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Cinemeducation: A mixed methods study on learning through reflective thinking, perspective taking and emotional narratives

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Abstract

Introduction: Cinemeducation describes the use of film in medical education. The M23 Cinema (M23C) comprises a film screening and subsequent discussion with experts, affected persons and the audience. Previous research suggests that participating in cinemeducation may affect emotions and attitudes. This study aimed to establish a conceptual framework and explore when learning takes place, how learning occurs and what participants learn during the M23C.

Methods: Informed by focused literature searches, discussions of the authors and the research results, a conceptual framework of the M23C was developed, comprising three dimensions (five distinct phases, learning methodology and potential impact). A mixed method study was undertaken, employing an exploratory sequential design. Initially, the qualitative component was conducted by interviewing everyone involved, comprising focus groups, expert interviews, a group interview and one narrative interview. All qualitative data were analysed using qualitative content analysis. The qualitative findings were used to inform the development of a survey among the participants of M23C evenings. The survey results were analysed descriptively. The findings generated by both data sets were integrated using the "following a thread" protocol and visualised by joint displays.

Results: In total, 15 participants in M23C courses, six members of the current and two of the former organising committee, two experts, two affected persons and the initiator of the M23C were included in the qualitative component ($n = 28$). A total of 503 participants responded to the survey. The qualitative data confirmed the relevance of the five phases and participants described reflective thinking, perspective taking and emotional narratives as the three dimensions of how they learned during the M23C. Participants reported a change in attitudes, enriching their knowledge, experiencing empathy and learning about other health professions.

Discussion: Our findings suggest that the M23C as a cinemeducation course provides a unique learning environment in the training of health professionals.

Abbreviations: FGD, Focus group discussion; LMU Munich, Ludwig-Maximilians-Universität München; M23C, M23 Cinema.

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1 | INTRODUCTION

Empathy is an essential trait for physicians, yet it appears to decrease during medical school,[1] leading to complaints from patients, relatives and other healthcare professionals about insensitivity.[2,3] As one means of addressing this issue and anchoring changes in the medical curriculum, Engel proposed the biopsychosocial model, which places the patient at the centre and requires reflective thinking about a narrower biomedical model.[2,4]

Medical humanities are important for conveying the humanistic aspect of medicine[5,6] and promoting patient-centred care.[2,7] They integrate multiple perspectives and can contribute to breaking down hierarchical structures and promoting effective interprofessional and transprofessional teams in hospitals.[8] However, it is important that medical curricula include the perspectives of professional groups other than physicians, as well as those of patients and their relatives.[3,9]

An innovative way of integrating medical humanities into curricula is through using the arts such as literature, poetry, opera, theatre plays or films.[10–12] Using feature and documentary films in medical education, known as cinemeducation, has gained popularity in the past decade.[13,14] Cinemeducation intertwines science with culture through patient narratives, similar to narrative medicine, and can be seen as a form of technology-enhanced learning.[15–17]

Film can help medical students learn about psychosocial aspects of medicine.[18] Using methods, concepts and content from other disciplines to understand aspects beyond biomedical issues, promoting critical questioning of medical work and interdisciplinary collaboration are key characteristics of cinemeducation.[19] This approach fosters reflective thinking, which involves questioning assumptions and highlighting systemic problems by learning from and making meaning of our experience through stories.[20–24] A narrative approach can encourage reflection and empathy and improves memory retention of illnesses for health professionals.[25]

Cinemeducation represents a way to incorporate the biopsychosocial model into medical curricula.[26] Films can elicit emotions that promote active participation and learning in students.[13,27] Changes in perspective in films can alter attitudes and behaviour.[15–17] Emotional experiences tend to be remembered better,[28,29] which is supported by the Yerkes–Dodson law.[30] The Don Quixote effect shows that medical students and doctors react more emotionally and remember events better when watching a film compared with actual patients.[31] Discussing fictional characters in films can facilitate learning of medical professionalism in different contexts.[32,33]

The M23 Cinema (M23C) at Ludwig-Maximilians-Universität München (LMU Munich) was established in 2005 as an extracurricular course.[34] It combines film screenings with interprofessional and interdisciplinary discussions among experts (e.g. clinical and research), affected persons (e.g. patients and relatives) and other stakeholders. Between three and five film evenings take place each semester. The method of selecting a film consists of brainstorming and a discussion among the members of the organising committee. The MC differs from other cinemeducation courses in that it does not define a list of questions for discussion. Instead, participants ask their own questions, resulting in a flexible learning experience.

In a previous study, we investigated the motivation for and advantages of taking part in a cinemeducation course.[34] Building on these results, we aim to establish a comprehensive learning methodology for cinemeducation. Currently, little is known about the timing and method of learning in the M23C and what students and others gain from attending the course. Furthermore, previous research on cinemeducation has largely focussed on individual films, without advancing and evaluating the concept of cinemeducation as a whole.[32,35–40]

This study aimed to determine, first, when and, second, how learning occurs in the M23C, evaluate if the learning method varies across different participant groups and, third, identify what participants learn from the course.

2 | METHODS

2.1 | Setting

This study was conducted at the medical faculty of LMU Munich in Germany. As shown in Figure 1, the research design comprised focused literature searches (taking place in April and May 2016), a qualitative component and a quantitative component. Qualitative data collection occurred between October 2016 and February 2017 and quantitative data collection during the summer term of 2017 and winter term of 2017/2018.

2.2 | Literature searches and development of a conceptual framework

Prior to designing the study and the interview guides, we conducted focused literature searches in MEDLINE, PUBMED, PsycINFO, Psyndex and ERIC from 14 April until 26 May 2016 with the keywords *cinema*, *medical cinema*, *film and medicine* and *cinemeducation*, followed by additional searches of the reference lists of relevant articles in English and German.[10,13,14,26,27,32,33,37,41–58] We used this literature to (i) inform the design of this study, to (ii) develop an a priori conceptual framework and, importantly, to (iii) design the guides for qualitative interviews and focus group discussions (FGDs) as well as the survey.

2.3 | Mixed methods study

We used a mixed methods approach[59,60] with an exploratory sequential design,[61] where the study's qualitative component preceded the study's quantitative component and was used to inform quantitative data collection.

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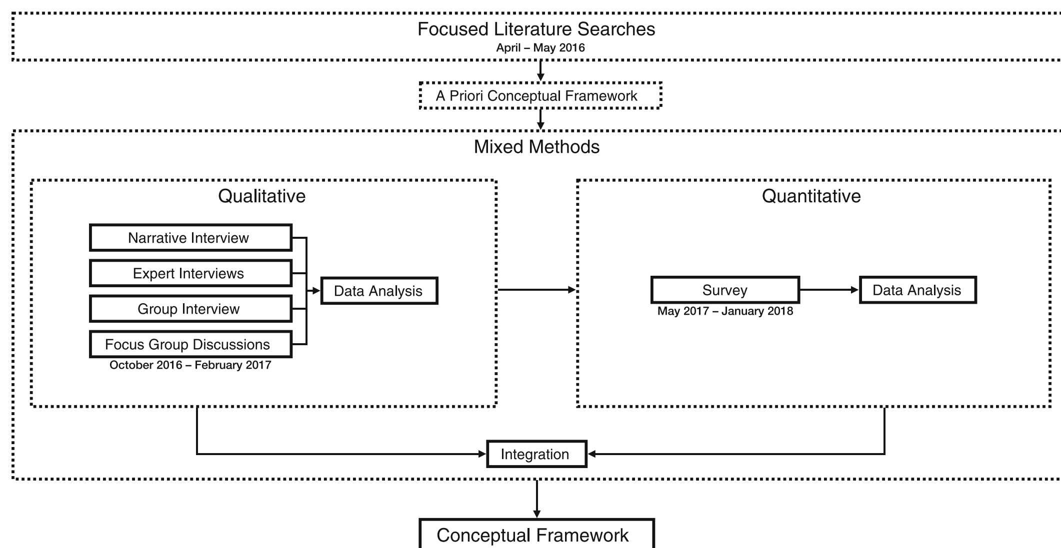

FIGURE 1 Research design.

2.3.1 | Qualitative sampling and recruitment

For the qualitative component, we employed purposive sampling[62] and sought to interview everyone involved. FGD and group interview participants were required to have attended at least two cinema evenings, while expert interviewees must have participated in one M23C evening within the last year. We interviewed both an affected person and an expert from the same event. Participants were recruited through email, a faculty newsletter and the M23C social media page.

2.3.2 | Qualitative data collection

The data collection was undertaken by two researchers (MR and LMP) and conducted in German.

We employed four different methods of data collection:

1. We used a narrative interview for the initiator of the M23C.
2. We held three internally homogeneous FGDs with different groups of participants (i.e. medical students, other health professionals and organising committee).
3. Two former organising committee members were interviewed in a group interview.
4. We conducted four expert interviews with two experts and two patients.

All interviews and FGDs were conducted using semi-structured guides. For the narrative interview, we developed an interview guide with (i) a narrative stimulus, (ii) narrative follow-up questions and (iii) closing questions. All other guides contained five sections: (i) reasons for attending the M23C, (ii) experiences with the M23C, (iii) what students learn and how they benefit, (iv) how students learn and (v) final questions to end the interview. The guide for the M23C committee contained an additional section on (vi) organising the M23C.

The guides were pilot-tested. FGDs and interviews were conducted face to face in private seminar rooms at the university or hospital, with only the researchers and participants present. All interviews were audio recorded, and field notes were taken by MR and LMP.

