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Abstract

Background: There is an increasing focus on communication between doctors and patients, and recent systematic reviews argue that teaching doctors necessary communication skills benefits patients at large. Moreover, patients report the lack of communication as their second-leading complaint. Motivational interviewing has proved to be person-centered in healthcare in communication between patients and doctors.

Aim: To examine how being inspired by motivational interviewing theory and using the Calgary Cambridge guide could improve medical students' communication skills at the master level using a mixed-method approach.

Methods: A cohort study with an exposed cohort compared to a non-exposed historical cohort.

The participants were students in their sixth year of medical training from the Clinical Department of the University of Southern Denmark.

The non-exposed cohort received laboratory training based on the Calgary Cambridge Guide. After this training, they participated in a two-month clinical "stay" and recorded two digital audio files of a real conversation with a patient about delivering information. The exposed cohort followed the same schedule but received additional special training in MI. All audio files were analyzed using the Motivational Interviewing Integrity method (MITI).

An additional focus group interview was conducted to support the results.

Results: Medical students demonstrated improvements in several essential areas of their communication style favorable to the MI approach, particularly empathy, and person-centeredness. The focus group interviews supported these findings.

Introduction and background

There is an increasing focus on communication between doctors and patients. Two recent systematic reviews argue that it benefits the patients that doctors receive the necessary communication skills. Moreover, the lack of communication reports is the second-largest complaint from patients [1-4]. From a medical point-of-view, the discussion is that low communication competencies may lead to patients referring to their symptoms but not getting into details. Lack of communication may lead to the doctor underestimating the illness level, affecting the patient's feelings [5]. Doctors must have excellent communication skills; therefore, efficient training and the ability to measure the effect of such efforts have been called for [6].

Patients prefer to be met by healthcare professionals, including doctors, with respect, recognition, and open

conversation [3,7,8]. Doctors must move from a paternalistic communication practice to more emphatic, collaborative behavior and be aware that patients' experiences are essential in the treatment and care [8]. Further, doctors must combine all relevant information to get suggestions for clinical tests and treatment, give information effectively, motivate the patient, and make them feel as safe as possible [3,5]. Universities worldwide provide communication training to medical students; method descriptions on evidence-based courses may be available [9]. Such can be based on the Calgary Cambridge Guide (CCG), which presents an overarching platform for evidence-based medical communication [10,11]. The CCG guide helps the doctor track the patient's conversation. Other similar concepts are available, including training in showing the patients' compassion and respect and using tools to aid communication and handle the clinical setting. An example could be accommodating the patient's disorders [12-14] or delivering a clear message [15].

Motivational interviewing is helpful in healthcare for communicating complex messages, such as motivation for behavioral change in patients with various health problems, such as substance abuse, obesity, smoking, and diabetes. It can be used in shared decision-making with the patient and to support medical interventions [16-19]. MI is recommended in the psychiatric clinic for its gentle approach to vulnerable patients in their treatment and care [20].

It has been proved that more randomized controlled trials have presented the Motivational Interviewing (MI) approach, which has made it possible to develop a respectful, supportive, acknowledging, and professional relationship with the patients [17-19]. Motivational Interviewing [21] is a patient-centered, directive counseling approach that strives to develop the patient's intrinsic motivation to change. The approach targeted behaviors through simultaneous strategic evocation and strengthening of change talk (i.e., self-statements that support change), skillful handling, and reducing patient resistance to change. The approach emphasizes reflective listening, open questioning, collaboration, support of patients' autonomy and self-efficacy, and appropriate elicitation of change talk. These characteristics embody the spirit or style in which the professional communicator interacts with their patients as they help them develop their awareness and eventually commit to behavior change. The effect of MI is measured by coding and counting (MITI) [22].

Although the Calgary Cambridge Guide is a recognized and evidence-based theory used in communication training at medical schools [23], the CCG does not guide the factual communication technique, dialogue, or the first encounter. It also does not prescribe a way to measure an immediate effect. The MI technique and the CCG supplement each other and present an evidence-based intervention that can be measured [21].

Aim

To examine how being inspired by motivational interviewing theory and using the Calgary Cambridge guide could improve medical students' communication skills at the master level using a mixed-method approach.

Methods

A cohort study was conducted with an exposed cohort compared to a non-exposed historical cohort.

