ORIGINAL RESEARCH

Psychological skills training using simulated practice for brief therapeutic interactions

Andrew Soundy[1], Vikram Mohan[2], Jonathan Room[3],
Josephine Morris[4], Louise Fazakarley[2], Robyn Stiger[3]

[1]*School of Sport, Exercise and Rehabilitation Sciences, University of Birmingham, Birmingham, UK*
[2]*Department of Physiotherapy, University of Bournemouth, Bournemouth, UK*
[3]*Department of Sport, Health Sciences and Social Work, Oxford Brookes University, Oxford, UK*
[4]*Faculty of Health and Wellbeing, University of Winchester, Winchester, UK*

Corresponding author: Andrew Soundy, A.A.Soundy@bham.ac.uk

ABSTRACT

Introduction:
Physiotherapy students lack confidence when applying psychological strategies as part of interaction and assessment. Further research is required to establish consistent approaches to training in prequalifying programmes. The purpose of this study was (a) to document experiences of student physiotherapist to a Stroke-based simulation when applying the model of emotions, adaptation and hope (MEAH) tool, (b) consider if there are different experiences when the tool is applied online versus in-person and (c) provide recommendations for the use and application of the MEAH tool and training for future research and clinical practice.

Methods:
An interpretative hermeneutic phenomenological study was undertaken. Two settings were selected in-person and online via zoom©. E-training focussing on the principles of the MEAH was delivered before a 10-minute simulation was undertaken by each student (online or in person). Semi-structured interview examining the experiences of the e-training were analysed using a reflexive thematic analysis. A conversation analysis was applied to 24 recorded in-person conversations.

Results:
Twenty-five university final year physiotherapy students completed the in-person study and 13 second year physiotherapy student completed the online study. Thematic analysis: Four major themes across both groups were identified: (a) the content and value of the e-training, (b) the experience and perception of the simulation, (c) the application of the MEAH screening tool and (d) future training needs. Conversational analysis: Three types of interaction were identified. Type 1 interactions (15/24, 62.5%) followed the form in a very exacting way. Type 2 interactions (3/24, 12.5%) used the tool as an aid to their conversation. Type 3 interactions (6/24, 25%) deviated from the main focus of the tool. Factors which influenced the interaction were identified.

Conclusions:
The current study demonstrated that the model of emotions, adaptation and hope can be used to enhance a brief therapeutic interaction for physiotherapy students. Further research and policy recommendations are provided.

What this study adds
- Physiotherapy students can be trained in under 2 hours to deliver a brief, supportive and empowering therapeutic interaction via simulated practice.
- A simulation experience based on a stroke scenario interaction using the MEAH tool provides a highly valuable experience for physiotherapy students.
- Student physiotherapists experiencing the online stroke-based simulation task appeared to experience less challenges compared to their in-person counterparts.

Introduction

Physiotherapists are well placed to improve communication with patients through the use of psychological strategies in their practice. Health benefits to patients as a result of being treated by physiotherapists with psychological training have been clearly demonstrated [1]. The use of psychological skills and strategies is a listed requirement for physiotherapists working in the National Health Service, as part of the Health Care Professions Council in the UK [2]. However, evidence suggests a lack of knowledge and confidence around the application of psychological strategies [3], owing in part to the limited consideration of psychological skills training during prequalifying physiotherapy education [4]. Physiotherapy students face several problems as a result including, understanding the skills that lie within their scope of practice, fear of applying those skills in context, lack of practice and practice in unrealistic environments or with their healthy peers offering limited transferability to clinical practice [5]. Psychological skills training within prequalifying programs across the UK has little consistency in the nature and content of teaching, this creates further challenges that need to be considered especially around the scope and amount of teaching given which currently varies greatly [2,6].

Approaches that can be taught in a relatively short timeframe may be a good starting point for identified areas within curricula. One approach used to provide a therapeutic interaction, that can be taught within a short period of time (less that one hour) is based on the model of emotions, adaptation and hope (MEAH). The MEAH was designed to provide a reconceptualized view of psychological adaptation [7]. From this research, the basis of the MEAH being used as a validated screening tool was established [8]. During COVID mental health, screening via zoom was undertaken by the primary author [9]. This work demonstrated that during an online interaction the screening tool could be used as a guide to a brief therapeutic interaction, and physiotherapy students could be trained to deliver this [10]. This research was developed to include a small number of additional therapeutic questions (see supplementary file section C) designed to enhance the interaction. The training provided for students to support the use of the therapeutic encounter draws on humanistic philosophy [11]. Students are taught the importance of non-judgemental and non-directive interactions and are introduced to the theory behind MEAH. The brief therapeutic interaction is designed to revolve around the first question. The question

requires an identification of one aspect an individual's present circumstance or life they are finding most difficult or challenged by. Four subsequent questions establish how an individual is psychologically adapting to the named difficulty. The response to these four questions identifies if further therapeutic questions should be asked.

The MEAH training has been associated with improvements in physiotherapy student's perceived ability to deal with difficult or distressing conversations [9]. However, further development of the MEAH training is needed, including how and when patients are introduced to students following the training. One way of achieving this is through the use of a simulated practice environment, with a paid actor who takes on the role of a patient. Since the MEAH was initially developed from studying the experiences of people with chronic neurological illnesses [12], a simulated patient following a stoke was deemed to be appropriate.

Physiotherapy students require opportunity to practice communication skills [10] and direct experience of interactions as central to knowing how to communicate and educate patients [13]. Simulation based education can improve patient centre care [14]. However, its use across physiotherapy courses is limited [4], especially compared to other allied health care programmes such as nursing [15] with relatively recent consideration for use in prequalifying physiotherapy education programs [16,17]. Review evidence suggests simulated practice can benefit physiotherapy student's confidence, emotional aspects of patient care and clinical skills [16–19]. Some benefits are compared to that of a standard clinical placement [20] and there are examples in the literature of it being used effectively over a short period of time. For instance, simulated practice taught across 3.5 hours can significantly benefit a student's confidence and clinical competence [21]. However, further research investigating specific training and focussed outcomes is needed for wider adoption by educational providers.

Research in physiotherapy education is needed to explore if simulated practice is superior to other educational methods [16] balanced against the economic considerations inherent in developing such resource intensive interventions [17]. The impact of the COVID-19 pandemic has also meant that digital platforms have been developed and utilized within teaching and clinical practice. However, such platforms lack any uniform application across training and review evidence has call for an urgent need for a standardized curriculum when using online approaches [22]. Given the above, there is a need to explore the students' perspective of the factors which promote and optimize confidence in simulated

patient interactions in an online, or in-person simulation environment, utilizing a qualitative research approach.

