted for six months following the intervention (13). The efficacy of this training program has been demonstrated in enhancing the performance and self-confidence of professionals in the realm of communication skills. Employing participant-centred strategies, this training initiative plays a pivotal role in advancing the quality of care and promoting patient-centred focus (14). The frequency measure was repeated approximately five weeks after the end of the final workshop (31). Taveira, et al. suggest that communication skill training based on experiential techniques should be used to establish experience and reflect on communication skills (32).

Empathy

Undergraduate medical students at Hasanuddin University are enrolled in this two-year training program; as the results revealed, a higher empathy score is in line with frequent interactions between medical students and patients in the training program. As suggested elsewhere in other studies (26, 28). Implementing supplementary educational programs is likely to contribute to the long-term maintenance of an increased empathetic approach to patient care. Just as with enhancing and sustaining clinical proficiency and procedural expertise, the cultivated sense of empathy should be consistently reinforced throughout medical education to develop into a habitual practice; if left unpracticed, it may gradually diminish (4). Another study showed that the empathy of medical students could be improved through specific training (8).

Association between communication skills with empathy

This study showed a correlation between the level of communication skills of medical students and empathy after enrolment in the training, a higher level of communication skills, and a higher level of empathy. Implementing supplementary educational programs is likely to contribute to the long-term maintenance of an increased empathetic approach to patient care. Just as with enhancing and sustaining clinical proficiency and procedural expertise, the cultivated sense of empathy should

be consistently reinforced throughout medical education to develop into a habitual practice; if left unpracticed, it may gradually diminish (26, 27). Other studies have confirmed the primary research inquiry, demonstrating the effectiveness of a communication skills training program that seeks to enhance empathy in medical students (4). This aligns with earlier research outcomes where the JSE was utilized to evaluate the results of programs designed to enhance empathy among medical students in the United States (4, 10, 28). The key elements of effective communication skills encompass four essential qualities: comfort, acceptance, responsiveness, and empathy. Comfort and acceptance pertain to the physician's capacity to address challenging subjects without conveying discomfort and to embrace the patient's beliefs without demonstrating irritation or intolerance. Responsiveness and empathy involve the ability to respond positively to subtle messages conveyed by the patient. These competencies enable physicians to comprehend the patient's perspective and integrate it into their treatment approach (33). Defining communication as the verbal, non-verbal, and written sharing of information, effective communicators can convey information to others while also being able to receive information from others effectively (34). Higher empathy levels following communication skills training have been observed in various studies (11, 15, 32). Son, et al. reported improvement in the willingness to show empathic behaviour in medical students after communication skills training (16). Physicians who express empathy in patient encounters by acting in a warm, friendly, and reassuring manner seem to be more effective in enhancing patients' satisfaction and recovery (35, 36). In line with our research, other studies have identified a noteworthy connection between verbal and non-verbal communication abilities. This observation can be construed as an indication of consistent communication, which holds significance in fostering interpersonal connections. Nevertheless, as advised by Weaver and colleagues in their research exploring the program's influence on patient satisfaction, it was observed that patients expressed significantly higher levels of satisfaction regarding information, continuity, and care when healthcare professionals had completed the training course (37). These students recognized clinical communication's crucial role as a fundamental skill in medicine and placed significant importance on the Pre-clerkship communication skills training program. As they progressed into their clinical practice years under the guidance of diverse clinicians,

they encountered challenges that tested the competencies they had acquired earlier. These challenges included time constraints, exposure to varying role models, encounters with complex real patients, and immersion in intricate real-world scenarios. In contrast, they also reported gaining valuable clinical experience and expanding their depth of scientific knowledge (32). Additionally, Consistent with similar research, our findings imply that instilling empathy in medical students can be achieved by emphasizing straightforward and easily conveyable concepts like active listening and attentiveness. The instructional approach should zero in on simpler ideas, such as effective listening and educational institutions should capitalize on the substantial impact that clinical supervisors wield over students' empathy development. It may also be advantageous to prioritize specific types of knowledge, particularly clinical facts, throughout medical education negatively affects medical students' empathy (38). Future research should measure the level of communication skills and empathy of medical undergraduate students before and after participating in a training program, so the effect of the training program on students can be clearly explained.

Conclusion

Undergraduate medical students had very good communication skills, but their empathy levels were low. The high level of communication skills obtained shows that communication skills and empathy levels can be acquired through experiential learning, during which medical students will get direct experience in interacting with patients before entering the clinical phase. Students' low empathy levels give information to the faculty to evaluate and improve the course. The empathy level of undergraduate medical students can be improved by increasing the frequency of interaction with patients in experiential learning through training programs. With a high level of empathy for the community, medical students will be able to provide good health services to patients, eventually producing better health outcomes.

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Authors' Contributions

All authors contributed to the discussion, read and approved the manuscript and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated resolved.

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