2.3.3 | Qualitative data analysis

All nine audio files were transcribed by MR using f5 transkript[63] and analysed using structured content analysis as described by Schreier[64] using MAXQDA 2020.[65] Coding themes were inductively developed from the data,[66] and patterns were recognised by sorting more-than-once-occurring sequences of explanations and searching for extreme or counterintuitive examples. Emerging patterns within the data were identified, specified and consolidated in an iterative process.[67] MR and LMP independently coded one FGD transcript, discussed emergent themes and agreed on an initial coding frame (Table S4). This coding frame was then applied to all transcripts by MR. In the analysis, the different qualitative data were coded using the same frame, while at the interpretation level, we paid particular attention to the different perspectives of the participants. The research team met regularly during the study to discuss the analysis. The category system, as well as exemplary quotes, was translated into English by MR and reviewed by MS (Table S5).

2.3.4 | Quantitative sampling and recruitment

A convenience sample of M23C participants during seven M23C screenings was used (see Rueb et al.[34] tab. 1). There was no additional recruitment for the survey beyond the usual promotional efforts of the M23C (i.e. faculty newsletter, M23C social media, posters and flyers). The survey was distributed in the lecture hall after the discussion.

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2.3.5 | Quantitative data collection and analysis

Informed by the qualitative research findings and a literature search on perspective taking and reflective thinking, we developed a multiple-choice survey with 15 items each on perspective taking and reflective thinking during the M23C (Supplement S1). We developed the survey based on the qualitative component and the following questionnaires: Questionnaire for Reflective Thinking, Empathy Assessment Index, Interpersonal Reactivity Index and Empathy-Scale.[68–70]

For the items, we used a 5-point Likert scale. Socio-demographic characteristics included gender, age, course of studies, university, education level and participation frequency. Zensus direkt[71] was used to construct the survey. We performed descriptive analyses (i.e. mean value and standard deviation) and constructed Likert plots in R.[72] We performed a factor and cluster analysis on the items.

2.3.6 | Integration

For integrating the qualitative and quantitative findings, we used the software MAXQDA 2020 and applied the "following a thread" protocol.[73–76] First, we sorted the data by creating a unified list of themes and constructing two convergence coding matrixes (included in the joint display tables). Second, we analysed the data in the two joint display tables by agreement, partial agreement or neutral and disagreement.[77] Third, in a completeness assessment, we compared the qualitative and quantitative results and shared the integrated results with the research team for feedback and comment.

2.3.7 | Ethical approval

Ethical approval for the study was obtained from the Ethics Committee of the Medical Faculty of LMU Munich (No. 537–16). All potentially eligible participants were informed about the research in oral and written form and signed an informed consent form. All data were treated anonymously. An exception was the narrative interview with MS. All participants in the qualitative component were invited to an informal dinner after the data collection. No incentive was given to participants in the quantitative component.

3 | RESULTS

3.1 | Conceptual framework

Informed by focused literature searches and brainstorming among the co-authors, an initial conceptual framework of the M23C was developed. This a priori framework informed the development of the tools for data collection. It allowed us to integrate findings from both components comprising three dimensions: five phases ("when they learn"), learning methodology ("how they learn") and potential impact ("what they learn"). *Five phases* shows the five consecutive steps of the M23C. *Learning methodology* describes the learning methods that underlie the M23C. *Potential impact* outlines the overarching learning content and objectives of M23C that run through all MC evenings. The five phases were already present in the a priori framework, and we assumed that learning about emotions and knowledge can lead to attitude change. Our study partially confirmed our assumption and extended the framework. After integrating the data, an adapted framework (cf. Figure 2) was created, refining the three original dimensions.

3.2 | Characteristics of study participants

3.2.1 | Participants in qualitative study

In total, 28 persons participated in the qualitative study component. Table S1 provides an overview of their characteristics.

3.2.2 | Participants in quantitative study

In total, we collected 503 surveys. Of all surveys, 344 (68.4%) were complete and entered the analysis. One hundred fifty-five surveys were excluded due to missing values because of technical problems with the fourth cinema evening and four due to incorrect age (we only included participants aged 17 to 90 years). Two hundred fifty-seven (74.7%) respondents were female, 85 (24.7%) male and 2 (0.6%) chose the "other" option. The mean age was 23.4 ± 5.1 years (mean; *SD*). Two hundred thirty-nine (69.5%) respondents were medical students, 56 (16.3%) other health students or professionals in training and 49 (14.2%) students from non-health related disciplines. Of all participating medical students, 49 (14.2%) were in the preclinical years of medical school, 188 (54.7%) in the clinical years, 10 (2.9%) in internship (last year) and 7 (2.0%) were graduated physicians. Of all participants, 243 (70.6%) studied at LMU Munich, 72 (20.9%) at Technical University Munich and 29 (8.4%) were from other institutions. One hundred nineteen (34.6%) respondents participated in M23C for the first time, and 225 (65.4%) had previously participated at least once.

3.3 | Integrated findings

In the following, we present the integrated—and qualitative where no quantitative data were collected—findings according to the three dimensions put forward by the a priori conceptual framework: five phases ("when students learn"), learning methodology ("how students learn") and potential impact ("what students learn").

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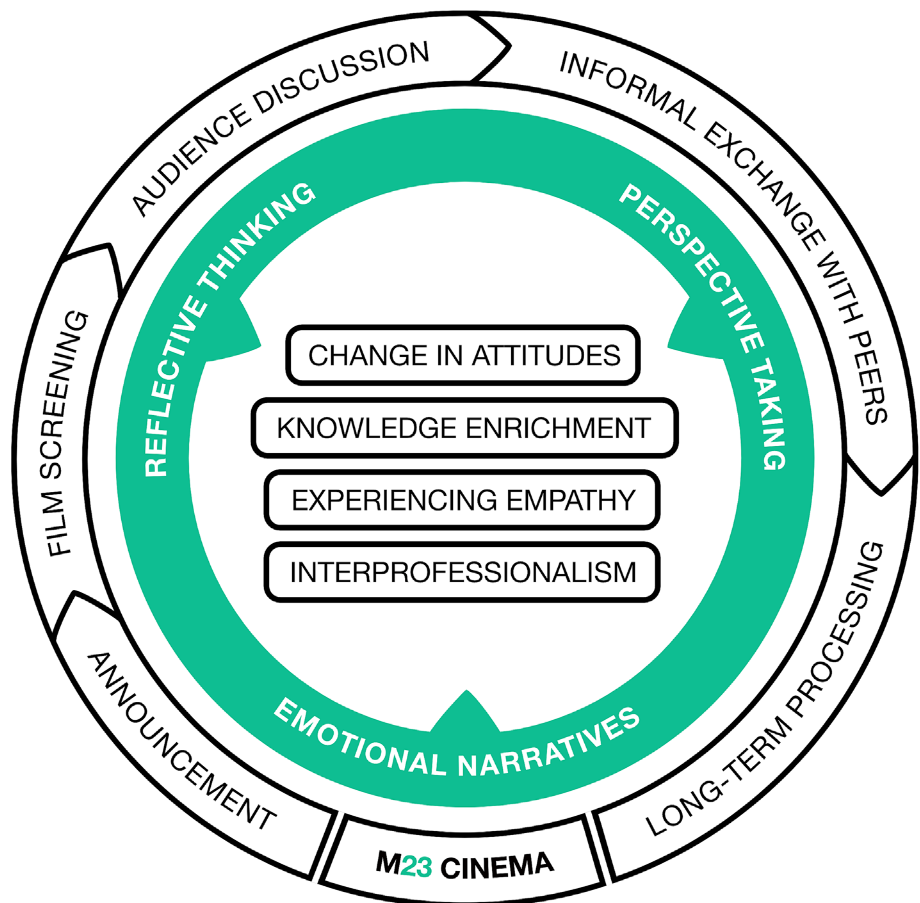

FIGURE 2 Conceptual framework of learning in the M23 Cinema. The framework consists of three dimensions. The outer, black ring describes the *five phases* (when students learn) of the M23 Cinema. The inner, turquoise ring contains the three underlying *learning methodologies* (how students learn) that can lead to the four *potential impacts* (what students learn) in the centre. [Color figure can be viewed at wileyonlinelibrary.com]

3.4 | Dimension I: Five phases—When students learn

As anticipated in our a priori conceptual framework and confirmed by the qualitative data, learning in M23C can be divided into five phases: (i) the announcement, (ii) the film screening, (iii) the panel discussion with experts, affected persons and the audience, (iv) the informal exchange between fellow students directly after the cinema evening and (v) the long-term processing of the cinema evening (see Table S2).

Because several participants in the qualitative part of the study reported that they would talk to other participants directly after the M23C, we asked this explicitly in the quantitative questionnaire. The quantitative data confirmed the importance of the fourth phase: 66.8% of the medical students, 73.8% of the other health students and 46.2% of the non-health students responded that they "still talk about the topic directly after the M23C evening."

3.5 | Dimension II: Learning methodology—How students learn

The qualitative data revealed that the learning methodology of the M23C consists of three sub-components: (i) offering space for reflective thinking, (ii) stimulating perspective taking and (iii) connecting knowledge with emotional narratives.

3.5.1 | Offering space for reflective thinking

Participants in the qualitative component reported that the M23C encouraged them to reflect critically by offering a space for reflective thinking, which is consistent with the quantitative results (see Figure 3). Both data sets were integrated into a joint display to understand better and contextualise the qualitative and quantitative data (see Table 1).