Further, as a closure of the study, all participant groups in the exposed cohort participated in a semi-structured focus group interview for each group (on average, with 5-6 students in each) to explore their experience of participating in the study.

The students were recruited by their lecturers in class,

and participants for the focus group interview were recruited through the medical student's Facebook group.

Each student uploaded the audio files in both the historical and the exposed groups to a secure system at the University, to which the researcher CLL had access only. The MITI coding was conducted in the system, and the data was stored securely according to the data agreement for the University of Southern Denmark.

The focus group interviews were uploaded securely in the secure system at the University of Southern Denmark database and transcribed using NVivo and by the researcher CLL only.

Participants

The participants were students in the 6th year of medical training at The University of Southern Denmark. The medical students had received their first mandatory medical communication training before this study in their third year of medical school. In our research, the students participated in their compulsory second communication training course. Most students were Danish who had completed their university bachelor's degree in medicine after the third year. There were also students of Norwegian and Swedish origins who had completed their bachelor's degree at another European medical school, e.g., in Poland, Hungary, or Czechoslovakia.

A total of 190 students participated in the study - 94 ($n = 94$) students in the non-exposed cohort and 100 ($n = 100$) students in the exposed cohort. In the non-exposed group, 47 ($n = 47$) female and 43 ($n = 43$) male students, aged between 21 and 36, were present. In the exposed group, 53 ($n = 53$) female and 47 ($n = 47$) male students, aged between 22 and 33, were present. All the students spoke and understood Danish.

Inclusion and exclusion criteria for the MI training and audio files

The inclusion criteria were that the students had completed their bachelor's degree in medicine at a university where they had received basic theory or training in patient-centered communication. They also had to be able to understand and speak Danish.

The exclusion criteria were students who had enrolled in medical training at the bachelor level but had not received communication training and had not mastered the Danish language.

The inclusion criteria for the focus group interviews were students who had participated in the MI training and submission of audio files.

Standard training

Traditionally, medical students receive training on

communication skills with patients, e.g., to forward diagnoses and treatments related to their medical illnesses. Further, medical students receive communication skills training on the ward with colleagues.

The CCG guides this training and focuses on developing patient-centered interviewing and promoting or fostering skills. This guide by Silverman, Kurtz, and Draper [23] was designed to align competent doctor-patient communication skills and provide an evidence-based structure for their analysis and teaching. The CCG guide is widely used in communication training programs at the undergraduate and postgraduate levels [23]. Moreover, the students are trained to elicit patients' views of their problems and concerns and encourage patients to participate in medical decision-making. The training sessions consisted of 5 x 3 hours, where the first session was theoretical, catching up on medical communication. A didactic approach was used. The following four sessions involved a professional actor cast to play patients in different situations. During a session, four students play the role of a doctor. Afterward, the role play is evaluated by the student playing the doctor, the other students, the actor, and finally, the trainer has the closing remarks. To create a relaxed atmosphere where the students feel safe, the groups never exceed 10 participants.

After the initial five communication lectures, our students' cohorts did clinical studies on the ward, including training in communicating with patients, relatives, and other healthcare professionals. Before the closure of their clinical period, they were to digital record two interviews with patients, containing at least 10 minutes of communication where the medical student gave the patient information about the patient's situation. Further, they had to write a page reflecting on good and bad communication experienced in the clinic. The audio files were uploaded to a secure university server where the first author (CLL) could access them. Another 3x3 hours were scheduled to listen to each student's recording, give feedback, and follow up on experiences from the clinic.

Exposed training

In addition to the CCG set-up in the historical cohort, we incorporated communication training using the MI approach developed by Rollnick et al. [21]. The training course was 5 X 3 hours. A deductive pedagogic approach was used [24], and a brief motivational interview guide [25], which makes the MI appropriate for use in healthcare settings by doctors and other healthcare professionals, was used [26]. In this approach, a conversation takes between 5 and 15 minutes to carry out. It involves establishing rapport between the doctor and patient using open questions, reflections, and summaries to understand their health concerns, relate to behavioral difficulties, and elicit how to help the patient. First, we presented and trained to ask open questions (O), affirming (A), reflections (R), and summarising (S) (OARS) (Tables 1-3).