The aims of this research were to:

a. Consider the experience of student physiotherapists to a stroke-based simulation scenario, when applying the MEAH tool as a guide to a brief therapeutic interaction;
b. Compare and contrast simulated practice when used in-person versus online using a stroke-based scenario;
c. Consider student experience of utilizing the MEAH within a simulated scenario to develop the tool itself.

Methods

The research is reported according to the guidelines for using qualitative research as feasibility studies [23] and the standards for reporting qualitative research [24] (see Supplementary File A). The components of the intervention are reported according to the TIDieR (Template for Intervention Description and Replication) checklist [25]. This ensures information required by the CONSORT simulation reporting guidelines is provided [26].

Qualitative approach and research paradigm: An interpretive hermeneutic phenomenological study situated within the world view of subtle realism was undertaken. This world view focuses on the most common experiences across a group of people. Ethical approval was gained from the university ethics committee of the principal investigator (ref: ERN_21-1647A).

Researchers' characteristics: The principal investigator was a white male, aged 42 years. He is a lecturer in physiotherapy at a public university in England. He was not previously known to the students where the simulation practice took place.

Context and training: Students were provided with a link to a single e-lecture one week before the simulation practice. The students then took part in either an online or in-person simulation practice scenario. This was followed by a single semi-structured interview with the principal investigator.

Name: Using the MEAH to enhance a brief therapeutic interaction.

Why: The MEAH represents a simple model of psychological adaptation derived from the experiences of people with chronic and palliative illness. The MEAH scale focuses on a named difficulty and enables a brief non-directive approach to communication [10].

What: Students received a single 50-minute pre-recorded e-lecture one week before a prearranged simulation practice based on a stroke scenario. This was similar to a single past e-training session [9,10], but also included recorded examples of MEAH trained physiotherapy students using the MEAH on three patients who had suffered a stroke.

The MEAH was provided to the student in hard copy or electronic copy. The pages included instructions around 5 core questions. Questions are taken from the validated

hope and adaptation screening tool [8] and the validated circumplex model of effect [27]. Following these questions, a flow diagram is presented. The flow diagram acts as a decision aid for identifying whether further therapeutic questions should be asked. See Supplementary File C for the form given to students.

Students were given a single timed 10-minute interaction with a paid actor (acting using a pre-prepared brief that represented an individual with a stroke. See Supplementary File B) where they applied the tool either in person or the online. The meet in person group (MIG) was undertaken first with final year physiotherapy students from a BSc and MSc (pre-registration program). The meet online group (MOG) were a group of second year BSc students. The principal investigator met all students in both groups online via zoom, directly following the interaction for a single interview.

Who provided: The e-training was pre-recorded and undertaken by the principal investigator. The students asked questions from the MEAH form to guide the brief therapeutic interaction (see Supplementary File C).

How: An e-based platform (zoom©) was used for the training. The simulation practice was undertaken by the first group in person and then followed by the second group online. Debriefing was undertaken after all students had undertaken the simulation. Following both interactions, the principal investigator interviewed students via zoom© directly after their brief therapeutic interaction. He then joined the group debrief session for students.

Where, when and how much: All training was undertaken in March 2022. E-training was given using the PANOPTO (pre-recorded lecture) and based on a 50-minute lecture that introduced the tool, the philosophy on how to interact using the MEAH tool and provided examples of interactions using the tool with people who had a Stroke. The simulation was delivered in two ways: (1) The meet online group (MOG) performed the brief interaction via zoom©. (2) The meet in-person group (MIG) undertook the interaction within a facility designed for practice consultations. The facility included a mock living room environment with sofa, table and light stand. Students were taken into the area by a member of staff and the patient was setting on the sofa ready to begin a mock home visit. All interactions were limited to and stopped at 10 minutes.

Eligibility: Any University student studying physiotherapy at one of four institutions within England. No restrictions were placed on the students.

Sampling and sample size: A convenience sample of each cohort was selected. We based our sample size on the principles of information power [28]. The principles state the sample size depends on the aim of the study, use of established theory, quality of dialogue and analysis strategy. The aim was focussed and leading on from past research, utilizing established theory. The quality of the dialogue was good, and the analysis strategy was to focus on common themes. The principle of data saturation was used to guide the focus of the analysis and reporting of results.

Data collection instruments: Basic student demographics were documented and an interview schedule for both groups was developed. The interview schedule (see Supplementary File D) was pilot tested on three trained student physiotherapists. The pilot testing identified that the questions were appropriate and no changes were made to the interview schedule. Students used in the pilot testing delivered the questions from the MEAH form to individuals who had suffered a stroke (these videos were then used as part of the e-training). Further to this the 10-minute conversations were recorded using smots™ (see http://www.scotiauk.com/smots for information) for the MIG group via a discrete camera.

Units of study: Characteristics of participants were reported and their responses to the questions identified.

Data process: The lead author typed the transcripts of all the interviews verbatim.

Data processing and data analysis: All qualitative semi-structured interviews from the MIG and MOG were analysed using conventional content analysis [29]. It is important to note that results from this analysis focussed on the most common themes. The results are presented as the number of students that support a theme or statement compared to the total number of students in the group. The focus on common experiences is to provide some level of translation of the results to other settings.

The results highlight how important it was to a number of students, importantly when presented in this way a statement supported by some students does not infer that other students in the group agree or disagree with the point made. For instance, some students may enjoyed the theory aspect of the training and attributed this to the benefit of it, this does not mean the other students did or did not enjoy the training. Conversation analysis [30] was also undertaken. Particular focus for the interactions included looking at types of interaction. This was achieved by identifying consistencies between students in the MIG group regarding how and if each student followed questions on the MEAH form provided.

Techniques to enhance trustworthiness: The lead author presented the research team with a defendable case of the analysis. Audit trails of the analysis were created (See Supplementary File E for reflexive thematic analysis and Supplementary File F for conversation analysis).

Results

The MIG groups were represented by 14 final year MSc (pre-registration) students (26 ± 7 years) and 11 BSc (Hons) third year students (25 ± 4 years). All but two students in the MIG had completed all of their clinical placement hours. All BSc students and nine (64%) MSc students had had a neurological placement and all BSc students. Eight BSc students and six MSc students said they had worked with people who had a stroke previously. The MOG group were represented by 13 BSc (Hons) second year students (20 ± 4 years). All students from the MOG had undertaken two clinical placements. However, only one student had experience of a neurological (stroke) placement.

