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# Emotion work in interpreter-mediated consultations: a systematic literature review

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## Abstract

(Word count 197)

**Objective:** To identify the ways in which physicians, patients and interpreters express emotions, react to emotional expressions and/or coordinate the emotional interaction in interpreter-mediated consultations (IMCs).

**Methods:** We systematically searched four databases and screened 10 307 articles. The following inclusion criteria were applied: 1) participants are patients with limited proficiency in the host language, physicians and professional interpreters, 2) analysis of patient-physician-interpreter interaction, 3) focus on emotions, 4) in vivo spoken language interpretation, and 5) authentic primary data.

**Results:** The results of 7 included studies suggest that physicians, patients and interpreters work together and verbally and paraverbally contribute to the co-construction of emotional communication (EC) in IMCs. However, a decrease in EC might still compromise the patient's quality of care in IMCs.

**Conclusion:** There is a dearth of scientific evidence of EC as an interactional process between participants in IMCs. More research on under investigated modes of communication and emotions is needed to advance our understanding. For now, EC seems to be subject to the successful interaction between participants in IMCs.

**Practice implications:** Evidence-based curricula of interprofessional education between physicians and interpreters on EC in IMCs could be beneficial to the effective co-construction of EC in IMCS.

## Keywords

- Emotions
- Interpreters
- Health communication
- Communication barriers
- Linguistic diversity

## 1 Introduction

Over the past decades, the importance of emotionally sensitive relationships between physicians and patients has been emphasized in the literature [1, 2]. One of the key components for the successful creation of this relationship is effective emotional communication (EC) [1, 2], i.e. the transactional interactional process where participants in a communicative event, such as a medical consultation, collaboratively create and negotiate meaning by expressing emotions, responding to emotional expressions and coordinating the emotional interaction using various semiotic resources, such as speech, prosody, gestures, facial expressions, etc. [3, 4]. More specifically, physicians should be able to detect, accurately identify and adequately respond to their patients' emotions as part of a patient-centered approach [5]. The physician's ability to accurately detect and adequately respond to the patient's emotions has been shown to positively impact the patient's level of satisfaction and their rapport [5, 6]. However, due to the implicitness of emotional cues and differences in communication styles, physicians often find it difficult to detect and respond to their patient's emotions which might lead to misdiagnosis, incorrect treatments and poorer health outcomes [5, 7].

Establishing an emotionally sensitive relationship through EC becomes even more complex when there is a language barrier between the patient and the physician and an interpreter is needed to enable communication [8]. Physicians find it difficult to empathize with patients with limited proficiency in the host language (henceforth patients) through interpreters [9]. The culture and language barriers in interpreter-mediated consultations (henceforth IMCs) might impact the way in which people express emotions (henceforth emotional display) [10, 11]. The presence of a professional interpreter might encourage [12]

as well as prevent patients from displaying emotions [13] and in turn interpreters experience difficulties with emotional display because their codes of conduct prevent them from sharing their own emotions even when patients and physicians expect them to do so [10].

Even though research into IMCs has shown that participants in IMCs (patients, doctors, interpreters) co-construct meaning with each other [14], research into EC has primarily focused on participants' perceptions and experiences related to EC in IMCs. Since participants' accounts in interview-based studies might be limited to what participants remember and decide to report on [15], they might not be an accurate representation of the actual interactional process of EC in IMCs.

In this review, we set out to gather all available evidence in the literature of the ways in which patients, physicians and professional interpreters display emotions, react to emotional display and/or coordinate the interactional process of EC in IMCs. Even though we hypothesized that research on this topic would be limited and scattered among different fields, we choose to conduct a systematic literature review to create an overview of all existing knowledge that could serve as a solid basis for future research on the subject matter [16]. In this systematic literature review we seek to provide a response to the following question:

'How do physicians, patients and interpreters display emotions, react to emotional display and/or coordinate the interactional process of EC in IMCs?'

## 2 Methods

### 2.1 Search strategy

This systematic review was conducted according to the PRISMA guidelines [17]. On October 29<sup>th</sup> 2018, we searched for relevant publications in PubMed, Embase, Web of Science and Google Scholar. Our search string comprised the following combination of controlled vocabulary and text words related to the PICO concepts (population, intervention, comparative, outcome) in our research question [18]: patient OR physician AND interpreter AND non-mediated medical consultations (i.e. without an interpreter) AND emotional display. No time or language filter were applied. The search string was adjusted to each database but the search terms remained identical (see Appendix A for the PubMed search string). The search string was created in collaboration with two librarians from the KU Leuven University library of the faculty of Medicine who are both experienced in the methodology of systematic literature reviews.