Open Questions (Open-Ended Questions): A question that invites a person to think a bit before responding	1. "So, one thing you hope will be different a year from now is that you will be free of pain." 2. "When do you feel most in pain."
Affirming: To recognize and acknowledge that which is good; to support and encourage.	1. "Look at this you did a good job writing down your Blood Pressure the past week" 2. "I noticed your great record this week."
Reflective Listening: Designed to clarify your understanding and convey this understanding.	1. "It sounds like you have suffered a lot." 2. "It sounds like this does not feel right for you."
Summarizing: Reflections that pull together Several things that a person has told you.	1. "So, one thing you hope will be different a year from now is your knee functioning better." 2. "So here is what you told me so far..."

Asking for permission
Being appreciative (say thank you)
Using more open questions than closed
Using reflections
Summarising
Use pauses
Listening

The medical student: Is it ok that I ask you about your current weight? (Asking for permission)
Patient: Yes, it is 83 kilos
The medical student: Thank you for sharing this with me.
The patient: I feel it is difficult and time-consuming to prepare vegetables!
The medical student: So, in reality, being in the kitchen preparing food is not your favorite activity? (Reflective listening)
The patient: Yes, exactly, that is how I feel.

We intensified the approach by focusing on 1) the start of the conversation, 2) asking permission when asking delicate topics, 3) thanking the patient for sharing private information, and 4) pausing to let the patient speak. The students needed to be taught the difference between kinds of reflection due to the duration of the training.

Measurements, coding, synthesis and analysis

In the analytical work with the sound files, we were inspired by Motivational Interviewing Treatment Integrity coding (MITI) [22]. MITI is a behavioral coding that indicates how well or poorly an individual uses motivational interviewing. The MITI coding should have been done over a sound file of 20 minutes, but we adjusted and used it on the 10-minute sound files. Our MITI-inspired coding registered MI behavior: the number of open questions versus closed questions, the ratio of summarising and using reflections, pauses, and encouraging 'mums' and 'hers'. In the coding, we did not differ between simple and complex reflections.

Using a global rating score [22], the recommended scores for achievement of proficiency (expected after the training) and competency (expected of the students who are more familiar with using MI after training) are 3.5 and 4.0, respectively [22]. Global scores are marked on a five-point Likert Scale [27], with the coder assuming a beginning score of '3' and deviating up or down [22].

Statistical analysis

The data were tabulated and analyzed using the Wilcoxon signed rank test in STATA Statistical Software (Stata Corp., College Station, TX, USA). This was applied to compare pre-test and post-test scores from the MITI coding. Here, a p-value <0.05 was considered significant.

Thematic analysis

For the exposed group four Focus group interviews were conducted in the sixth year of medical school after the training, recording of audio files, and MITI coding. All interviews were transcribed verbatim and analyzed inspired by Braun and Clarke [28]. This part of the project is described in an additional article.

Results

The following results present the data from the MITI coding of the sound files. Hereafter, we present short excerpts from the focus group interviews, the full versions of which will be presented in an additional paper.

We had 94 ($n = 94$) participants in the historical cohort from 1.1.2015 to 31.12.2017 and 100 ($n = 100$) participants in the exposed cohort from 1.1 2017 to 31.12.2019. All sound files had a duration of 10-12 minutes. According to the MITI scores, the historical group reached 2.9 on the Likert Scale, whereas the exposed group reached 4.0. This proves that the historical group is below proficiency level for communicating according to the MITI coding, which is 3.5. According to the MITI, the historical group is reaching a competency level of 4.0. The results demonstrated that the exposed cohort had a higher rating in favor of using motivational communication skills in their communication skills than the historical group. On average, the students in the exposed group had more open questions than closed and used reflective listening language; they summarised, asked for permission, thanked the patient for sharing information, and listened using pauses to let the patient speak or think. In the historical group, the students were between 2.5 and 3.0 at the MITI coding on MI spirit. The low scores were primarily due to the need to build relationships with the patients through open questions, reflections, and summarising. Overall, the MI spirit did not reach the proficiency level of the historical group. The exposed group had a higher frequency of using the MI theory, e.g. making encouraging sounds or words like hmmm, I see, yes, or, I understand during the communication with patients.

This became evident during the recording when they were listening. According to the MITI coding, this means that the MI spirit has improved, and the students are communicating more emphatically with their patients and at a competency level (Table 4).

Results from the focus group interviews

Combining our study with qualitative research added another dimension to our study.