Reflexive thematic analysis

Four major themes across both groups were identified: (a) the content and value of the e-training, (b) the experience and perception of the simulation, (c) The application of the MEAH screening tool and (d) future training needs. See Supplementary File F for a Table that provides examples of verbatim quotes across themes for each group.

Theme 1: The content and value of the E-training
No sub-themes were generated for this theme.

Consistency across groups

All physiotherapy groups enjoyed and valued the e-training by identifying that it had value by sharing statements such as it was 'good' or 'enjoyable'. Further to this, a number of students identified that the MEAH form would have value across all areas of clinical practice and not just as a tool for use in patients following a stroke (13/25; 4/13). A particular area of value that was the use of the recordings of past students applying the tool, as this promoted understanding and confidence of the tool for application during the interaction (13/25, 6/13). Other consistencies in the results included understanding; (a) the importance of listening (7/25, 5/13), (b) the value of letting the patient lead the conversations and explore their own problems (4/25, 3/13) and (c) insight around how to support difficult conversations (8/25; 6/13).

Differences between groups

Some students from the MOG group stated that there was no need to change any of the e-content (5/13). A slightly smaller number of students from the MIG group identified the benefits of being able to go back over the e-content, speed it up or pause it (4/25).

Theme 2: The experience and perceptions of the simulation
Two sub-themes were identified within this theme.
Sub-theme 1: context and value of the simulation experience.

Consistency across groups

Across all participants the simulation was highlighted as a highly valuable experience by saying yes when asked. The most common reasons for the value were primarily associated with the practical nature of the experience and increased confidence (11/25, 10/13).

Differences between groups

Students from the MIG group identified the very few experiences they had of simulation (7/25) and identified the simulated practice scenario as being a safe space to practice (4/25). Some students within the MIG group specifically mentioned that 10-minute timed interaction was too short (5/25).
Sub-theme 2: the factors that influenced confidence

Consistency across groups

Experience of applying the tool was considered the most important factor in the ability to use it (11/25, 5/13). Some students (4/25) highlighted the importance of simulated practice. These students believed that applying the MEAH without practice was a straight forward task and were ready to do this, however, only after attempting the interaction did

they understand the challenges of it. Some students from both groups highlighted the importance of understanding the scale questions and requiring knowledge regarding how to ask questions in different ways (8/25, 5/13).

Differences between groups
Some students from the MIG group identified that the scale could significantly interrupt the interaction (4/25). Some students from the MIG group also identified from experience that particular placements could increase confidence with the MEAH interaction including mental health, chronic pain and Stroke (3/25). Some students (5/25) in the MIG group wanted to know different ways to word the MEAH questions, requiring alternatives to help their interaction. This highlighted the importance of understanding the theory behind each question.

Theme 3: The application of the MEAH screening tool
This theme had three sub-themes:
Sub-theme 1: the therapeutic value of the tool and questions

Consistency across groups
The screening tool provided guidance for undertaking and exploring difficult conversations (8/25, 7/13).

Differences between groups
Instances were recalled in the MOG when the student did not know how to respond in placement (3/13). This highlighted the importance of the training.
Sub-theme 2: the aspects which influenced the application of the tool as a therapeutic device

Consistencies across groups
Request for options for different wording for specific questions that followed question 1 (10/25, 7/13). One student in the online group liked the word 'pleasant'.

Differences between groups
The MIG identified that the Likert scale prevented conversational flow (18/25). Some students wanted changes to simplify scale (6/25), but also wanted further examples of how to manage challenges and improve conversations when using it (6/25). Some students within the MOG group identified the experience online as more clinical compared to an in-person conversation (3/13) and some experienced challenges with how to reword the first question when required (4/25). However, some were happy, and felt no changes to the tool were needed (3/13).
Sub-theme 3: the ability to complete all questions on the form

Differences between groups
The MIG often only got through part of the tool during the 10 minutes conversation (10/25). The four-page version of the tool could be reduced to a prompt sheet (8/25). The MOG commented that it was most often completed without problem (7/13).

Theme 4: Future training needs
Two sub-themes were identified.
Sub-theme 1: Timing and value around placements

Consistencies across groups
Both groups identified that the best time for the training would be around placements. Some students in the MIG identified this should be directly before placement (13/25) or following a placement before the next placement started (4/25). The MOG identified the timing was good having undertaken two placements (4/13). The MIG suggested that the second year would work well (4/25). Students identified that the current training and simulated practice could be provided within particular modules including a communication module (2/25, 4/13) or a neurological module (4/25).
Sub-theme 2: Future training and development needs

Differences between groups
All students in the MOG requested future training be both in person and online. Some students from the MIG wanted more focus from the training on practical elements of conversation on different techniques for how to engage the conversation and overcome challenges like difficult and different responses from patients (8/25).

Conversational analysis of the MIG group (*n* = 24)

General types of interaction that occurred
Following the initial information provision students tended to fit into three types of interaction: Type 1 interactions followed the MEAH questions on the form in a very exacting way with a focus on establishing the difficulty and ensuring the scale was complete and numerical responses recorded. Type 2 interactions used the forms as an aid to their conversation. The difference to Type 1 interactions was that once the difficulty was established, the numerical scales were not recorded and any further questions were then used more generally. Type 3 interactions deviated from the main focus of the form. This type of interaction did not identify a main difficulty for MEAH question 1 and base the following questions around that. This type of interaction often reverted to a generic physiotherapy subjective assessment.

The ability to follow the introduction section of the form
The most consistent aspect of the introduction across all students was the ability to introduce themselves and their profession at the start of the interaction. Interestingly, permission was often requested, but only in one instance did the student ask permission to talk about the perceived difficulty as a focus of the conversation. The form requested specific information be relayed to the actor. The ability to achieve and relay the information is provided in Table 1. This breaks down information by program and type of interaction.

Difficulties discussed during the interaction
The perceived difficulties that were identified by the actor were consistent and had a consistent script/narrative from the actor. These included the following difficulties identified for the BSc student: Cognitive and social (n = 4), mobility related (n = 2), isolation/loneliness (n = 2), worry about further health (n = 1) and low mood difficulty (n = 1). For the MSc student, the following difficulties were identified by the actor; cognitive and social difficulty (n = 6), mobility related difficulty (n = 3), loneliness (n = 2), gripping problems (n = 1), sleep (n = 1), no problem identified (n = 1).