### 2.2 Inclusion & exclusion criteria

The inclusion and exclusion criteria of this systematic literature review are in line with the scope of the EmpathicCare4All-project [16] within which this study was conducted.

Considering that this project aims to optimize interpreter education within the framework of an interprofessional education module for medical student and student interpreters [16], we made the methodological decision to focus our review solely on professional interpreters who usually have received interpreting training in the past. The inclusion and exclusion criteria of our review were defined as follows: 1) patients with limited proficiency in the host language, physicians and professional interpreters, 2) analysis of patient-physician-interpreter interaction, 3) focus on emotions, 4) in vivo spoken language interpretation, and

5) authentic primary data. Table 1 provides an overview of the working definitions of the key concepts in our criteria.

<b>Key concept</b>	<b>Working definition</b>
Professional interpreter	A professional who is trained and certified to deliver interpreting services in public service settings.
Physician	Doctor in primary, secondary or tertiary conventional medical care.
Nonverbal resources	All paralinguistic and kinetic resources patients, physicians and interpreters may use in interaction [19]
Emotions	Affective states which can be experienced and have arousing and motivational properties [Mesh-database]
Emotional display	Verbal and nonverbal ways in which participants in IMCs express emotions
Emotional communication	The transactional interactional process where participants in a communicative event, such as a medical consultation, collaboratively create and negotiate meaning by expressing emotions, responding to emotional expressions and coordinating the emotional interaction using various semiotic resources, such as speech, prosody, gestures, facial expressions, etc. [3, 4]

*Table 1: definitions of key concepts in criteria*

We limited our study to spoken language on-site IMCs because of the different use of semiotic resources in sign language IMCs (i.e. primary use of hand gestures and absence of speech) [20, 21] and remote interpreting (i.e. the electronic mediation of the communication limits the use of nonverbal resources in the interaction) [22].

### 2.3 Study selection

The studies were screened against predefined criteria by five coders (LT, DK, HS, CW, PP) with expertise in medicine (PP), terminology (CW), interpreting and translation studies (LT, DK, HS, CW). Four coders (LT, DK, HS, CW) were trained by the fifth coder (PP) who has experience in realist reviews [23]. For the title and abstract screening, two pairs of coders (pair A: LT & HS, and pair B: DK & CW) divided the number of studies and independently screened titles and abstracts. For the full text screening, two individual coders (LT & DK) independently screened the full text of the studies that were included in the first round of screening. For both screenings, an additional coder (PP) was available to consult in case of disagreement. Consensus among coders was reached through discussion.



## 2.4 Study characteristics and content analysis

For the extraction of study characteristics and content analysis, the research team identified a set of topics that were relevant to the research question (Table 2). Based on these topics, two individual coders (LT & DK) independently analysed the study characteristics and findings of the included studies and extracted all relevant information. The help of an additional coder (PP) was available in case of disagreement. Coders reached consensus through discussion.

	<u>Topic</u>
<b>Study characteristics</b>	Country
	Research aim
	Type of data
	Measurement tool
	Participants (number, language, recruitment and, if applicable, medical setting)
<b>Findings</b>	(Working) definition of emotions
	Specific emotions that were studied
	Measurement tool/coding system
	(Verbal, nonverbal or combined) emotional statement on the part of the patient, physician and interpreter
	Emotional display of the participant's own/other participants' emotions
	(Likely) impact of the emotional statement on the consultation
	Interactional context of the emotional statement
	Conclusion of the authors

*Table 2: extraction of study characteristics & findings*

## 2.5 Quality appraisal

We relied on four appraisal tools [18, 24-26] which were recommended in the Cochrane Handbook [18] to develop a quality appraisal checklist (i.e. a checklist of questions that addressed the topics we had previously identified as relevant to our research question. We used these questions to assess the findings, research design, sample coverage, data collection, data analysis, reporting, reflexivity, neutrality, ethics and documentation of the research process in the included studies. Three individual coders (LT, DK & PP) independently evaluated each study against the appraisal checklist and reached consensus through discussion. For each study, we calculated a quality appraisal score by adding up the

number of positively rated quality indicators, i.e. aspects of the research design that were sufficiently and adequately addressed in the study, and dividing this number by the total number of quality indicators (see Appendix B for the quality appraisal of the final corpus).