The integrated results (cf. Table 1) show that

1. the M23C is perceived as a space for reflection; and
2. the M23C stimulates reflective thinking in most participants.

One of the experts used the term "space for reflection" to describe the M23C, and 82% of the participants responded that the M23C evening stimulated them to think (cf. Figure 3):

> It is rather the case that [...] in [the M23C] [...] a space for reflection is organised [in which] the students can experience something and then also reflect on it. [...]
> – B1, expert, expert interview

Comparing the M23C with an ordinary film night at home, a medical student stated that the same film in the M23C stimulates one differently:

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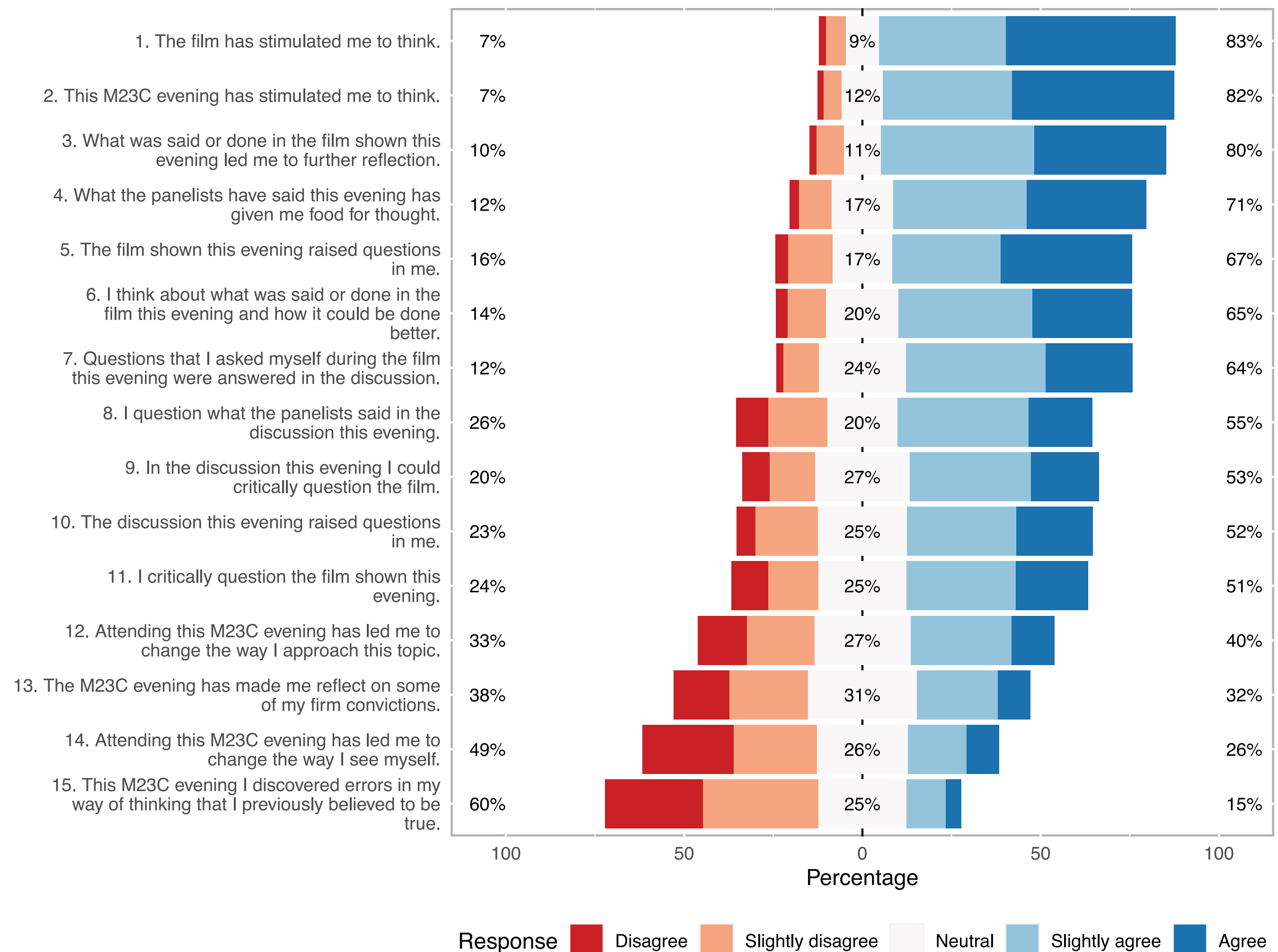

FIGURE 3 Survey response of 344 participants to 15 items on reflective thinking in M23 Cinema with a 5-point Likert scale. [Color figure can be viewed at wileyonlinelibrary.com]

> You did not just watch it for entertainment—as you usually do when you watch a film at home—but somehow there was another level to it. You thought about the film in a completely different way and that it is not just a film but that it theoretically describes something that takes place in normal everyday life but is not omnipresent.
>
> – B1, medical student, focus group

Most participants (83%) reported that the film stimulated them to think, and 80% answered that the M23C led them to further reflection (cf. Figure 2). This is rounded off by a statement that talks about active thinking instead of passive consumption:

> I also believe that you are not just a passive consumer, but at the same time, you somehow reflect more while watching the film because you know that you still have the opportunity to ask questions afterwards.
>
> – B2, former organising committee, group interview

Not only the film but also the discussion stimulates reflective thinking. Thus, 71% of the participants stated that the panellists provided them with food for thought (cf. Figure 3).

3.5.2 | Stimulating perspective taking

Participants in the qualitative component reported that they could take other perspectives in the M23C, which is consistent with the quantitative results (see Figure 4). Both data sets were integrated into a joint display (see Table 2).

The key results from the integration of the qualitative and quantitative data are that

1. most participants can take various perspectives in the film and the discussion by attending the M23C;
2. the M23C helps participants to perceive and empathise with the reality of the patients; and

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TABLE 1 Joint display on reflective thinking in the M23C.

	Literature		Qualitative component			Quantitative component	
Item	**Source**	**Category**	**Agreement**	**Partial agreement or neutral**	**Disagreement**	**Overall agreement**	**Stratified agreement**
The film has stimulated me to think.	QRT (R)	Thinking	When I watch a film at home, when I am tired and lying in bed, my first thought is not during the film, "Mhm (affirmative), yes. These are interesting sociol- topics that I should think about now," but then maybe I just watch the film and really don't think about it afterwards, but go to sleep. But when I watch the film there, then I know that this is quasi—then I am also there a bit in the sense that I am also actively thinking about it. – B1, organising committee, focus group I have to say that there have been situations in films where—even if I hadn't dealt with the subject at all beforehand—[…] during the film I thought, "Wow, that's really cool!" So it really hit me. And even during the film, I sometimes digressed a bit [and] in [my] thoughts [I] kind of racked my brain more about the topic. – B4, organising committee, focus group	It's not like you're being sprinkled, but sometimes you have to think about it a bit yourself. – B2, health professional, focus group	Not available	83% agreement	Medical students: 83.3% Other health students: 84.8% Non-health students: 80.0%
This M23C evening has stimulated me to think.	QRT (R)	Thinking	Medical studies suffer from the fact that they are unbelievably full of material, because they think they have to impart so much knowledge. […] And that is in stark contrast to what is required of you later as a doctor. [Because] you have to reflect a lot. […] Time is often short afterwards, because you are in the thick of it and have	It's not this [being] sprinkled, but sometimes you have to think about it a bit yourself. – B2, health professional, focus group	Not available	82% agreement	Medical students: 83.0% Other health students: 80.4% Non-health students: 76.1%

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TABLE 1 (Continued)

Item	Literature: Source	Literature: Category	Qualitative component: Agreement	Qualitative component: Partial agreement or neutral	Qualitative component: Disagreement	Quantitative component: Overall agreement	Quantitative component: Stratified agreement
			to get through one patient after the other so quickly. But I think that the ability to reflect is very much required later on and there are simply too few spaces for reflection in the degree programme. And for me, the M23 Cinema is a very successful way to create such spaces for reflection. – B1, expert, expert interview				
What was said or done in the film shown this evening led me to further reflection.	QRT (CR)	Improving it	You didn't just watch it for entertainment, as you normally do when you watch a film at home, but somehow there was another level to it. You thought about the film in a completely different way and that it is not just a film, but that it theoretically describes something that […] takes place in normal life every day, but is just not omnipresent. – B1, medical student, focus group I think […] that [in the M23C] you are not only a passive consumer, but at the same time you somehow reflect […] more while watching the film, because you know [that you] still have the possibility to ask any questions afterwards. – B2, former organising committee, group interview	You didn't just watch [the film] for entertainment, like you normally do […] at home […], but somehow there was another level to it. You thought about the film in a completely different way. And that it is not just a film, but that it theoretically describes something that […] takes place in normal life every day, but is just not omnipresent. – B1, former organising committee, group interview	Not available	80% agreement	Medical students: 81.5% Other health students: 82.6% Non-health students: 69.6%
What the panellists have said this evening has given me food for thought.	QRT (R)	Thinking	[…] This thinking about it, also hearing other opinions and, depending on the case, also hearing aspects that one has never thought about oneself. […] That's what brings me the	That's just the possibility [to] ask: […] I have now seen the film. I know what it's roughly about. But what is it like here? And what is it actually like there in Munich, for example?	But with the other films, the discussion […] with the experts didn't help me that much. – B3, medical student, focus group	71% agreement	Medical students: 74.8% Other health students: 66.0%