Table 1: Some verbatim examples of student quotes per group

Theme	Sub-themes	Example Quotes
The content and value of the e-training		**MIG BSc students** 'I loved the fact you had the examples with a pair, like a patient, that is really good and provides a good visual representation of how it should be done' [P2] 'it is different to other teaching in that it is more focused on feelings and change than anything else that we have looked at...for instance we consider, you knee hurts, your leg hurts, where does it hurt, how long has it hurt, whereas this is [looking at] whatever the event is [individual's perception], focusing on [how they] change and [their] adaptation' [P4] 'I liked the fact that it focused on the importance of not giving patients solutions...I like the fact that this is a listening tool and there should not be too much input from our side, that we source the information from the patient and give them the tools indirectly' [P7] 'The training is a nice length of time and if people wanted to access the resources they always could' [P8] 'Looking at the first question around what you are finding most difficult right now, I mean a lot of people, I have had a mental health problems myself and you do find it hard to open up and talk and tell someone, being able to hear this response would help reveal those thoughts' [P8] 'The two examples at the end would have been useful, because without them I would have been very lost and how would I go through this and how would I do it myself' [P10] 'the practice examples were really useful, before coming into the simulations' [P11] **MIG MSc pre-registration students** 'we haven't had much course content or guidance on directing questions or practicing scenarios, this is a more real life scenario where you are faced with a patient and you have to explore certain scenarios, so we have explored the pathphysiological side of things but we haven't explore the subjective assessment which is so much more important to get' [P16] 'the training was useful in terms of how to ask a question' [P18] 'it provides you that opportunity to really engage with a patient and listen to them' [P19] 'we talk about psychology and theory in our course, but this training allows you to put it into practice and that gives you a way to incorporate it' [P21] 'it was actually good to see examples of it being used, it really sort of like brought it to life for me and was probably the most helpful part of the training' [P24] **MOG students** past teaching trains but doesn't give you the skills to deal with these kind of problems [P6] Timing wise it is enough to help me understand what to do away and look at, it is not going to make me 100% good at talking to people straight away, but it highlights the areas where I am not so good and what I need to work on [P2] Its good it worked, but a bit like using outcome measures in practice, you want to keep the conversation following, it I did it again I would let him lead where it goes [P3] 'it was nice to see it first before going into more detail within the training' [P7] 'The demonstration videos were really helpful in understanding how to apply it' [P8] 'it makes you aware of what you are saying to a patient, because sometimes you can be a bit suggestive for instance, have you considered doing this, or that doesn't sounds good, and the training helped me, the one question at the start made it focused' [P10]
The experience and perception of the simulation	Context and value of the simulation experience	**MIG BSc students** 'it felt quite flowing conversation and I felt like I could respond to what he said, whether it was reassuring or was I am sorry to hear that, and feeling that I wasn't been to harsh in my responses' [P6] 'I would say it is different just because of the simulation, I mean we haven't an opportunity to do any simulation and its quite nice to practice before we go out and use it' [P8] 'the simulation was a really good way to get on top of it and understand it' [P12] **MIG MSc pre-registration students** 'the simulation can help the student get a real feel of the placement' [P17] 'being exposed to the training and the case that I had I feel more confident' [P18] 'I like the e-training and the simulation because it can give you tools you can use on placements' [P19] **MOG students** We worked through the questionnaire with no problems..it felt really good [P1] I like to be able to practice, it is impossible to connect without this [P2] 'You needed the simulation training to understand where to take things' [P6] 'I think there were times when it felt a bit vague with the patient and I would delve deeper' [P8] 'its good using the tool and how you can use it in practice is clear' [P11]

(*Continued*)

Table 1: Continued

Theme	Sub-themes	Example Quotes
	The factors that influenced confidence	MIG BSc students 'it (the simulation) showed me that I didn't know the tool that well, I thought like it would be fine and I would be ok to use it, but during the interaction I thought, I don't know what is next' [P5] 'If I was more confident with the form, and knowing the layout…I was quite nervous because I didn't know what to expect…I think I did a lot better with it having completed all my placements now' [P6] 'using the tool, it may be harder to show empathy, but they may be that will get better with practice' [P13] MIG MSc pre-registration students 'I didn't want to just sit there and stare at paper and read of questions, where as when you become more confident you can talk and not look at the paper at all…I diverged towards more of a mental health assessment, than using the tool, but that is partly because I hadn't used the tool before' [P15] 'I had a chronic pain placement before this and I was required to know more about psychological therapies there, like cbt, if I hadn't had that, I may be more nervous' [P16] 'may be worth having an opportunity with your class mates to use it, just to feel more comfortable with it because I was referring back to the tool a couple of times for specific questions' [P19] MOG students The physioaspect of this I didn't need to focus on, because earily on he mentioned mentally he was struggling to come to terms with things and it was affecting his feelings…I was able to tell him from [my own] personal experience hold on to what you can do…The screening tool helped me base the conversation afterwards…I havent had much awareness of mental health on placement [P1] 'The training video helped me understand that you don't need to give a response to help the individual feel valid' [P3] 'when difficult topics come up, sometimes you can feel left to your own devices, so this helped with that..watching the examples is really helpful..but for me one practice is enough and I would like to go straight in then with a patient' [P6] 'the simulation was really helpful for communication and finding things to improve on' [P12]
The application of the MEAH screening tool	the therapeutic value of the tool and questions	MIG BSc students 'I say it was useful as a guidance, because otherwise you feel that your bit lost after five questions' [P1] 'it is useful and good to have' [P3] 'useful tool to find out where people are, and get ideas for how to start a conversation…I would use the tool in patients where I was struggling to break through or struggling to have an interaction with…because it forces a conversation, so I don't think in every patient it would be beneficial but for the ones where they are facing difficulties it is black and white and easier for patients to go to that place' [P5] 'lay out of the questions, they were really good' [P6] MIG MSc pre-registration students 'I think it is a great skeleton and then people will phrase it how they like' [P9] 'I think if we had time with patients it would be a good tool to use' [P13] 'the tool gave a really good structure to the sort of questions you could ask if you got stuck in an assessment, I mean I am not sure I would ask about energy or hope or anything like that otherwise' [P15] 'having a framework to explore certain avenues is really useful and just from a personal perspective I have come off a chronic pain placement and having this tool, prior to doing that would have been super beneficial' [P16] 'using this tool will be good for building rapport and for the continuity of care' [P18] 'we were able to consider the challenges and where his motivation was and consideration for where he wanted to go with his rehab, and it is nice to be able to consider where he wants to go with his rehab' [P19] 'it was nice to have something which guided what was a difficult conversation' [P24] MOG students 'The questions worked fine and I didn't have any problems' [P5] 'I spent around half the time trying to figure out the difficulty' [P7] 'it's a big thing to be able to step back and listen to a patient, I will take that forward' [P8] 'we got on to speaking about the goals he has which was quite nice and how it would like to gain independence back' [P10]