Generally, all medical students interviewed in the focus groups from the group conveyed that motivational interviewing helped them become more structured in their communication skills, using the Calgary Cambridge guide as a frame.

However, the students anticipated challenges. The interviews' analysis identified one overall theme and four sub-themes.

Overall theme: Motivational interviewing gives you a tool to communicate with patients

All the medical students ($n = 4$ groups, 28 students) interviewed stated that MI is a valuable and straightforward technique that enables patient-centered communication.

During the interviews, four sub-themes emerged, and all sub-themes were chosen according to how the students explained their experiences with their communication using MI: 1) Training using the MI in the class is necessary 2) Using the MI to open the conversation, establish rapport and summarise what is said 3) A need for follow up in the clinic with feedback from tutors on communication with patients in situ 4) Supervision in class and feedback from lecturer and peers.

The following is an excerpt of quotations from the focus group interviews.

A male student in the exposed group said:

"I found out that starting the conversation with an open question and letting the patient speak made my conversation much more structured while also using the CCG. Of course, I used a closed question, but I knew when to do it."

They found that following the steps and using the Calgary Cambridge Guide helped them become more confident communicating with the patients.

Table 4: A comparison between the historical and exposed group.

	Competency	MI spirit	OpenQ	ClosedQ	Summarising	Affirming	Reflections	Listening	Pauses
Historical Group ($n = 94$)	2,9	7%	27%	43%	13%	12%	9%	21%	19%
Exposed Group ($n = 100$)	4,0	26%	41%	27%	64%	59%	48%	39%	33%

“Asking for permission is a great tool to gain the patient’s trust. It makes such a difference how they accept me as a medical student and not a qualified doctor.”

In particular, summarising both the doctor and the patient made it easier to follow a plan during the encounter with the patient.

A female student expressed:

“Summarising gives both the patient and me a chance to be on track. Where are we, and what was said?”.

A female student followed:

“I needed feedback on how I used my communication skills in the clinic. We received feedback from the class and the lecturer when training with actors. In the clinic, you get uncertain if you do it correctly.”

Discussion

Our study compared an exposed group of medical students taught communication inspired by motivational interviewing (MI) with a historical group who received regular communication training. In general, the medical students in our exposed cohort communicated to a higher degree with a patient-centered approach [11,25,29]. The results of the scores after the MITI coding point towards communication skills with empathetic communication skills empathy and to a more significant extent than the historical cohort. This is an important finding, as empathy amongst healthcare professionals are core component of healthcare [21,25,30].

Communication skills are essential for training emphatic doctors. Hence, the question is not whether we should build communication training in medical schools but how much training is needed and what the training should contain [31].

We found that the medical students developed what we refer to as the MI spirit [25] by implementing an MI-inspired approach [25]. This is understood that the students, in cooperation with the patient, use the CCG guide; they use more open questions than closed ones and use reflections frequently during the communication instead of asking closed questions to the patient. Patients in general find the doctor more empathetic when using open questions and reflections during the communication [25]. The MI spirit rate captures the degree to which the medical students support the patient’s autonomy, evoke the patients for change, and support a collaborative communication environment [21,22].

In our exposed cohort, we trained the students in the Calgary Cambridge Guide (CCG) which is the framework where motivational interviewing is the communication technique [11]. Thus we cannot see how the (CCG) was

used from the scores the focus group interviews indicated that the students felt they understood how to use the CCG and the MI communication technique together and thus the communication became more structured with a proper start and closure of the communication with the patient. A scoping review by Lei et al. supports our findings [32].

In the study, we further found that the present training course, consisting of 3 hours of theory followed by 4 x 3 hours of skills communication training with actors, enables the students to acquire skills in patient communication at the proficiency level [22].

Implementing evidence-based curricula with the content of a didactic approach with theory on communication techniques, frequently incorporated skills training and exercises facilitated by lecturers who are training in communication skills themselves and have clinical experience will heighten the level of communication for medical students [32]. Further, an educational approach where feedback is part of the training. Peer feedback from the lecturer may enhance communication skills encompassing empathy and compassion [33]. In the focus group, receiving feedback was mentioned both in the skills training and in the students’ clinic at the hospital.