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TABLE 1 (Continued)

Item	Literature: Source	Literature: Category	Qualitative component: Agreement	Qualitative component: Partial agreement or neutral	Qualitative component: Disagreement	Quantitative component: Overall agreement	Quantitative component: Stratified agreement
			most personally. – B2, organising committee, focus group	I think that takes [you] a lot further. – B3, expert interview			Non-health students: 57.4%
The film shown this evening raised questions in me.	QRT (R)	Raising questions	That was already in the documentary itself, you were then always thinking "What would I do? How would I act?" – B2, organising committee, focus group That leads to the point that you […] don't just let yourself be touched like that. And that what comes out is a bit random. But that [one] has the possibility […] to ask questions. So [that] questions that are raised [are] answered. – B2, expert, expert interview	You have […] the chance, if you […] didn't quite understand things in the film, […] to ask again—and I think that's actually quite good. – B1, affected person, expert interview	So I don't think about the subject at all yet. I watch the film and [ask myself] "Oh, do I like it"—like when I go to the cinema. Whether I think it's good or not. And then I start thinking. […] Then when the discussion comes, I think "Okay, but what else do I actually want to know now?" – B1, health professional, focus group	67% agreement	Medical students: 70.2% Other health students: 58.7% Non-health students: 61.7%
I think about what was said or done in the film and about how it could be done better.	QRT (CR)	Improving it	Sometimes there are just scenes with doctors where you think to yourself: "Maybe you shouldn't do it like that later on." […] There were always situations where I thought to myself during educational talks: "Well, maybe you could package it a little differently." – B5, organising committee, focus group	It changes something in that when you have met a person who is affected by the issue before and you meet a new person again, you are no longer—or not as much—prejudiced. – B1, affected person, expert interview	For me, there was never […] an example that I somehow thought, this has totally blown me away, I would not have expected that at all. – B5, medical student, focus group	65% agreement	Medical students: 66.5% Other health students: 65.2% Non-health students: 60.5%
Questions that I asked myself during the film were answered in the discussion.	QRT (R)	Raising questions	You have the chance to ask additional questions if you didn't quite understand things in the film. – B1, affected person, expert interview	In this respect, I believe that with all the appreciation I have now shown for this subjective, emotional, emphatic level, it is of course also good to have the opportunity afterwards to get competent answers to these knowledge questions that are raised. – B2, expert, expert interview	Not available	64% agreement	Medical students: 64.2% Other health students: 73.9% Non-health students: 50.0%

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TABLE 1 (Continued)

Item	Literature: Source	Literature: Category	Qualitative component: Agreement	Qualitative component: Partial agreement or neutral	Qualitative component: Disagreement	Quantitative component: Overall agreement	Quantitative component: Stratified agreement
I question what the panellists said in the discussion this evening.	QRT (CR)	Challenging	You [are] not only a passive consumer, but at the same time you somehow reflect more while watching the film […] because you know you still have the opportunity to ask questions afterwards. – B2, former organising committee, group interview	Not available	Not available	55% agreement	Medical students: 58.2% Other health students: 57.4% Non-health students: 34.8%
In the discussion this evening, I could critically question the film.	QRT (R)	Challenging	Without the film, I wouldn't have come up with the topic at all. […] The discussion is […] afterwards […] to see, okay, does the film work the way it was? Or was it total nonsense because it was a film? – B1, health professional, focus group I think it is also very important that the topic is taken up [in the panel discussion] and that we can reflect on it together, ask questions and so on. In the combination [of the film and the discussion]. – B1, affected person, expert interview	It just doesn't reflect how the path here is or what a transgender person has to do here now or what requirements a transgender person has here. [In the M23C you have] the possibility to ask: […] I have now seen the film. I know what it's roughly about. […] What is it actually like […] in Munich now, for example? That brings [… one] a lot further. – B1, affected person, expert interview	[…] Whereby it becomes clear to me once again […] that—if it had been a smaller group—then one could have simply reflected a lot more, that is, thought about it, exchanged ideas, discussed it and considered it. Especially what does the film do? […] How does the film present this? […] Is it perhaps also suggestive? Every film is suggestive somewhere. Does it lead us to do something? Is it perhaps something you have to resist in order not to be seduced? And all these things, of course, were not so easy to discuss. – B2, expert, expert interview	53% agreement	Medical students: 54.8% Other health students: 47.8% Non-health students: 50.0%
The discussion this evening raised questions in me.	—	Raising questions	[…] To be able to think on your own […] about what you tend to do now. Even on questions that you would perhaps never really have asked yourself, because these are very special topics that are shown and addressed. I find that very, very exemplary for the whole cinema. – B4, organising committee, focus group	Not available	Not available	52% agreement	Medical students: 53.0% Other health students: 42.2% Non-health students: 58.1%

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TABLE 1 (Continued)

Item	Literature: Source	Literature: Category	Qualitative component: Agreement	Qualitative component: Partial agreement or neutral	Qualitative component: Disagreement	Quantitative component: Overall agreement	Quantitative component: Stratified agreement
I critically question the film shown this evening.	—	Challenging	I didn't find the film particularly good. Not in many respects. There was a lot of confusion, but maybe that's a very harsh expert judgement from someone who […] imagines that he knows the subject particularly well. – B1, expert, expert interview	The discussion afterwards is first of all to see: Okay, does the film work the way it was? Or was it total nonsense because it [was] a film? – B1, health professional, focus group	Not available	51% agreement	Medical students: 52.5% Other health students: 44.7% Non-health students: 50.0%
Attending this M23C evening has led me to change the way I approach this topic.	QRT (CR)	Improving it	[…] There is this one scene where the woman gets electroconvulsive therapy. And that is just portrayed in a totally terrible way, really. […] But nowadays we actually know that it's not like that any more. […] It is […] actually relaxed, they are slightly anaesthetised. […] If you want to tell a patient "You're going to get electroconvulsive therapy," but they have a certain image of it through such media. That you […] then maybe approach it in a completely different way. That you say "Yes, you need not be afraid," which you might not do otherwise. But there is this interface with what the public communicates through the media […] and what we somehow know as insiders […]. – B6, medical student, focus group	It is more like […] organising […] a space for reflection, [in which] the students experience […], witness […] and can then also reflect—which otherwise does not have such a space in medical studies. […] I believe that this is extremely valuable didactically. – B1, expert, expert interview In the case of medical students, I would assume—and this was the impression I had—that it leads to more tolerance in the vast majority of them. Or basically to a greater understanding. Not only tolerance and acceptance, but also a better ability to empathise. Of course for this it was good to have people who were affected there. – B1, expert, expert interview	Not available	40% agreement	Medical students: 40.2% Other health students: 43.2% Non-health students: 38.6%
This M23C evening has made me reflect on some of my firm convictions.	QRT (CR)	Self-reflection	For me, it's often the case that I watch the film and think, "Oh, there's another opinion that you can hold." (Laughter) […] Actually, I just change my opinion during the film. – B6,	[…] If you look at it from a didactic point of view, [that is] a very important added value of this event—that you are encouraged to think about your own attitudes to what is	Well, my attitude doesn't change at this point. But maybe my way of thinking about the issue is changing. – B8, health professional, focus group	32% agreement	Medical students: 34.1% Other health students: 28.3%

(Continues)

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TABLE 1 (Continued)

Item	Literature		Qualitative component			Quantitative component	
	Source	Category	Agreement	Partial agreement or neutral	Disagreement	Overall agreement	Stratified agreement
			health professional, focus group	shown [in the film]. And perhaps to reflect critically on one's own attitude. However, this is something that, I think, is rather implicit. […] The attitudes change with experience. And a film like this is very close to experience. You could also say that it is a bit of a transfer of experience. – B1, expert interview			Non-health students: 24.4%
Attending this M23C evening has led me to change the way I see myself.	QRT (CR)	Self-reflection	These discussions bring you to exactly this point, because there are affected people [or] relatives sitting down there […] who can […] tell you how they felt in the situation. This makes you think about how you should react as a doctor or how you would react yourself if someone was sitting in front of you and you had to say some terrible diagnosis. – B2, medical student, focus group	Not available	Not available	26% agreement	Medical students: 26.1% Other health students: 27.7% Non-health students: 20.5%
This M23C evening, I discovered errors in my way of thinking that I believed to be true.	QRT (CR)	Self-reflection	This sometimes actually leads me to think about my own attitude […] and actually have to critically question it once in a while. That's something you don't usually like to do, to critically question your own attitudes. And that I then actually change them sometimes, thinking: "Well, I was quite wrong." – B1, health professional, focus group	Of course, I always tried to compare this with my experiences […] in the hospital. – B1, expert, expert interview […] A very important added value of this event [is] that you are encouraged to think about your own attitudes to what is depicted in the film. And perhaps to reflect critically on one's own attitude. However, this is something that, I think, is	Not available	15% agreement	Medical students: 16.7% Other health students: 8.7% Non-health students: 15.9%

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TABLE 1 (Continued)

Item	Literature		Qualitative component			Quantitative component	
	Source	Category	Agreement	Partial agreement or neutral	Disagreement	Overall agreement	Stratified agreement
				more implicit. – B2, expert, expert interview			

Note: Integration of qualitative and quantitative data on reflective thinking in a joint display.
Abbreviations: M23C, M23 Cinema; QRT (CR), Questionnaire for Reflective Thinking (Critical Reflection); QRT (R), Questionnaire for Reflective Thinking (Reflection).