Table 1: Continued

Theme	Sub-themes	Example Quotes
	The aspects which influenced the application of the tool as a therapeutic device	**MIG BSc students** 'I would say went pretty much as I expected I didn't expect [name of actor] to struggle to come up with what was his main difficulty as much as he did, and I wasn't sure how much I was meant to prompt to ask him to specify the difficulty, so he was very much like yeah effects, like my conditioning affects me in my daily life. And that was his first answer and I was like I was like I don't know if I meant to ask him to pick out one specific thing or if he just sees that as a whole, broad range of sure so' [P1] 'people perceive questions differently, whether they are in a way that is phrased in a way you want them to be phrased and I think that if you had multiple people's opinions, and if you could see how someone with a different background would perceive something differently, or would withhold information because it is not within their culture to reveal things, if you do that early on then you are in much better position to support people' [P3] **MIG MSc pre-registration students** 'I didn't even get to the questions at the back, but that may come with experience and being able to move people on a bit quicker' [P21] 'I think with my last placement (chronic pain), if a patient was going off on a tangent I had to bring them back quite a lot, so I managed to get through all the questions, I managed to say, oh, I will come back to that later, if they recall certain bits of information, then I would put that information down, rather than repeat the question again' [P16] **MOG students** 'I have to word it in a way where I wasn't sounding controlling of the conversation' [P1] 'because of COVID, we have practice online' [P6] 'the technology (zoom) worked, we were fine with it (the interaction)' [P5] 'When you are face to face there can be things like body language which is different, so that needs to be considered' [P7] 'I could have done with reading the tool a bit more before the interaction, as there is a couple of quesitons on it, where I wasn't really sure how to explain it to a patient, because I felt my communicaiton was a bit off, because I was trying to work it out myself' [P12]
	The ability to complete all questions on the form	**MIG BSc students** 'it is a brief intervention and you could easily delve and delve, so yes, 10 minutes is a good length but yes you can go more' [P2] '10 minutes is a good time to work through it and it would be great to set up your subjective...but personally the only thing I would have to be strict with myself about is not to go on, because you could find yourself discussing things for about an hour...so in some settings it is about being strict with yourself' [P5] 'it was a bit short (10 minutes not enough) because I spent a bit of time explaining the tool and explaining the questions' [P7] 'I didn't get to the final questions but we did have a conversation about a difficult phone call that he had had with his son and that kind of thing, so I would say it could do with a little longer to be able to account for distractions, then you wouldn't want to go longer than 15 minutes' [P8] 'I got to the end of the scale, but I didn't take it further, I didn't have time' [P9] **MIG MSc pre-registration students** 'I was expecting to get further down the question, but then before you know it 10 minutes is up' [P14] 'more timing is needed for this questionnaire and may be getting the patient to have the form before a meeting would help' [P17] 'you have to think about the time and cognition of a patient' [P19] **MOG students** 'it is good as it is, its not too long' [P4] 'I quite like the process of it, but wasn't sure when to ask certain questions to the client, I followed the intial tool then asked some of the therapeutic questiions' [P10]

(*Continued*)

Table 1: Continued

Theme	Sub-themes	Example Quotes
Future training needs	Timing and value around placements	**MIG BSc students** 'I just think anywhere that's near near or around placement' [P1] 'it's a end of second year or third year thing, because first year is your meat and potatoes, and then you learn other things like motivational interviewing and you have some other placements' [P2] 'you kind of want it at the end of your second placement and beginning of your third' [P2] 'I would put it right before practice placement, because knowledge of this is really valuable for steering patients...following uni training you are well equipped to support a msk physically, a stroke patient physically, but when they [patient] report these things [difficulties] you are not well equipped to deal with them' [P4] 'on placement you don't have the time to learn different techniques, so this would be really helpful' [P4] 'I think pre-placement, because placement is one of those times when you can try things, I could have taken this on placement, because my educator can be like yes we can try it and I can try it in a safe place...because now I will be like on my own and that is when it is more important that we tried it pre-placement like now...' [P5] 'it would be a really good thing to do before placement' [P6] 'I would like it in the preparation for practice module' [P7] **MIG MSc pre-registration students** 'it would be useful to do before going out on placement but I don't know whether it would be good to fit on particular modules that we do on first year, but before placements would be really useful' [P15] 'be useful around the neurological module' [P15] 'early on before the placements, because it can be used on the placements and it is really helpful, for us it is too late as we only have one placement left, early on it would be helpful' [P18] 'it would be useful before placement, especially as you go into your 2,3,4 placement, it is more expected that you are required to have these conversations, so as a student you are thinking how to I approach that, and the educators would appreciate you have a tool you can use and also educate them on how to use the tool' [P19] 'pre-placement would be useful' [P22] 'may be after a placement so you have some context, but still early enough to have an impact' [P24] **MOG students** 'to help us from year 1 think about the mental health things rather than just a physical focus' [P3] 'we had a module in our first year in our first year, which this could, or just like today worked well, may be a session like this each term even' [P4] 'its useful to help with patient with complex, problems, I have had some and I could definetly use it' [P10]

(*Continued*)

Table 1: Continued

Theme	Sub-themes	Example Quotes
	Future training needs development	**MIG BSc students** 'if you had slightly different phrasing of the questions it would reduce the time spent rephrasing and the patient process' [P3] 'Make the questions more patient friendly, when you say what are you struggling to adapt to it is possible that a patient struggles to understand, so alternatives are needed' [P4] 'Every experience of using something like this is that you give it to the patient in the waiting room and they complete it and bring it in' [P5] 'I would change the wording to have topic areas....so as an example if you look down and see the topic goals, that is easier than if you look down and think I need to read a question...so it is about not staring at paper for too long' [P5] 'your confidence comes back to experience in asking a question like that (you need more experience)' [P5] 'it doesn't feel like it fits into any one discipline, it would be good for when we think about goal setting, because we do a lot about that...it helps us focus down on to what the main aim of the patient is' [P7] 'I don't know if it would have been useful to have space to ask questions before the interaction more' [P10] **MIG MSc pre-registration students** 'it would be useful for all areas of physio, so I would say quite early on, to be honest with you, because then you can develop it across the course and programme, if you have it in the middle or end you don't have as much time to implement it and see if it works for you' [P16] 'I would put it through the whole program' [P17] 'Initially having the screening tool as it is would be useful, because you have everything there, after that, a prompt sheet would work well' [P16] 'he asked for my advice at some point, and I know in the training it said you are not there to give advice and it through me off, and he said do you think I will get better, but I wasn't sure what to say' [P21] **MOG students** At discharage is where patients may need this, when support from the MDT drops off [P1] I would like to do it in person, because I feel that it is easier to conntect in person, you can read their body language a lot better they can read yours, its not like it was bad over zoom, it was perfectly good, I would just be interested to see the comparison [P2] 'We need to practice having those difficult conversations, may be three practices would be useful just so you have the experinece' [P3] 'I would like to see more practical types for instance, prompts that would help a patient explain or reveal more' [P4] 'it links nicely to goal setting because you get to identify the barrier as such' [P10] 'it would be quite nice to have a futher session for feedback, reflection then have another go, knowing how to improve and what your challenges are is so important for future interactions' [P11] 'some more examples of how students or physiotherapist got to identify the problem, so ways to navigate the first question and deal with blocks from the patient' [P12]

