Empathy unlocked: Enhancing Emotional Intelligence Skills using Communication Workshop for Undergraduates Medical and Dental Students.

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Empathy is considered as a basic skill, if patient care is to be improved. Published literature showed that with academic progress from 1st year to final year, overall, there is a decline in empathy among undergraduates. Emerging evidence suggest that by stimulating emotional intelligence, we can improve empathy more effectively when compared to solely relying upon cognitive method of teaching.[1]

Review of the literature showed that in some way or other empathy may be taught".[2-5] Many ways to teach empathy has been proposed these includes; "improving interpersonal skills, audio or video-taping of encounters with patients, exposure to role model, role playing (aging game), shadowing a patient (patient navigator), hospitalisation experiences, studying literature and the arts, improving narrative skills, theatrical performances, and by discussing cases/clinical situation which has aroused feelings among students known as Balint method". Among this interpersonal commination was addressed more in detail by Davis[4] by developing Interpersonal Reactivity Index (IRI) that identified multidimensional approach towards empathy and also ways how empathy may be improved. Different aspects of empathy and ways how it may be improved were best address by Krznaric et al.[5] He identified 6 habits of highly empathic peoples and ways how these habits allow these empathic peoples to connect them with others very nicely.

When reviews on the subjects were assessed, we found three reviews of worth mentioning.

Empathy is under discussion since long time and there are many published reviews. In 2014, Kelm et al.[6] reviewed 64 studies, having mean sample size of 89 (range 11-439), addressing different intervention to develop empathy. Among these, medical students were study subjects in 36 (56.25%) studies, while for doctors were study subjects in 28 (43.75%) studies. Communication skills training was the most commonly used intervention (n=20, 31%) to develop empathy. The training methods includes were "lectures, videotapes, hand-outs on effective communication and empathy, experiential learning and behaviour-based workshops". Role playing was employed in 11% studies where any of the participants played role of the patient/family member. Six studies (9%) used reflective writing or literature course. "Balint training"[7] was used in 4.5% of all studies.

Another review included 13 studies using different interventions to foster empathy among undergraduate medical students. Communication skills workshops was used in 6 studies. Other intervention included "reflective writing, literature and theatrical experience". This review concluded that by using intervention empathy may be enhanced.[8]

Another review studied 18 different studies. Communication skills workshops as intervention was used in 28% studies and concluded that by using some intervention, we may get remarkable positive change in empathy.[9]

It is therefore obvious from the review of the literature that by teaching communications skills/interpersonal skills in some way or other, is the single most important tool to develop empathy among undergraduates.[10] "The major hurdle while a physician is communicating with a patient is deficiency of appropriately understanding each other, usually due to weakness in communicating techniques. Many clinical scenarios may easily be found where physician fails to recognized the significance of ensuring that patients are well informed.[11]

Process and components of communication skills:

When compared to hearing, listening is the active and major part of the communication. It is as much active that it allows us to digest "information expressed verbally or non-verbally by the patient".[11] On the other hand, it the most widely used but least understood part of the communication process.[12] "In contrast to hearing which is a natural process, hearing is considered highest form of courtesy.[12] Generally, we considered that our lives are spend mainly spend in writing and reading. In fact, these two represent only 25% part, on the other hand talking (35%) and listening (40%) constitute 75% of the commination in our life.[12] Here "listening includes not only listening verbal component but also understanding the "patient's attitude, needs and motives behind the words". The objective of attentive listening is to explore the physical, social, and emotional effects of these issues on the patient's quality of life, thereby facilitating comprehensive care and ensuring satisfaction.[11]

Component of commination includes verbal, non-verbal and para-verbal.[11] The verbal part is limited to the selection of words in a message, while non-verbal part includes "gesture, facial expression, spatial distance and gaze direction". Paraverbal part is also important and it consists of "tone, pitch, pacing and volume of the voice" while communicating with the patient. In contrast to general thinking verbal part is in fact constitute only 10% of the message and 90% of the message depends upon non-verbal and paraverbal component while communicating verbally. It has also been found that patients most of the time do not verbalise their feelings directly, here it is responsibility of the physician to address this issue by using both verbal and non-verbal signals to gain confidence of the patients so