3. participants learn about medical topics from a biopsychosocial perspective.

Seventy-four per cent of participants stated that multiple views exist on the topic of an M23C evening and that they would try to consider them all. Seventy per cent sought to understand all perspectives of the discussion before forming an opinion (cf. Figure 4). This diversity of perspectives seems to be an essential component:

> Some people just bring good perspectives to it you just don't get otherwise. When I think about it, in my studies I always get the doctor's perspective.
> – B4, medical student, focus group

Sixty-two per cent reported that they had looked at the issue through M23C from angles they otherwise would not have thought about (cf. Figure 4).

For participants, the M23C is an opportunity to take the patient's perspective by watching a film and being provided with the possibility to ask questions to patients affected by a disease:

> I believe that through these discussions you get exactly to this point [of understanding the patients' perspective] because there are affected people and relatives sitting down there […] who can tell you how they felt in the situation.
> – B2, medical student, focus group

For example, 85% of participants said that during the film, they tried to imagine how the characters felt, and 75% tried to imagine how they would feel if they were in the situation in the film:

> […] With the film "24 Weeks" […] it really got under my skin, I have to say. Maybe it's also because I'm a woman myself and it can happen to me.
> – B3, medical student, focus group

A medical student reported that in M23C, he learned that patients have different perspectives and ways of dealing with their illness and concludes from this:

> I think this M23 Cinema has also revealed that not every patient is the same. And that you do not always have to behave the same way in this and that situation. But you have to adapt to the individual patient.
> – B1, medical student, focus group

The M23C sheds light on a topic not only from a biomedical point of view but also from a (psycho)social or even public health perspective. For instance, 66% of participants said that they were able to look at the topic in a more comprehensive manner during the discussion. A medical student stated that there are two ways of asking a question, a biomedical and a psychosocial way:

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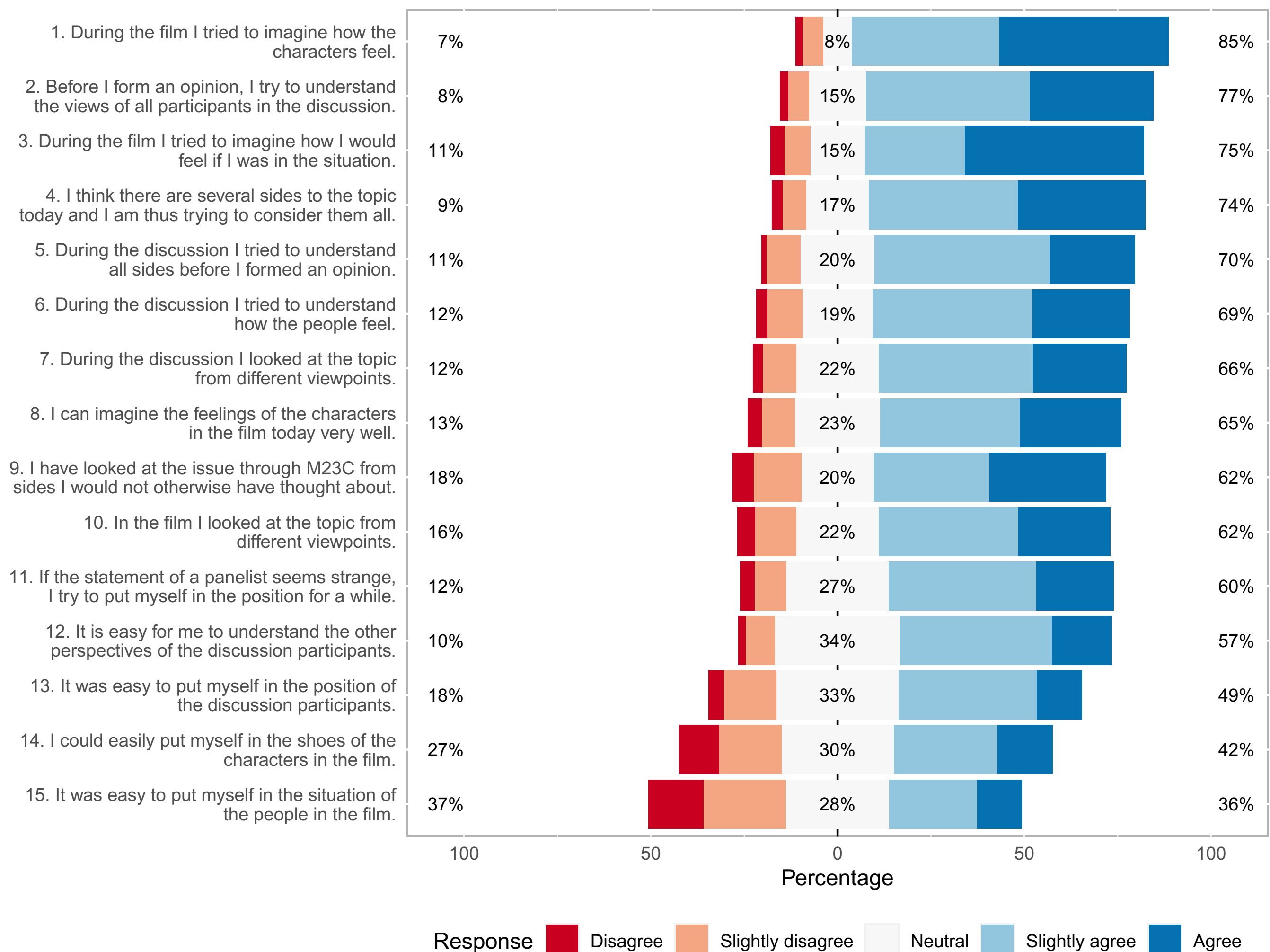

FIGURE 4 Survey response of 344 participants to 15 items on perspective taking in M23 Cinema with a 5-point Likert scale. [Color figure can be viewed at wileyonlinelibrary.com]

> [...] [There are] many who ask strictly factual questions [...]: "What is it about the disease or the side effects? [...]" And then there are those who focus more on the interpersonal component and ask the person affected: "How do you feel in this situation?" [...]
>
> – B1, medical students, focus group

In a factor and cluster analysis, no usable results emerged for all 30 items.

3.5.3 | Connecting knowledge with emotional narratives

Participants in the qualitative component reported that they were able to learn through emotional narratives in the film and the discussion in the M23C. No quantitative data were collected for this dimension.

In the qualitative analysis, three key points were identified in relation to knowledge and emotional narratives being connected in the M23C:

1. Emotional learning can take place during the film but also in the discussion;
2. The M23C enables medical students to allow emotions and not to have to suppress them; and
3. Students seem to remember the learned knowledge longer due to the emotional component of the M23C.

Compared with a "factual" lecture, the M23C aims to convey emotions through films and thereby touches participants explicitly:

> [...] Films are touching; that is what they are made for. [...] They are meant to touch and thus, they stimulate something utterly different than a standard, objective, didactically good lesson.
>
> – B2, expert, expert interview

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TABLE 2 Joint display on perspective taking in the M23C.

	Literature		Qualitative component			Quantitative component	
Item	Source	Category	Agreement	Partial agreement or neutral	Disagreement	Overall agreement	Stratified agreement
During the film, I tried to imagine how the characters feel.	E-Scale	Empathy	You really have to put yourself in the other person's position. And that also has something to do with empathy, which we don't learn in medical school. On the contrary, we tend to be trained away from it, because we don't learn this empathic, but rather this analytical, very often scientifically dominated view [of people]. […] We then reconstruct the patient as a complex biomechanical machine and not as a caring, emotional individual. And it is precisely this perspective that can of course be seen in film, where it is in the foreground anyway. These are often psychograms of people and interactions between people. […] That can be portrayed in a much more direct and touching way. And with it, reflections on […] these very humane dimensions of illness, dying and death can be conveyed much better. – B2, expert, expert interview The fact that one gets a very direct insight into the subjective experience of those affected improves the understanding for them. This then makes it easier to create a shared reality with those affected. When we are later in the situation that we are the professional carers, we have to somehow get access to the people. And [creating a] shared reality means that we sense	With this view of reality, we naturally move relatively far away from the reality of the experience of the patients affected. And this also leads to the fact that one or the other doctor-patient interaction later on is no longer so empathic. Rather, it is very objective—and in the best case very competent, but without the necessary empathy. – B1, expert, expert interview	Not available	85% agreement	Medical students: 85.9% Other health students: 79.6% Non-health students: 84.8%

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TABLE 2 (Continued)