MIG = Meeting In-person Group; MOG = Meeting Online Group.

Summary of Type 1 interactions

Fifteen interactions (15/24, 62.5%) were classified as Type 1 interactions that followed the form. On average students asked 14 ± 3.4 questions within 10 minutes. In seven interactions, the students were able to ask additional questions from the tool. On five occasions, the question asked was considering if the individual knew anyone else (peer) who had experienced similar problems. Interestingly, a total of 12 interactions involved asking additional, other or related questions not found on the form, which mostly looked to explore previous responses.

Summary of type 2 interactions

Three interactions (3/24, 12.5%) were classified as Type 2, on average asking 16 ± 1.7 questions. One of these interactions involved using a modified scale where the student talked about a top, middle and bottom response. In the other two interactions, the students did not use the scale at all. Only one student asked additional questions from the tool. Two students identified other questions.

The identification of the main difficulty (across both type 1 and 2, n = 18)

Students spent a fair bit of time identifying the difficulty (MEAH question 1), for students who did not deviate from the tool (not including type 3 interactions) this was achieved by: (1) identifying statements that helped to confirm the difficulty, (2) using questions to enable greater context and understanding of the difficulty and (3) using questions to confirm the focus of the initial question.

1. Statements confirming the difficulty

A total of 14 statements related to the difficulty: 7 statements confirmed the area in which it lay e.g. '*the difficulty can be physical, psychological or social*'. Six students confirmed the focus of the tool e.g. '*it is about how you feel*', '*it is for anyone who has gone through a challenge or change*', '*we want to focus on what you are experiencing right now*'. One student considered a statement confirming what the actor had said, that the difficulty was unique and would not be faced by most people.

2. Questions enabling greater context and understanding of the difficulty

A total of 21 questions were asked (most often one question, but sometimes multiple questions per student), that were seeking clarification of the exact problem and understanding it, this could be clarity around context e.g. if the social setting was a problem a student asked if it was '*only in crowded situations?*', statements were also more general for instance by using phrases like '*could you expand on that a little further?*', or '*could you tell me more about that?*'.

Other singular questions included questions that required understanding of the impact, asking the reasons for the choice e.g. '*what made you say that?*'. Finally, one question was more empathetic asking if the difficulty '*had been ok?*' seeking to understand the impact further.

3. Questions confirming the focus of the initial question

A total of 27 questions were asked (most often one or two questions per student, but sometimes multiple questions) that were designed to get an answer which related to the one aspect which was perceived to be the most difficult e.g. '*what are you struggling with the most?*', '*if you had to pin point one thing what would it be?*', '*if you had a list what would be at the top?*', there were also questions that first were aimed at understanding the context in order to lead on to understanding what may be challenging e.g. '*what has changed in your life since your stroke?*'.

Identification of additional therapeutic questions

A total of 8 students asked additional therapeutic questions to the form. The most common and often the only question considered was if the individual knew others that faced a similar challenge. A total of 13 students asked other questions beyond the scope of the tool.

Summary of Type 3 interactions

A total of six interactions (6/24, 25%) were classified as Type 3. An average of 15 ± 6.8 questions were asked during the interaction. These interactions most often identified a mobility problem (n = 4/6) as the named difficulty for the focus of the conversation, although often this was not a difficulty expressed by the actor. One identified gripping as a difficulty and one identified no difficulty.

The main problems identified within these interactions were around the questions that were asked. These could be grouped as follows; (a) questions about an interaction that was too general e.g. '*I am here to see how you have been doing since the stroke?*', (b) questions that focussed on a particular problem as perceived by the student e.g. '*How hopeful are you, that you will get back to golf?*' (actor was playing golf and had assistive technology) and (c) questions that did not pick up on social or psychological statements which required exploration e.g. Actor: '*I would like to get out socially...but it is hard when people forget this has happened to me*'. Student: '*So regarding your difficulty you identified, we will focus on the gripping*'

Discussion

To the best of the authors knowledge, this is the first study to consider how the MEAH as a guide for a brief therapeutic encounter can be effectively used within a simulated environment. Both groups of students perceived benefit for the development of difficult and challenging conversation, which supports past research findings that used the MEAH as a screening tool for physiotherapy students [9], as well as research that looked at the benefit of training students using the MEAH [10]. Students, most often in the MIG identified a need for greater knowledge of the MEAH questions, to allow for more flexibility in the use of the tool and an improved understanding which could enable patient interactions to flow. Students from the MOG group appeared to experienced less difficulties with the interaction, with several students identifying the MEAH tool as a relatively simple clinical interaction online. The positive experiences identified in the current study of online interactions are replicated in other studies e.g. [31,32]. One reason for this could be that online interactions can enable more healthcare professional-centred interaction, meaning more questions are asked by the health care professional and less consideration if given to the need for other aspects of interaction like providing empathy [33]. Whilst online interactions are not suitable for certain conditions or situations, there are benefits perceived by patients [34] and as such online based simulation should be explored further for understanding it use, value and effectiveness.

Conversational analysis revealed that in around a quarter of interactions, the MIG group participants did not follow the screening tool and remained focussed on the main difficulty, often reverting back to a generic subjective assessment. In three instances students from the MIG group used the tool to enable a conversation, rather than filling in the screening tool. Interestingly many of the students from the MIG group requested alterations to the format of the MEAH tool to enable a conversational approach (see the supplementary file G).