However, several MI assessment points must be present to achieve complete empathetic communication skills measured with an MI approach. As a reference point, the Cambridge Calgary Guide is the communication frame, allowing the student to concentrate on the communication itself. Using the MITI coding system, the validity between the highest scores was autonomy and empathy [22]. A recent review by Kaltman and Tankersley emphasizes that training must be planned to achieve this [34].

Using the MI technique (OARS, Table 1), the student builds a rapport with the patient earlier during the communication, thus creating an opportunity to forward the information to the patient [25]. When the students use OARS, they communicate with empathy and compassion, which correlates with increased patient well-being and quality of life [33].

The healthcare system in Western countries aims to have short hospital stays and accelerated discharge from the hospital, continuing the care and treatment in the patient’s own homes [35]. It is essential that the communication and guidance about the patient’s discharge and the further plan are clear and concise and that the patient understands the plan and feels safe [36,37]. Our study showed that the students could establish rapport, build trust with patients, and experiment with face-to-face medical communication with patients and relatives. In general, the students in the exposed group encompassed the theory of MI. In particular, they demonstrated skills in using reflective listening by

reflecting on the patients' words and thus enabled the patient to feel "that the doctor knows how I feel." Others before us have found that communication inspired by MI can enhance the communication between healthcare persons and patients [15].

The findings from the focus group interviews pointed out that the students in the exposed group felt motivated to use the MI approach in the clinic and found the CCG more manageable. Keifenheim et al. support this and investigate the approach of sixth-semester medical students to MI. The results showed that basic MI skills can be taught successfully [38].

Hospitals have implemented mandatory communication courses for healthcare professionals, using the Cambridge Calgary guide and patient-centered communication [39,40]. However, the training has not been evaluated as the MITI scoring in this article.

Empathy skills can be measured in coding systems [22,41], making this approach more valid for teaching and measuring them [22,41].

When comparing the results from the MITI coding and the results from the focus group interviews we conclude that simple communication techniques may change the students' awareness of their position and the patient's perspective [10,32]. This awareness may lead to a higher intent for being curious with empathetic compassionate person-centered communication in their treatment and care [42]. The medical students have limited clinical experience, but this immediate training enables the students to achieve basic communication skills and a base to continue communication training after graduating. In Southern Denmark, mandatory communication courses for intern doctors are held during the first two years of practice, enabling the students to continue their communication skills [43,44].

Limitations

Our study has limitations. As this is a large cohort group, some students still need to complete the training course, which did not count in the overall assessment.

The sound files were 10 minutes, not a full 20-minute recording as recommended for the MITI coding. This may have to be considered when comparing this study to other settings. However, it has been demonstrated that presenting communication skills over a short period of five minutes is sufficient for evaluating communication skills [41].

Further, we did not follow the complete MITI coding manual, which required that the students be taught how to use complex reflections. In MI training, complex reflection requires mastering MI communication skills at a high level and

extended training in communicating in clinical practice with patients. This did not comply with our students in the sixth year of medical school. Adding complex reflection to post-graduate training for doctors may be relevant as the doctors here often work with complex patient cases [16]. Further, we did not note if the participants were male or female, which may have been interesting to evaluate if there is a gender difference in learning and using MI.

Our study included medical students at the University of Southern Denmark, and our findings may not apply to other medical schools in Denmark or faculties abroad.

Conclusion and further directions

Despite these limitations, the main strengths are a large cohort study. We used valid and reliable coding techniques by qualified coders and achieved an acceptable overall level of inter-rater reliability. Further, a qualitative approach was used to support the quantitative findings.

This study indicates that teaching practical and theoretical knowledge of MI as part of a mandatory training course in the 6th semester improved communication skills in medical students with minimal clinical experience after 15 hours of MI-inspired training. However, it is noted that by exploring the overall experience in focus group interviews, the students did question how they could be competent using the MI training in their clinic without follow-up, feedback, and mentoring. Further research should assess the long-term benefits of this training and its impact on the patient experience and doctor-patient communication. Implementing blended learning modules such as short videos and podcasts to support in-class lectures in MI may also improve the learning style of medical students.

Ethics

The local ethics committee approved the study (No. S-20222000 – 103). All participants gave informed consent to participate.

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Contributor CLL was the PI and guarantor of this project, wrote the protocol, conducted all the interviews, and analyzed and was the PI throughout the research project and the article submission. MT participated in the analysis and writing of this article.

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