Item	Literature: Source	Literature: Category	Qualitative component: Agreement	Qualitative component: Partial agreement or neutral	Qualitative component: Disagreement	Quantitative component: Overall agreement	Quantitative component: Stratified agreement
			what meaning the events have for those affected. And [creating a] shared reality means that we sense what meaning the events have for those affected. To do that, we have to put ourselves in the other person's shoes a bit. And that is not possible without empathy. I believe that empathy is promoted and trained through such films, through reflecting on such films. – B2, expert, expert interview				
Before I form an opinion, I try to understand the views of all participants in the discussion.	—	Several perspectives	I found that very enriching for myself. [...] I also had the feeling that we [as experts] also [...] had the opportunity to interact a bit. So we didn't get involved in any in-depth discussions, but you do have the opportunity to pick up on what the other person said and to accentuate it. [...] I actually found that very enriching. [...] – B1, expert, expert interview	I think that the M23 cinema also brought out well that not every patient is the same. [...] That you don't always [think] in the same way, that's how you have to behave in this and that situation—but that you have to adapt to the patient individually. – B1, medical students, focus group	Not available	77% agreement	Medical students: 76.2% Other health students: 78.7% Non-health students: 78.3%
During the film, I tried to imagine how I would feel if I was in the situation.	IRI (F)	Empathy	You really have to put yourself in the other person's position. And that also has something to do with empathy, which we don't learn in medical school. On the contrary, we tend to be trained away from it, because we don't learn this empathic, but rather this analytical, very often scientifically dominated view [of people]. [...] We then reconstruct the patient as a complex biomechanical machine and not as a caring,	With the [...] film "24 Weeks" [...] [I] was a bit dissolved, I must say. Maybe it's also because I'm a woman myself and it can actually happen to me. – B3, medical student, focus group I believe that empathy [...] is promoted and trained by reflecting on such films. – B2, expert, expert interview	Not available	75% agreement	Medical students: 76.1% Other health students: 79.2% Non-health students: 63.8%

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TABLE 2 (Continued)

Item	Literature: Source	Literature: Category	Qualitative component: Agreement	Qualitative component: Partial agreement or neutral	Qualitative component: Disagreement	Quantitative component: Overall agreement	Quantitative component: Stratified agreement
			emotional individual. And it is precisely this perspective that can of course be seen in film, where it is in the foreground anyway. These are often psychograms of people and interactions between people. […] That can be portrayed in a much more direct and touching way. And with it, reflections on […] these very humane dimensions of illness, dying and death can be conveyed much better. – B1, expert, expert interview [It] is perhaps also […] an advantage […] of this medium of instruction that you are not presented with the ethical […] or medical questions […] in isolation, so to speak, but embedded in a story [of a film]. And so of course it has much more context, much more information about [the] environment. What that means for the individual persons. – B2, expert, expert interview				
I think there are several sides to the topic today and I am thus trying to consider them all.	—	Several perspectives	I would almost have found it a pity if I […] had been alone in the lecture hall as an expert. […] I think that these different perspectives, I would say in general terms, that were gathered there, are of course also appropriate with regard to the different perspectives that the film has, that the film serves, that the film addresses. – B1, expert, expert interview	And some people also bring [a] good perspective to it, which you don't get otherwise. When I think about it, in my studies I always get the doctor's side. – B4, medical students, focus group The students must then decide for themselves what to make of it. You won't be able to overturn the therapist's expert opinion. But you won't be able to say that we [those affected] will change our minds either. So it's just this opinion that we	But that is—especially in this area—difficult. […] More difficult, more problematic than with other diseases. A very banal example: a film about diabetes […] is less explosive in terms of the discussion and possible dividing line than a film about [transidentity]. – B1, expert, expert interview	74% agreement	Medical students: 73.7% Other health students: 71.4% Non-health students: 79.1%

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TABLE 2 (Continued)

Item	Literature: Source	Literature: Category	Qualitative component: Agreement	Qualitative component: Partial agreement or neutral	Qualitative component: Disagreement	Quantitative component: Overall agreement	Quantitative component: Stratified agreement
				have from the experiences that we also see. And [the other way round] the experiences that he has had. There are simply two different opinions on a subject. That's just the way it is. – B1, affected person, expert interview			
During the discussion, I tried to understand all sides before I formed an opinion.	—	Several perspectives	This thinking about it, also hearing other opinions and, depending on the case, also hearing aspects that one has never thought about oneself. […] That's what brings me the most personally. – B2, organising committee, focus group Through the discussions and perhaps also the other opinions [one] simply becomes more open to other opinions, approaches and proposed solutions. […] That gives you [the] incentive to […] think about it and maybe deal with things more openly. – B5, health professionals, focus group	I had […] the feeling that we […] had a bit of an opportunity to interact. We didn't get involved in any in-depth discussions, but we did have the opportunity to pick up on what the other person had said. To accentuate that. And I actually found that very enriching. – B2, expert, expert interview	Not available	70% agreement	Medical students: 68.2% Other health students: 72.3% Non-health students: 75.0%
During the discussion, I tried to understand how the people feel.	E-Scale	Empathy	[…] How it felt to me: that there was a great sense of consternation and identification with the representatives of the self-help groups or especially with the one lady who shed a tear. – B1, expert, expert interview They were always very […] serious films. […] You found a completely different emotional approach to the film when you had participants sitting in the discussion group afterwards	With this view of reality, we naturally move relatively far away from the reality of the experience of the patients affected. And this also leads to the fact that one or the other doctor-patient interaction later on is no longer so empathic. Rather, it is very objective—and in the best case very competent, but without the necessary empathy. – B1, expert, expert interview	I had the feeling that the discussion was taking place on this […] factual level. And that what [was] actually there in terms of […] touching elements was not taken up. […] So to speak, this […] very vivid experience of what it means to receive such a diagnosis for an unborn child and then wrestle with the decision. What should one do? What is the right decision? Should	69% agreement	Medical students: 68.1% Other health students: 61.7% Non-health students: 80.0%

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TABLE 2 (Continued)

	Literature		Qualitative component			Quantitative component	
Item	Source	Category	Agreement	Partial agreement or neutral	Disagreement	Overall agreement	Stratified agreement
			and that really changed […] your perspective once again. – B1, medical student, focus group		you have the baby? Should you not have the baby? Should you abort? And what does that mean? That became incredibly clear. You were incredibly close [to the people in the film]. From my point of view, this was not reflected in the discussion [afterwards]. Instead, as I perceived it, it was more like […]—not everything—but often […] on a factual level. – B2, expert, expert interview		
During the discussion, I looked at the topic from different viewpoints.	IRI (PT)	Several perspectives	[…] Many who ask strictly technical questions and say: "Yes, what is it […] with the disease? […]" Like with the side effects or other things. And then there are the people who focus more on the interpersonal component and ask the person affected: "How do you feel in this situation or how is this and that?" And yes, I think that there are two types of viewers. One is the one who really has this blatant "I'm now a demigod in white" thought in my head and "I really just want to know how the disease is now." And then the other part, which somehow says "Sure, the illness is all important and interesting," but then also takes into account the interpersonal aspect and asks more in that direction. There [is] more catching up to do, because you actually get the rest in the lecture. And you don't have the opportunity to ask, "But what's it actually like	Not available	Not available	66% agreement	Medical students: 70.1% Other health students: 55.3% Non-health students: 59.1%

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TABLE 2 (Continued)

Item	Literature: Source	Literature: Category	Qualitative component: Agreement	Qualitative component: Partial agreement or neutral	Qualitative component: Disagreement	Quantitative component: Overall agreement	Quantitative component: Stratified agreement
			when you're affected yourself? I think that's the advantage of the M23 Cinema, that you really do have the opportunity: If I want to ask professional questions, I can ask professional questions. If I want to know more about the patients, I can do that too. – B1, medical students, focus group In this regard, the people you invited were perhaps a good mix, because they [covered] these different areas. The knowledge on the one hand, the pragmatic support on the other hand and then the subjective experience of the people concerned. – B2, expert, expert interview				
I can imagine the feelings of the characters in the film today very well.	IRI (F)	Empathy	By gaining a very direct insight into the subjective experience of those affected, this opens up or improves the understanding for those affected. And that makes it easier to create a common reality with the people affected. […] If we are in the situation later on that we are the professional carers, then we have to get access to the people somehow. And creating a shared reality means that we sense what meaning the events have for those affected. […] To do that, we have to put ourselves in the other person's shoes a little bit, and that is not possible without empathy. And I believe that empathy is promoted and trained through such films [and] the reflection	As a rule, […] a film […] has a story. […] A story is such that it always portrays the events […] in a very multi-faceted way and also naturally involves the viewer [personally] much more emotionally. – B2, expert, expert interview	You can hardly change your perspective on our particular issue. If you are not in our shoes, you can never really understand it completely. So you can try to understand what [a transgender person] feels, but you will never really know what someone feels, because you are not really affected yourself. So from that point of view, a change of perspective is actually a bit difficult. – B1, affected person, expert interview	65% agreement	Medical students: 66.5% Other health students: 63.3% Non-health students: 56.2%

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TABLE 2 (Continued)

Item	Literature		Qualitative component			Quantitative component	
	Source	Category	Agreement	Partial agreement or neutral	Disagreement	Overall agreement	Stratified agreement
			of such films. – B2, expert, expert interview I believe that you can open up more emotionally through such a film than [with] a normal patient. […] Through the film you […] have the possibility to at least let out your emotions at that moment and to be able to fully put yourself in this situation or to try. And I think you get a good perspective that way. – B1, medical students, focus group				
I have looked at the issue through M23C from sides I would not otherwise have thought about.	IRI (PT)	New mindset	[…] There are already situations […] in films […] for me—even if I hadn't dealt with the subject at all beforehand—where I thought to myself during the film: "Wow!" So it really hit me. And even during the film, every now and then […] I drifted off a bit, just [was] in my thoughts and more—yes, [I] kind of racked my brain about the topic. – B4, organising committee, focus group	[…] This change of perspective or role reversal is not only a feel-good factor, but I believe that it is really extremely relevant for diagnostics and therapy. – B1, expert, expert interview I actually wanted to go to "Still Alice" [in M23C]. […] I had already seen the film […] before […] and then I didn't go after all. But I think it would have been […] interesting to see the film […] from a different perspective and then maybe change your opinion about how the film was when the discussion took place afterwards. – B4, health professionals, focus group	Not available	62% agreement	Medical students: 64.3% Other health students: 57.1% Non-health students: 57.4%
In the film, I looked at the topic from different viewpoints.	IRI (PT)	Several perspectives	I would almost have found it a pity if I […] had been alone as an expert […] in the lecture hall. […] I think that these different perspectives […] that were gathered there are of course also appropriate with regard to the different perspectives that the film has, that the film	That an attempt is being made to bring medicine more into contact with social issues. Or, conversely, to bring socially relevant topics into medical courses and thus build a bridge. In other words, to broaden the horizon a little to the left and to	You have to watch films that show you a different perspective. For example, "Dr. Alemán" didn't do anything for me. It's a standard film. Drugs. Violence. – B1, former organising committee, group interview	62% agreement	Medical students: 68.5% Other health students: 50.0% Non-health students: 43.5%