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that he/she may express feelings.[13] A common oversight is the failure to identify an "empathic opportunity" or a "praise opportunity," which can result in the absence of a fitting "empathic response." Physicians can unlock opportunities for empathic engagement by focusing on their patients' illness narratives instead of conducting a "clinical interrogation"[14] Incorporating narrative into clinical interactions can enhance empathy, as it helps the listener establish a more profound connection.[15]

Although accounts 55%, yet the most frequently neglected part is the non-verbal part of the communication.[11] Non-verbal communication includes “appropriate posture, eye contact, assessing the patient’s feelings correctly, responding appropriately with correct facial and body expressions, and saying “in our own words what we think the patient may be feeling, can improve communication and empathy”.[16] In addition, “eye contact, gaze and aversion of gaze, silence, laughter, teary eyes, facial expressions, hand and body movements, trembling, touch, physical distance, leaning forward or backward, sighs, or other signs of distress or discomfort can help in establishing an empathic clinician-patient relationship.[17-19] Body language convey louder message. For example, folded arms represent defensiveness, coldness and rejection. While moderately open arms represent acceptance and warmth.[20] It is also been postulated that clinicians once learned to mirror image patient’s posture can develop empathic engagement more conveniently.[21] Para-verbal communication is art how we say something. This part constitutes 38% of communication process.[19] Well planned communication process has three components; "recognition" of patient's negative emotions, concerns, and inner experiences (cognition), exploration" of these emotions, concerns, and experiences (understanding), and acknowledgement of them to generate a feeling in the patient of being understood”.[21] These three components can easily promote empathy; hence “just nodding or saying: "I understand your concern; let's work on it together" can improve the communication process”.[22]

When medical students experience only 2 brief sessions on effective communication, 81% of these students were found to be well prepared to engage in empathic response while dealing with the patients.[23] The practice of communication skills with self-reflection among medical students led to notable improvements in their overall communication competence and their relationship-building skills, an important element for patient care.[24]

It has been shown that 5 days communication skills workshop, significantly improve empathy as measured by “Jefferson Scale of Empathy”.[25]

Rationale of the Study:

View that empathy may be is widely held true. However, to the best of our knowledge so far, no national study has been conducted to assess effectiveness of large group teaching and communication skill workshop to develop empathy among undergraduates. We at Muhammad Medical College, for last 5 years, conducting communication skill workshop for undergraduates in addition to large group teaching.

Objective:

To assess the effectiveness of teaching methods, we use EAS twice. First before the initiation of teaching and workshop and 2nd after the session is complete. Our aim was to assess whether students has improved empathy after above mentioned teaching methods.

Methodology:

Participants and setting:

undergraduates’ students of MBBS and BDS who has attended the teaching lectures and 2-days workshop with role model on communication skills were considered as potential study participants (N=750). Study conducted at Ibn-e-Sina University between Jan 2022 to Dec 2023. Ethical approval sought from IRB, Ibn-e-Sina University vide isu/erc/2021/3-4 dated Sep 17, 2021.

Sample size calculation:

Sample size calculated using empathy score among medical students as 49.9% (Khalid Saifullah) using sample size calculator OpenEpi of WHO https://www.openepi.com/SampleSize/SSPropor.htm keeping confidence interval 95% confidence and margin of error as 5%. Sample size calculated was 384. Simple random sampling used to select study participants by using online resource; https://www.random.org/integers/. Values entered between 1 and 750 (integer selected are attached as supplementary file).

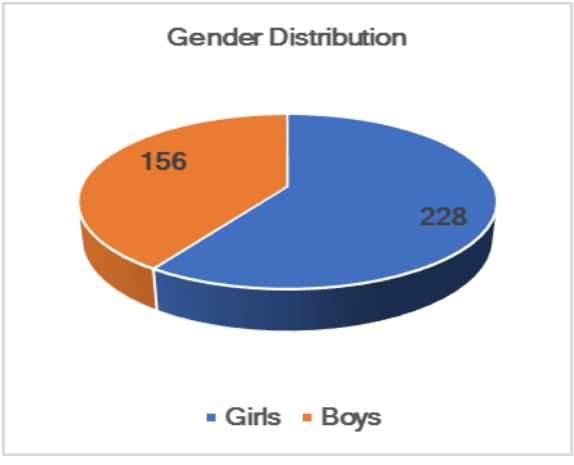
Intervention:

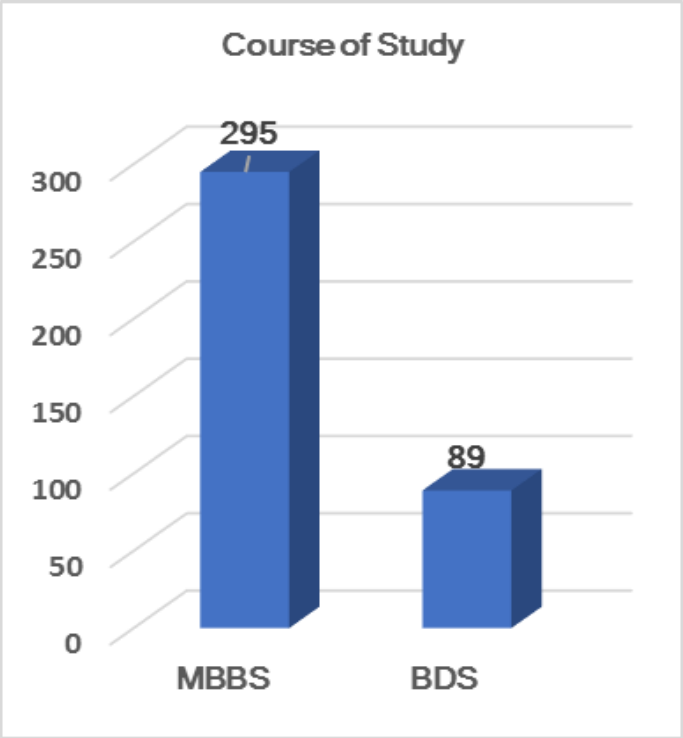
Before enrolling for the study, informed written consent was obtained from all participants with liberty to left the study at any time and reassurance of anonymity. Demographic characteristics collected includes gender, age, year of study. To assess empathy a compact yet comprehensive tool known as Empathy Assessment Scale (EAS) was used. This consists of 13 questions and response is from never to always as ordinal variable. Selected study participants were asked to response questionnaire before attending lectures and 2-days workshop on communication skills. Again, students were asked to response to the questionnaire with latent period of 4 weeks after attending lectures/2-days workshop on communication skills.

Statistical analysis: Statistical analysis was performed using SPSS version. Demographic variables presented as mean SD or percentage. To analyse the ordinal data collected from the questionnaires, we employed the Wilcoxon Signed-Ranks test, run test, Mann-Whitney U Test and two -sample Kolmogorov-Smirnov test with a significance level set at a p value of 0.05.

Results:

Among 384 students, girls (n=228, 59.4%) outnumber boys (156, 40.6). Students from MBBS were 295 while from BDS were 89. Year of study shown in table no 1. Combined final year MBBS and 4th year BDS constitutes large group (37.8%).





Year of study	Frequency	%	Cumulative Percentage
First Year MBBS	10	2.6	2.6
Second Year MBBS	23	6.0	8.6
Third Year MBBS	60	15.6	24.2
Fourth Year MBBS	97	25.3	49.5
Final Year MBBS	105	27.3	76.8
Second Year BDS	22	5.7	82.6
Third Year BDS	27	7.0	89.6
Fourth Year BDS	40	10.4	100
Total	384	100	

Teaching schedule is routinely announced 5 days before the start of the month. At this time target students were asked to fill the ESA proforma (before taking lecture/ workshop). Based on communication skills, large group lectures were delivered to each student twice a week for one week, followed next week by 2 days' workshop on communication skills. After attending both lecture and communication workshop, students were asked to fill the ESA once again with a latent period of 2 weeks.

The results involve several statistical tests assessing the impact of an intervention (workshop) on empathy.

1. Sign Test and Wilcoxon Signed Ranks Test:

Results of both sign test and Wilcoxon Signed Ranks Test shows a positive difference; participants showed significant improvements in empathy after the workshop. For all comparisons, the z-values were significantly negative, which indicates a shift toward increased empathy. First comparison (sadness empathy): z=-13.26, p=0.000. Second comparison (congratulating opponent): z = -14.51, p = 0.000. Third comparison (anger at wrongdoer): z = -11.30, p = 0.000. These p-values of 0.000 indicate highly significant differences between empathy levels before and after the intervention.