Review evidence has consistently identified the benefits of simulated practice across health care students e.g. [35]. Simulated practice primarily benefits confidence and knowledge which is supported by past review evidence [16,17]. Further to this, deliberate practice within simulation can enhance learning [36] and empathy [31]. The current results support these past findings. More practice and more feedback have been reported in other training as a main requirement for physiotherapists [6] and this can be enhanced by using different teaching modes including videos of interactions and active participation [36] as well as the 'fishbowl' method [27]. The current results support

this with student physiotherapists requesting a focus on typical problems and information on how to word questions, as a way to develop the training. This may improve how communication is understood by physiotherapy students e.g. the physiotherapy student could consider their consultations as something which is *done to* a patient, rather than working *with* a patient [38]. The training philosophy given to the students [11] and impact of training on stigmatized attitudes [10] using simulated practice could help to challenge the idea of what 'communication' represents for students. Further research is needed to identify this.

Time allocated to simulated practice has been suggested as too little [17], which does not prepare physiotherapists to deliver psychosocial care in a confident way [39]. Further to this, the e-training and simulation appeared to require students to reflect on their ability to undertake a therapeutic interaction and be able to understand their own perceived limitations. This process is important and is supported by past research [40]. The online interactions were associated with less perceived challenges and needs. This is supported by past research [41]. Different reasons for this may be that direct questions which may seem obtrusive/inappropriate in person can be acceptable online [42] and the greater focus on verbal information may be one reason for this, when compared to an in-person consultation [43]. It should be acknowledged that online interactions can be inhibited by patient preference and/or concerns with online security, familiarity with the therapist and therapist competence/past interaction experience [41,42]. Further to this, therapists have previously identified concerns regarding the inability to build a therapeutic relationship online [43]. Despite this, the experience for a majority of students within the MOG group appeared to demonstrate a particular advantage for online interactions being more straight forward with less challenges. It may be that online interactions using the MEAH are the best introduction to experiencing the tool and could then be used in person. Further research is needed to establish this.

Implications

- The MEAH tool demonstrates that brief and focussed teaching is able to enhance the perceived confidence of physiotherapy students.
- Brief training of other techniques can be used in UK courses but would likely benefit from; (a) pre-recorded peer interactions, (b) the application of the tool online, (c) debriefing and (d) simulated practice in person.
- The MEAH tool appeared to enable difficult interactions and may be a good precursor to using shared decision making or patient centred goal setting.
- Practical advice around wording of therapeutic questions or how to face common challenges during conversations should be a focus of future training.
- Online experiences were associated with less challenges compared to the in-person training, making it a useful mode for developing confidence in applying skills.

Limitations

- The results have focussed on the most common reports, the results do not claim statistical generalizability but can illustrate representational generalizability [44].
- The effectiveness of the training cannot be established but were consistent with effectiveness identified from previous research [8].
- The MIG group and MOG group were not matched by student demographics which may limit comparisons and influence conclusions made.
- Further research is needed to consider how this training could be used across physiotherapy programmes.

Conclusion

Simulated practice provides an ideal way to enhance communication skills. Training using specific approaches such as using the MEAH as a guide to a therapeutic interaction appear beneficial and should be considered in future developments of the United Kingdom physiotherapy curricula.

Declarations

Authors' contributions

None declared.

Funding

No funding was obtained.

Availability of data and materials

If required all transcripts can be accessed from the primary author. The supplementary file provides extensive data and illustrates the analysis undertaken using the data.

Ethics approval and consent to participate

Ethical approval for this study was provided by the University of Birmingham (reference ERN_21-1647A).

Competing interests

There are no conflicts of interest identified

References

1. Coronado RA, Patel AM, McKernan LC, Wegener ST, Archer KR. Preoperative and postoperative psychologically informed physical therapy: a systematic review of randomized trials among patients with degenerative spine, hip, and knee conditions. Journal of Applied Biobehavioral Research. 2019;24:e12159.
2. Alexanders J, Douglas C. The role of psychological skills within physiotherapy: a narrative review of the profession and training. Physical Therapy Reviews. 2017;21:3–6.
3. Driver C, Lovell GP, Oprescu F. Psychosocial strategies for physiotherapy: a qualitative examination of physiotherapists' reported training preferences. Nursing & Health Sciences. 2021;23:136–147.
4. Heaney C, Green A, Rostron C, Walker N. A qualitative and quantitative investigation of the psychology content of UK physiotherapy education. Journal of Physical Therapy Education. 2012;26:1–26.

5. Higgins R, Gray H. Barriers and facilitators to student physiotherapists' use of psychological interventions in physiotherapy. Physiotherapy. 2020;107:e154.

6. Ballengee LA, Covington JK, George SZ. Introduction of a psychologically informed educational intervention for pre-licensure physical therapist in a classroom setting. BMC Medical Education. 2020;20;382.

7. Soundy A, Roskell C, Elder T, Collett J, Dawes H. The psychological processes of adaptation and hope in patients with multiple sclerosis: a thematic synthesis. Open Journal of Therapy and Rehabilitation. 2016;4:22–47. doi:10.4236/ojtr.2016.41003

8. Soundy A, Rosenbaum S, Elder T, Kyte, D, Stubbs B, Hemmings L, Roskell C, Collett J, Dawes H. The hope and adaptation scale (HAS): establishing face and content validity. Open Journal of Therapy and Rehabilitation. 2016:4;76–86.

9. Soundy A, Hemmings L, Gardiner L. Screening and supporting the mental health of student physiotherapists during the COVID-19 pandemic. International Journal of Therapy and Rehabilitation. 2021;28:1–15.

10. Soundy A, Gardiner L, Rosewilliam S, Heneghan N, Cronin K, Hemmings L, Reid K. E-learning communication skills training for physiotherapy students: a two phased sequential mixed methods study. Patient Education and Counseling. 2021;104:2045–2053.

11. Renger S, Macaskill A. Developing the foundation for a learning based humanistic therapy. Journal of Humanistic Psychology. 2021; doi:10.1177/00221678211007668

12. Soundy A, Liles C, Stubbs B, Roskell C. Identifying a framework for hope in order to establish the importance of generalised hopes for individuals who have suffered a stroke. Advances in Medicine. 2014;471874:1–8.

13. Forbes R, Mandrusiak A, Russell T, Smith M. Evaluating physiotherapists' practice and perceptions of patient education: a national survey in Australia. International Journal of Therapy and Rehabiliation. 2017;24. doi:10.12968/ijtr.2017.24.3.122

14. Nestle D, Bearman N. Introduction to simulated patient methodology. In: Nestel D, Bearman M, editors. Simulated Patient Methodology: Theory, Evidence, and Practice. Sussex, UK: John Wiley & Sons Ltd. 2015. p. 1–4.