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TABLE 2 (Continued)

Item	Literature		Qualitative component			Quantitative component	
	Source	Category	Agreement	Partial agreement or neutral	Disagreement	Overall agreement	Stratified agreement
			serves, that the film addresses. – B2, expert, expert interview […] For me it was […] most extreme when we showed this organ transplant documentary, because exactly in the documentary many aspects [were shown]. Once [of] a person who wanted a kidney. One who gave a kidney. Once a doctor who transplanted. So that was already in the documentary itself. – B2, organising committee, focus group	the right. – B2, expert, expert interview			
If the statement of a panellist seems strange, I try to put myself in the position for a while.	—	Put yourself in their shoes	Not available	Not available	[…] An expert who just made me completely aggressive. […] I don't know what exactly it was, but somehow it was a social worker who kind of […] annoyed me. But there were also unbelievably great people where I really thought to myself: "Respect, that you sit down in front of all the students and say: by the way, this and that. So it really depends completely on who says what. And some people always bring good perspectives that you don't get otherwise. So, when I think about it, in my studies I always get the doctor's side. – B4, medical students, focus group	60% agreement	Medical students: 59.3% Other health students: 60.4% Non-health students: 64.4%
It is easy for me to understand the other perspectives of the discussion participants.	EAI	Put yourself in their shoes	[The moderator] led the discussion in such a way [that] everyone could simply make a contribution. This led to a discussion in the audience,	Not available	Not available	57% agreement	Medical students: 52.8%

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TABLE 2 (Continued)

Item	Literature: Source	Literature: Category	Qualitative component: Agreement	Qualitative component: Partial agreement or neutral	Qualitative component: Disagreement	Quantitative component: Overall agreement	Quantitative component: Stratified agreement
			which was relatively interesting, because there were people from relatively many different [African] countries—also Germans, who were able to contribute from other countries, because they had already done a voluntary social year. Accordingly, a lot of information came together. And that's how we got such a huge overview of the topic of [homosexuality in Africa]. – B2, organising committee, focus group The [discussion] then […] went through the whole lecture hall. The African students […] said something about it. And then, one by one, German students also had something to say about it. […] Mr Siebeck also said something […] about it. So it wasn't necessarily a doctor saying, "This is how it is," but rather an opinion or view from the various students who were there. And that was interesting. – B4, organising committee, focus group				Other health students: 66.0% Non-health students: 66.7%
It was easy to put myself in the position of the discussion participants.	EAI	Put yourself in their shoes	I think that you take away many aspects from the discussion, from the people who were there and so on. – B4, health professionals, focus group	The perspective I take on as a spectator […] is through this identification with the person concerned, […] the perspective of the patient and [not] the perspective of the doctor. In this respect [therefore] a change of role or a change of sides, a change of perspective. – B1, expert, expert interview	For example, I found—this was also my first time—[…] that on that day the discussion was not so good. – B1, organising committee, focus group	49% agreement	Medical students: 48.6% Other health students: 57.4% Non-health students: 42.2%

(Continues)

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TABLE 2 (Continued)

Item	Literature		Qualitative component			Quantitative component	
	Source	Category	Agreement	Partial agreement or neutral	Disagreement	Overall agreement	Stratified agreement
I could easily put myself in the shoes of the characters in the film.	IRI (F)	Put yourself in their shoes	How it feels to be in the patient's situation, that seems extremely important to me. – B2, expert, expert interview	That is simply another possibility, so to speak. Without having a patient in the room who is also particularly vulnerable, we can approach these essential dimensions of illness. And what it means for the patient to be ill. – B1, expert, expert interview	Not available	42% agreement	Medical students: 41.9% Other health students: 52.1% Non-health students: 35.4%
It was easy to put myself in the situation of the people in the film.	EAI	Put yourself in their shoes	[…] You saw her perspective [in the film]. Because I […] hadn't dealt with it before, what it entails […] when you make a decision like that [means abortion] and how it works. And I found it quite interesting to see that from their perspective. – B3, health professionals, focus group	That is simply another possibility, so to speak. Without having a patient in the room who is also particularly vulnerable, we can approach these essential dimensions of illness. And what it means for the patient to be ill. – B2, expert, expert interview	Not available	36% agreement	Medical students: 33.0% Other health students: 56.2% Non-health students: 26.1%

Note: Integration of qualitative and quantitative data on perspective taking in a joint display.
Abbreviations: EAI, Empathy Assessment Index; E-Scale, Empathy-Scale; IRI (F), Interpersonal Reactivity Index (Fantasy); IRI (PT), Interpersonal Reactivity Index (Perspective Taking); M23C, M23 Cinema.

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One medical student reported that emotional learning was triggered not only by the film but also by the participation of affected people in the discussion:

> […] in "The Fault in Our Stars," there was a mother of a deceased cancer patient who described from her own point of view what it was like for her, and that was somehow emotional. It was also very touching about the film. The film itself was already quite emotionally moving and that was somehow something else.
>
> – B4, medical student, focus group

Allowing emotions during learning seems to have negative connotations for some of the medical students. On the other hand, it is precisely this emotional component that seems to trigger something that keeps the participant engaged with the topic:

> I do not know either. Maybe I am also very sensitive to the [topic of abortion]. […] However, the [M23C evening] still does not let me go.
>
> – B3, medical student, focus group

This negative connotation of emotions is also reflected upon by this medical student, who feels that a doctor cannot be emotional. The M23C, on the other hand, offers a space in which the student can allow emotions towards a fictitious patient to take hold and to learn from them:

> I believe that you can open up more emotionally through such a film than you can now with a normal patient. Because if you […] worked in oncology and had to deal with such patients' fates on a daily basis and were to absorb it as emotionally as you do now, for example, with a film like this, then I do not think you could work in the profession for long. Because somehow you have to build up a certain healthy distance to protect yourself. And through the film, you have the possibility to at least let out your emotions at that moment and to be able to fully put yourself in this situation or to try to do so. […]
>
> – B1, medical student, focus group

This medical student states that the emotions the films evoked made her remember their content better and longer. She describes this as "emotional learning":

> I think it is also a bit of emotional learning. […] It is not factual knowledge […]. If it is more of a feature film, for example, then you already have all these emotions, the music. […] That is the reason why you […] remember it longer […] afterwards. Because in the film, you also somehow feel sympathy, sadness. […] These emotions that you go through in the film then lead to the fact that you remember it better than simply a lecture problem.
>
> – B1, organising committee, focus group

A film can manage to stir you up emotionally and raise questions, as this student reports the following:

> I can use the example of […] "24 Weeks" again because that was simply a film that somehow […] stirred me up inside. And I always try to ask myself the question, "What would you do in that situation?" Because as a medical student, now I am 24 years old. By the time I am done with all my training, I will be 32 […]. And I do not plan to have a child in between somehow. And the older you get, the more likely you are to have a child with trisomy 21. What do you really do then? On the one hand, you do not know how bad it really is. However—my best friend works with people with disabilities—they can give you a lot. […] On the other hand, if it is just being in hospital and having to suffer a lot, that does not make any sense either. And I have really been asking myself the question, "What would you do now?" for days, but I just cannot come up with an answer. And that, somehow, still preoccupies me.
>
> – B3, medical student, focus group

Further, the medical student describes that she perceived the learning experience in the M23C in combination with the pure factual learning for the state exam as holistic:

> At that time, I was also studying gynaecology for the state examination, and I have to say that because I saw the film at that time, I somehow felt as if I had studied holistically. So somehow, I had really exhausted all media. (Laughter) But somehow, the film just will not let me go. […]
>
> – B3, medical student, focus group

Compared with a lecture, the M23C leads to a more intense learning experience through the images in the film and the emotions these trigger:

> Of course, a lot more knowledge is factually conveyed in the lecture. But I think the knowledge, or what you take away from the film or the discussion, remains even more intense because you simply have an image. You have a relative; you have a doctor; you have a film scene in front of you. And that remains even more

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> intense—maybe it is a little less in the end [than in the lecture], but in any case, it stays in your memory a lot longer.
>
> – B3, organising committee, focus group

This is also confirmed by one of the experts, who describes that what is learned emotionally had a different quality to traditional learning:

> What difference is it when I, as a spectator or medical student, acquire knowledge through sharing a personal story of life and suffering? I believe that this is an entirely different quality. And then also burns itself into the memory more effectively. To have approached it on an emotional level. Or I tried to understand it on an emotional level. What is actually going on in their minds? As if I only hear it in a scientific lecture or read it in a textbook.
>
> – B1, expert, expert interview

3.6 | Dimension III: Potential impact—What students learn

Participants reported on various topics in the qualitative data eye-opening moments during the M23C. A former member of the organising committee described it as "enlightening":

> Once you have been there, there are some really enlightening and interesting insights.
>
> – B2, former organising committee, group interview

An affected person gave an example for such an eye-opening moment:

> However, with three hundred [participants], I am sure many of them had such an aha experience for the first time. Also [...] in the case of the trans woman [...]. Perhaps the [...] thought also arose: If I were sitting next to them in the tramway, I would not notice [...] [or] realise. So, they are not freaks at all; they are just normal people that you do not notice at all. [...]
>
> – B1, affected person, expert interview

The qualitative data suggested four categories (see Table S3) of what students learned:

1. a change in attitudes;
2. knowledge enrichment;
3. empathic understanding; and
4. open-mindedness about working in an interprofessional team.