2. Run Test:

This test examines the randomness of responses. After the intervention, the shift in empathy responses is clear, but it's unclear how the significance is interpreted from the Z-values provided. First comparison (sadness empathy): Z = 1.716 before and Z = -0.236 after. The change suggests a shift, but the significance (.086 before and .813 after) is unclear. Second comparison (congratulating opponent): Z = -4.92 before and Z = -4.89 after, with both showing p = 0.000, indicating significance. Third comparison (anger at wrongdoer): Z = 0.665 before and Z = 7.293 after, with p = 0.813 before and p = 0.000 after. This indicates significant changes after the workshop.

3. Mann-Whitney U Test:

This test measures differences between two independent groups (before and after intervention). First comparison: Z = -1.793 before, improved to Z = -1.302 after the intervention. The significance values suggest improvement but are not highly significant (p = 0.073 before and p = 0.189 after). Second comparison: Z = -0.381 before, Z = -1.313 after. The p-values (0.703 before and 0.193 after) indicate changes, but they are not statistically significant.

4. Two-sample Kolmogorov-Smirnov Test:

This test examines whether two distributions differ significantly. First comparison: Z = 0.731 before and Z = 0.682 after. The p-values (0.660 before and 0.741 after) do not suggest significance. Second comparison: Z = 0.380 before, Z = 0.487 after. The p-values (0.999 before and 0.972 after) indicate no significant change.

Table No 1: Wilcoxon signed ranks test.

Ranks				
		N	Mean Rank	Sum of Ranks
"Being together with a sad person, I feel sad too - Being together with a sad person, I feel sad too"	Negative Ranks	37[a]	85.88	3177.50
	Positive Ranks	265[b]	160.66	42575.50
	Ties	82[c]		
	Total	384		
"I sincerely congratulate my successful opponent - I sincerely congratulate my successful opponent"	Negative Ranks	19[d]	111.66	2121.50
	Positive Ranks	301[e]	163.58	49238.50
	Ties	64[f]		
	Total	384		
"I get angry at the wrongdoer character in a story - I get angry at the wrongdoer character in a story	Negative Ranks	48[g]	106.75	5124.00
	Positive Ranks	237[h]	150.34	35631.00
	Ties	99[i]		
	Total	384		
a." Being together with a sad person, I feel sad too < Being together with a sad person, I feel sad too"				
b. "Being together with a sad person, I feel sad too > Being together with a sad person, I feel sad too"				
c." Being together with a sad person, I feel sad too = Being together with a sad person, I feel sad too"				
d. "I sincerely congratulate my successful opponent < I sincerely congratulate my successful opponent"				
e. "I sincerely congratulate my successful opponent > I sincerely congratulate my successful opponent"				
f. "I sincerely congratulate my successful opponent = I sincerely congratulate my successful opponent"				
g. "I get angry at the wrongdoer character in a story < I get angry at the wrongdoer character in a story"				
h. "I get angry at the wrongdoer character in a story > I get angry at the wrongdoer character in a story"				
i. "I get angry at the wrongdoer character in a story = I get angry at the wrongdoer character in a story"				

Test Statistic a,c					
			"Being together with a sad person, I feel sad too - Being together with a sad person, I feel sad too"	"I sincerely congratulate my successful opponent - I sincerely congratulate my successful opponent"	"I get angry at the wrongdoer character in a story - I get angry at the wrongdoer character in a story"
Z			-13.261[b]	-14.517[b]	-11.300[b]
Asymp. Sig. (2-tailed)			.000	.000	.000
Monte Carlo Sig. (2-tailed)	Sig.		.000	.000	.000
	95% Confidence Interval	Lower Bound	.000	.000	.000
		Upper Bound	.000	.000	.000
Monte Carlo Sig. (1-tailed)	Sig.		.000	.000	.000
	95% Confidence Interval	Lower Bound	.000	.000	.000
		Upper Bound	.000	.000	.000
a. Wilcoxon Signed Ranks Test					
b. Based on negative ranks.					
c. Based on 10000 sampled tables with starting seed 2000000.					

Table No 2: Sign Test .