15. Melling M, Duanai M, Pellow B, et al. Simulation experiences in Canadian physiotherapy programmes: a description of current practices. Physiotherapy Canada, 2018;70:262–271.

16. Kaplonyi J, Bowles K-A, Nestel D, Kiegaldie D, Maloney S, Haines T, Williams C. Understanding the impact of simulated patients on health care learners' communication skills: a systematic review. Medical Education. 2017;52:1209–1219.

17. Pritchard SA, Blackstock, FC, Nestel D, Keating JL. Simulated patients in physical therapy education: systematic review and meta-analysis. Physical Therapy. 2016;96:1342–1353.

18. Roberts, F, Cooper K. Effectiveness of high fidelity simulation versus low fidelity simulation on practical/clinical skill development in pre-registration physiotherapy students: a systematic review. JBI Evidence Synthesis. 2019;17:1229–1255. doi:10.11124/JBISRIR-2017-003931

19. Dalwood N, Bowles K, Williams C, Morgan P, Pritchard S, Blackstock F. Students as patients: a systematic review of peer simulation in health care professional education. Medical Education. 2020;54:387–399. doi:10.1111/medu.14058

20. Wright A, Moss P, Dennis DM, Harrold M, Levy S, Furness AL, Reubenson A. The influence of a full-time, immersive simulation-based clinical placement on physiotherapy student confidence during the transition to clinical practice. Advances in Simulation. 2018;3:3. doi:10.1186/s41077-018-0062-9

21. Forbes R, Mandrusiak A, Smith M, Russell T. Training physiotherapy students to educate patients: a randomised control trial. Patient Education and Counseling. 101:295–303. doi:10.1016/j.pec.2017.08.009

22. Chike-Harris K, Durham C, Logan A, Smith G, BuBose-Morris R. Integration of telehealth education into the health care provider curriculum: a review. Telemedicine and e-Health, 27:2. doi:10.1089/tmj.2019.0261

23. O'Cathain A, Hoddinott P, Lewin S, Thomas KJ, Young B, Adamson J, Jensen JFM, Mills N, Moore G, Donovan JL. Maximising the impact of qualitative research in feasibility studies for randomised controlled trials: guidance for researchers. Pilot and Feasibility Studies. 2015;32.

24. O'Brien B, Harris I, Beckman T, Reed D, Cook DA. Standards for reporting qualitative research. A synthesis of recommendations. Academic Medicine. 2014;89:1245–1251.

25. Hoffmann TC, Glasziou PP, Milne R, et al. Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide. British Medical Journal. 2014;348:g1687.

26. Cheng C, Kessler D, Mackinnon R, et al. Reporting guidelines for health care simulation research: extension to the CONSORT and STROBE statements. Advances in Simulation. 2016;1:25.

27. Russell JA. A circumplex model of affect. Journal of Personality and Social Psychology. 1980;39:1161–1178.

28. Malterud K, Siersma VD, Guassora AD. Sample size in qualitative interview studies: guided by information power. Qualitative Health Research. 2016;26:1753–1760.

29. Hsieh H-F, Shannon SE. Three approaches to qualitative content analysis. Qualitative Health Research. 2005;15:1277–1288.

30. O'Brien R, Goldberg SE, Pilnick A, et al. The VOICE study—a before and after study of a dementia communication skills training course. PLoS ONE 2018, 13: e0198567.

31. Ward A, Mandrusiak A, Levett-Jones T. Cultrual empathy in physiotherapy students: A pre-test post-test study using virtual simulation. Physiotherapy. 104:453–461. doi:10.1016/j.physio.2018.07.011

32. Jiménez-Rodríguez D, Navarro MT, Plaza del Pino FJ, Arrogante O. Simulated nursing video consulations: An innovative proposal during COVID-19 confinement. Clinical Simulation in Nursing. 48:29–37. doi:10.1016/j.ecns.2020.08.004

33. Holmes MB, Starr JA. A comparison of doctor of physical therapy students' self-reported empathy with standardized patients perceptions of empathy during a simulated telehealth encounter. Journal of Patient Experience. 2022;9:1–5. doi:10.1177/23743735221112226

34. Bennell KL, Lawford BK, Metcalf B, et al. Physiotherapists and patients report positive experiences overall with telehealth during the COVID-19 pandemic: a mixed-methods study. 2021;67:201–209. doi:10.1016/j.jphys.2021.06.009

35. Alanazi AA, Nicholson N, Thomas S. The use of simulation training to improve knowledge, skills, and confidence among

healthcare students: a systematic review. The Internet Journal of Allied Health Sciences and Practice. 2017;15:Article 2.

36. de Sousa Mata AN, de Azevedo KPM, Braga LP, et al. Training in communication skills for self-efficacy of health care professionals: a systematic review. Human Resources for Health. 2021;19:30.

37. Cho A, Kim J, Chung HS, Shin Y, Kim J, Cho J. The effect of lecturing about communication skill with standardized patient for medical students. Health Communication. 2020;15:11–16.

38. Bright FAS, Cummins C, Waterworth K, Gibson BE, Larmer P. Physiotherapy students' conceptualisation of clinical communication: a call to revisit communication in physiotherapy education. OpenPhysio Journal. 2018; doi:10.14426/art/509.

39. Holopainen R, Simpson P, Piirainen A, Karppinen J, Schütze J, Smith A, O'Sullivan P, Kent P. Physiotherapists' perceptions of learning and implementing a biopsychosocial intervention to treat musculoskeletal pain conditions: a systematic review and metasynthesis of qualitative studies. Pain. 2020;161:1150–1168.

40. Saaranen T, Vaajoki A, Kellomäki M, Hyvärinen M-L. The simulation method in learning interpersonal communication competence—experiences of masters' degree students of health sciences. Nurse Education Today. 2015;35:e8–e13.

41. Stoll J, Müller JA, Trachsel M. Ethical issues in online psychotherapy. Frontiers in Psychiatry. 2020;10:993.

42. Qudah B, Luetsch K. The influence on mobile applications on patient – healthcare provider relationships: a systematic, narrative review. Patient Education and Counselling. 2019;102:1080–1089.

43. Miller EA. The technical and interpersonal aspects of telemedicine: effects on doctor-patient communication. J. Telemed. Telecare. 2003;9:1–7.

44. Lewis J, Richie J. Generalizing from qualitative research. In: Ritchie J, Lewis C, editors. Qualitative research practice. London: Sage. 2003. p. 263–268.