No quantitative data were collected for this dimension.

4 | DISCUSSION

In this paper, we aimed to construct a conceptual framework and assess when (five phases), how (learning methodology) and what (potential impact) participants learned when attending the M23C. Learning happened throughout all five phases—but mainly during the film viewing, during the discussion with experts, affected persons and the audience and during subsequent peer discussions—as proposed in the conceptual framework. M23C provides a unique learning environment and opportunity to facilitate learning through stimulating reflective thinking, encouraging perspective taking and connecting knowledge with emotional narratives. Through this process and these learning methodologies, participants reported a change in attitude, knowledge enrichment, empathic understanding and interprofessional learning.

The qualitative data collection, in particular, confirmed the framework with its five phases. Indeed, it suggests that the course is not over at the end of the formal discussion but that participants subsequently exchange ideas informally in small groups and sometimes over prolonged periods of time, which can lead to new, individual learning insights.[34]

Our study confirms prior research that reflective thinking is key to cinemeducation.[18,23] Through reflective thinking and a change in perspective, M23C can initiate transformative learning and train participants to become change agents.[8,78,79] Our study supports Brookfield's idea that a film combined with discussion and diverse participants can be the lens for students.[80] While only a small proportion of participants changed their innermost beliefs, M23C can contribute to changing attitudes and actions among participants. Cinemeducation, especially M23C, can help shift the biomedical focus to a more humanistic approach.[20] M23C is one way to promote reflective thinking among health professionals and encourage them to view their practice broadly.[80]

Most methods to enhance reflection in medical students include an introduction, a trigger, a guideline, writing, small group discussions, a tutor, and feedback.[81] Writing in non-technical language is important in narrative medicine.[82] Our research suggests that large group discussions without writing can also lead to reflection. Cinemeducation seems to be a useful teaching method to improve reflection skills in health students and professionals.[83] Our study supports Sandars' argument that guided reflection and feedback can challenge assumptions and lead to new perspectives.[84]

Our findings complement prior research that film is effective in providing different perspectives.[18,85] Films serve as discussion triggers by capturing attention, enabling a change in perspective and promoting self and external reflection through emotions.[13,86] Cinemeducation projects have demonstrated that medical students' change of perspective through film reduces the stigma associated with, for example, mental illnesses.[47,87]

Apart from setting the topic, there was an intended openness to how the discussion developed, and most likely each cinema evening had a somewhat different impact on participants. In M23C, in line with other cinemeducation courses, participants might learn to change

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their attitudes towards issues and groups of people,[37,88] generate new knowledge,[33] learn to empathise with people[37,38] and learn about the importance of interprofessional collaboration.

Based on this study, potential implications for other forms of embedding the humanities in medical education could be that they are particularly suitable as interprofessional learning environments. Linking science with the arts, humanities and social sciences through narrative medicine can improve human health in that the voices of suffering are seen, heard and felt. M23C, or cinemeducation in general, can be seen as a methodology of moving images and speech to make narratives tangible and experienceable.[15] With regard to our results, there is a major overlap with the prism model and its four functions, mastering skills, perspective taking, personal insights and social advocacy.[89–92] The World Health Organization supports the inclusion of arts and humanities education—under which we include cinemeducation—within the training of health professionals.[93]

4.1 | Strengths and limitations

This is one of the first studies to assess learning in cinemeducation using a mixed methods design. The study was accompanied by a conceptual framework that guided the research from the beginning and was advanced with the findings. Our survey was based on various questionnaires and in large parts developed *de novo* which enabled a detailed interpretation of the quantitative data with the qualitative data. All questionnaires are based on self-attribution and can provide socially desirable answers. Our study did not use a pre-post-design to assess if participants increased their ability to reflect critically or take other peoples' perspectives. A limitation of the study is that MR and MS were both involved in the organising committee of the M23C and were able to influence all levels of the study design. At the same time, this allowed for a participatory research approach, which ultimately ensured the relevance of the research questions and the linking of theoretical and practical knowledge regarding cinemeducation.

Purposive sampling for the qualitative component may have limitations in terms of susceptibility to judgement error, lower reliability and difficulty in generalising research findings. It was, however, both time-efficient and is particularly suitable for exploratory research.[94] As participants were interviewed not immediately after an M23C evening, recall bias might have been present. Through the open-ended questions of the semi-structured interviews and focus groups, as well as the inclusion of a variety of different groups of people involved in the M23C, we were able to collect rich qualitative data. As some of the participants knew MR through their studies, it is possible that they felt they could not speak openly or negatively about the M23C (social desirability bias). Therefore, we encouraged all participants in advance to consider mentioning negative aspects. During the qualitative data collection, we were not yet aware of the comparatively large group of non-health students, so that their perspective insufficiently appears in the qualitative data.

The M23C tends to attract more female than male students and is therefore not representative in relation to the gender distribution of the medical school. It is possible that due to the extracurricular, voluntary structure of the M23C, students who would benefit the most deliberately do not participate in this humanities-based course. It can be assumed that some of the 503 surveys were filled out more than once by the same persons, as it was anonymous.

Intercoder reliability is given as the development of the coding framework (main and subcategories) was done by MR and LMP. To present our findings to an international audience, MR translated quotes which were then reviewed by MS. This may have resulted in a loss or change of meaning. Given that the conventional questionnaires for perspective taking and reflective thinking were only partially applicable to our cinemeducation intervention, our results might be difficult to compare. Particularly, the integration of the two data sets in the analysis is a strength of our study, as it allowed us to use the qualitative quotes to better capture, understand and interpret the quantitative findings.

5 | CONCLUSION

The M23C provides a unique opportunity for pre-service and in-service health professionals to engage in reflective thinking, adopt different perspectives on medical and socially relevant topics and connect knowledge with emotional narratives through film screenings and audience discussions with experts and patients. This might help participants to reflect on and change their opinions and attitudes, enrich their knowledge, experience empathy and establish an open-mindedness about working in an interprofessional team. For learners in other contexts, it can be generalised that they take away something in particular when, for example, their thinking and knowledge is challenged by reflective thinking, perspective taking or emotional narratives. Our results might help medical educators to compare and improve cinemeducation courses and find similarities and differences with other humanities courses in medical education.

Further studies using more robust study designs are needed to confirm these findings. These should investigate if participants of cinemeducation interventions increase their skills in reflective thinking and perspective taking in a pre- and post-testing and whether any short-term impacts persist over prolonged periods of time. Validated questionnaires on reflective thinking and perspective taking in cinemeducation settings would be an asset.

Our study focused on students of medicine and other health professions, implying that cinemeducation can and should play a broader role in medical curricula. Similar formats combining film screenings with discussions, for example, at a film festival, may also be a means to convey knowledge on health topics to members of the public.

AUTHOR CONTRIBUTIONS

MR and MS developed the initial idea for the study. All authors contributed to study conception and design. Material preparation was

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performed by MR with the help of all other authors. Data collection was performed by MR and LMP. LMP was the interviewer and MR was the recorder during the narrative interview, the focus group with the organising committee and the focus group with the medical students. MR was the interviewer and LMP was the recorder during the focus group with the health professional students, the group interview and the four expert interviews. MR transcribed all audio files. Analysis was performed by MR with the help of LMP. MR coded 100% and LMP 10% of the qualitative data. The quantitative analysis in R was made by MR. All authors interpreted the data. The first draft of the manuscript was written by MR, and all authors reviewed and revised subsequent versions of the manuscript. All authors read and approved the final manuscript.

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CONFLICT OF INTEREST STATEMENT

MS initiated the M23C in 2005. MR was part of the organising committee during data collection and supervised the current team at time of publication. EAR and LMP indicated that they do not have any competing interests to declare.

FUNDING INFORMATION

The film licences were paid for out of the medical faculty's budget.

DATA AVAILABILITY STATEMENT

The qualitative data sets used will not be publicly available due to concerns regarding the identification of the participants and in agreement with the ethical approval obtained by the institutional review board based at the medical faculty of LMU Munich. However, these data are secured and could be made available if the request is in line with the data usage outlined in the ethical approval. The quantitative data sets supporting the conclusions of this article are included in the article and its supplementary file (Table S6). More detailed data sets are available from the corresponding author on reasonable request.

ETHICS STATEMENT

Ethical approval for the study was performed in accordance with the Declaration of Helsinki and obtained from the Ethics Committee of the Medical Faculty of LMU Munich (No. 537–16). All participants gave written consent to participate in the study.

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