Frequencies		N
"Being together with a sad person, I feel sad too - Being together with a sad person, I feel sad too"	Negative Differences [a,d,g]	37
	Positive Differences [b,e,h]	265
	Ties [c,f,i]	82
	Total	384
"I sincerely congratulate my successful opponent - I sincerely congratulate my successful opponent"	Negative Differences [a,d,g]	19
	Positive Differences [b,e,h]	301
	Ties [c,f,i]	64
	Total	384
"I get angry at the wrongdoer character in a story - I get angry at the wrongdoer character in a story"	Negative Differences [a,d,g]	48
	Positive Differences [b,e,h]	237
	Ties [c,f,i]	99
	Total	384

a. “Being together with a sad person, I feel sad too < Being together with a sad person, I feel sad too”
b. Being together with a sad person, I feel sad too > Being together with a sad person, I feel sad too
c. “Being together with a sad person, I feel sad too = Being together with a sad person, I feel sad too”
d. “I sincerely congratulate my successful opponent < I sincerely congratulate my successful opponent”
e. “I sincerely congratulate my successful opponent > I sincerely congratulate my successful opponent”
f. “I sincerely congratulate my successful opponent = I sincerely congratulate my successful opponent”
g. “I get angry at the wrongdoer character in a story < I get angry at the wrongdoer character in a story”
h. “I get angry at the wrongdoer character in a story > I get angry at the wrongdoer character in a story”
i. “I get angry at the wrongdoer character in a story = I get angry at the wrongdoer character in a story”

Test Statistics [a,b]

			“Being together with a sad person, I feel sad too - Being together with a sad person, I feel sad too”	“I sincerely congratulate my successful opponent - I sincerely congratulate my successful opponent”	“I get angry at the wrongdoer character in a story - I get angry at the wrongdoer character in a story”
Z			-13.062	-15.708	-11.136
Asymp. Sig. (2-tailed)			.000	.000	.000
“Monte Carlo” Sig. (2-tailed)	Sig.		.000	.000	.000
	95% Confidence Interval	Lower Bound	.000	.000	.000
		Upper Bound	.000	.000	.000
“Monte Carlo” Sig. (1-tailed)	Sig.		.000	.000	.000
	95% Confidence Interval	Lower Bound	.000	.000	.000
		Upper Bound	.000	.000	.000

a. Sign Test

b. Based on 10000 sampled tables with starting seed 2000000.

Table No 3: Runs Test.

	“Being together with a sad person, I feel sad too”	“I sincerely congratulate my successful opponent”	“I get angry at the wrongdoer character in a story”	“Being together with a sad person, I feel sad too”	“I sincerely congratulate my successful opponent”	“I get angry at the wrongdoer character in a story”
Test Value [a]	3	3	3	4.00	4.00	4.00
Cases < Test Value	91	137	86	66	58	104
Cases >= Test Value	293	247	298	318	326	280
Total Cases	384	384	384	384	384	384
Number of Runs	152	133	139	109	75	209
Z	1.716	-4.927	.665	-.236	-4.890	7.293
Asymp. Sig. (2-tailed)	.086	.000	.506	.813	.000	.000

a. Median

Table No 4: Mann Whitney test.

Ranks				
	gender	N	Mean Rank	Sum of Ranks
"Being together with a sad person, I feel sad too"	Boy	156	180.90	28220.00
	Girl	228	200.44	45700.00
	Total	384		
"I sincerely congratulate my successful opponent"	Boy	156	190.08	29652.50
	Girl	228	194.16	44267.50
	Total	384		
"Being together with a sad person, I feel sad too"	Boy	156	184.20	28735.00
	Girl	228	198.18	45185.00
	Total	384		
"I sincerely congratulate my successful opponent"	Boy	156	200.49	31276.00
	Girl	228	187.04	42644.00
	Total	384		
"I get angry at the wrong-doer character in a story"	Boy	156	193.10	30123.00
	Girl	228	192.09	43797.00
	Total	384		

Test Statistics					
	"Being together with a sad person, I feel sad too"	"I sincerely congratulate my successful opponent"	"Being together with a sad person, I feel sad too"	"I sincerely congratulate my successful opponent"	"I get angry at the wrongdoer character in a story"
Mann-Whitney U	15974.000	17406.500	16489.000	16538.000	17691.000
Wilcoxon W	28220.000	29652.500	28735.000	42644.000	43797.000
Z	-1.793	-.381	-1.313	-1.302	-.094
Asymp. Sig. (2-tailed)	.073	.703	.189	.193	.925
a. Grouping Variable: gender					

Table No 5: Two-sample Kolmogorov Smirnov test.

Test Statistics						
		"Being together with a sad person, I feel sad too"	"I sincerely congratulate my successful opponent"	"Being together with a sad person, I feel sad too"	"I sincerely congratulate my successful opponent"	"I get angry at the wrong-doer character in a story"
Most Extreme Differences	Absolute	.076	.039	.071	.051	.004
	Positive	.000	.009	.000	.051	.004
	Negative	-.076	-.039	-.071	.000	.000
Kolmogorov-Smirnov Z		.731	.380	.682	.487	.042
Asymp. Sig. (2-tailed)		.660	.999	.741	.972	1.000
a. Grouping Variable: gender						

Summary: The Sign Test and Wilcoxon Signed Ranks Test show clear and statistically significant improvements in empathy after the communication skill workshop. The Run test shows mixed results; significance was found for the second and third comparisons but not for the first. The Mann-Whitney U Test and Kolmogorov-Smirnov Test show some positive changes but mostly non-significant differences.

Discussion:

To ensure effective patient care, it is imperative for healthcare professionals to exhibit empathy. This research indicates that a crucial skill necessary for fostering empathy can be enhanced through communication skills workshops. Both medical and dental students have shown notable advancements in their empathetic abilities following participation in these workshops, thereby confirming that empathy can indeed be cultivated. Incorporating such workshops into medical education is likely to strengthen the provider-patient relationship, potentially resulting in improved outcomes. Significant increase in empathy was observed on an Empathy Assessment Scale (EAS) following interactive 2 day-long communication skills workshop of active learning and role playing. Although our results are consistent with previous research, they reinforce the idea that empathy can be learned and developed at a young stage of medical education. Contrary to prior literature that may include smaller numbers of subjects or shorter intervention lengths[1], our study is unique in its size (N = 384 medical and dental students across several years) which allows for more generalizable conclusions about change over time. This continued improvement in all modules (sad, happy and anger) of EAS shows the need that such workshops can be casted into medical curriculum. Improving empathy also facilitates better clinician-patient relationships and clinical outcomes; this is an important lesson for medical professionals. Targeted interventions, such as workshops focused on communication skills, may indeed appeal to certain training physicians.[5] The findings underscore the necessity for continuous investment in the emotional intelligence training of healthcare professionals, emphasizing the importance of both technical and empathetic skills

A similar study conducted by Khajeh et al[24] also found that resident's self – perceived empathetic behaviour significantly improved after the 8 hours workshop in empathetic communication skill. However current study is unique as it focuses on undergraduate medical students involving MBBS and BDS students from first year to final year of their training, hence building a concept of affective domain on empathetic behaviour from the year of starting medical training till the final year of graduation.

Similar study was conducted at university of Manchester medical school UK by GM[25] in 2023 on teaching empathy to medical students in which only eight participants were included, comparing to current study with 384 participants including 1st to final year MBBS and BDS having variable clinical experiences. In GM study 1-hour focused group discussion was conducted to explore students experience and perspective of each experience moderated by GM. While in our study students had attended a 2-day workshop and lectures with a role model on communication skills. Our study was conducted over a period of 2 years hence our study has a greater number of participants from different academic year and different age groups and more extensive time; results may be generalized. For current EAS was recorded both before and after attending the workshop on communication skills and again after a latent period of 4 weeks after attending workshop on communication skills. While in GM study Author derive descriptive theme after in depth coding and analysing focused group discussion (more subjective than our study). Hence our study derive conclusion on scientifically validated scales on assessment of empathy scores.

The first study conducted at the national level was a cross sectional study on 'Empathy among medical students "at Lahore Medical and Dental College Pakistan by Riaz S[26] which was of 6-month duration study in which a questionnaire was filled by 569 medical students (Toronto empathy score/ TEQ) to determine empathy among medical students. In this study association of empathy with social demographic variables was performed and they found a significant difference in empathy score between gender, place of residence, year of study with mean empathy scores. Empathy among medical students is considered essential for effective doctor patient relationship. Our study showed that educational intervention in terms of introducing communication skill workshops from first year first year of graduation to final year of graduation has significantly improved the empathy score of the students.

The first meta-analysis performed on empathy among medical students by Konstantinos C. Fragkos,[27] indicate that undergraduate empathy educational interventions significantly increase student empathy. This was the first systematic review and meta-analysis of randomized controlled studies of clinical empathy educational interventions amongst medical students. The meta-analysis shows that educational interventions had a significant moderate positive effect on increasing empathy,

Conclusion:

The concept that empathy cannot be teach is currently no longer hold true. By enhancing emotional intelligence using appropriate means empathy can be leaned by undergraduates.

Conflict of interest:

Authors declares no conflict of interest.

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