### 3 Results

Our database search yielded 10 307 results. After removing 2 486 duplicates, we screened the title and abstract of 7 821 publications. The full text of 139 studies was screened. The full text screening yielded 7 studies which met all inclusion criteria (Figure 1).

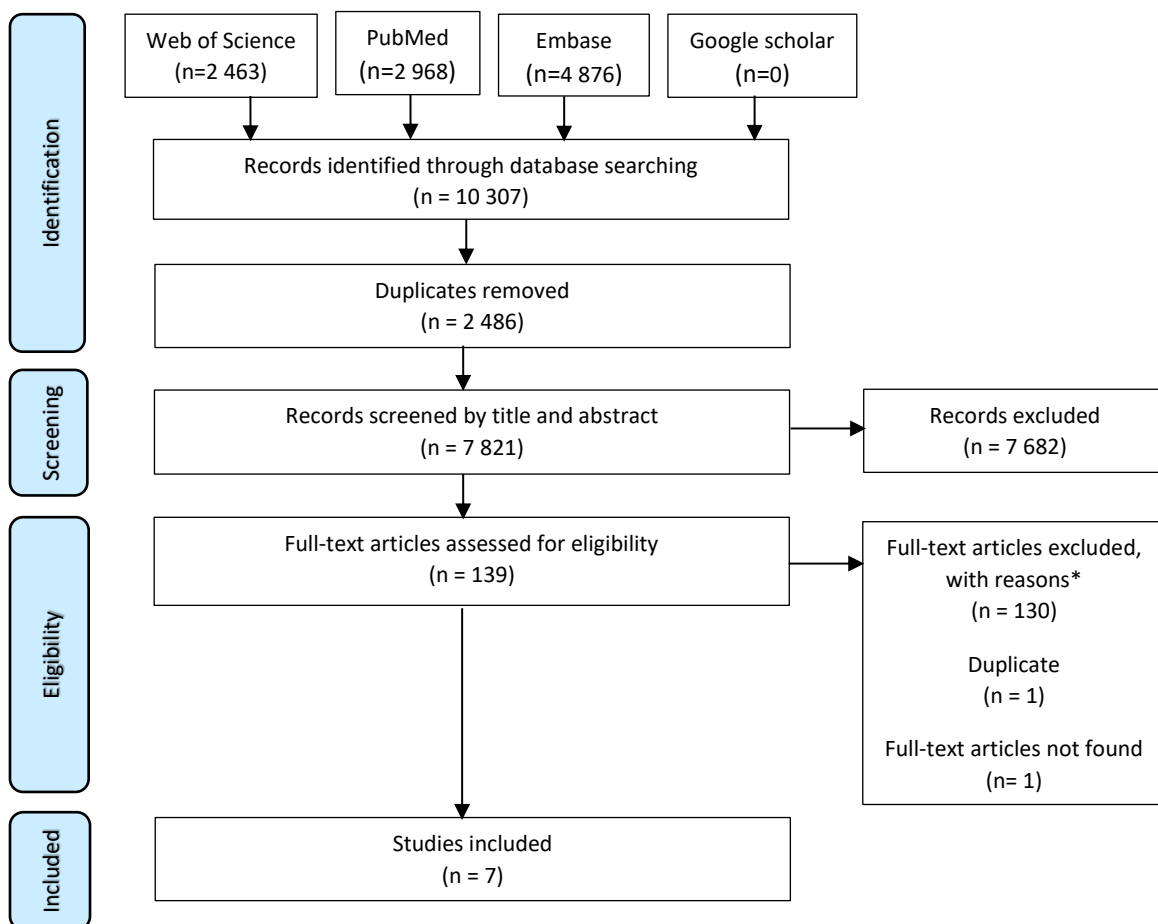


Figure 1: flow chart of the selection process

\*Most frequent reasons for exclusion: 1) no patient with limited proficiency in the host language and/or physician and/or professional interpreter; 2) no analysis of interaction; 3) no authentic primary data

### 3.1 Study characteristics

Table 3 provides an overview of the study characteristics of the 7 included studies. The notation 'M' denotes missing information.

Authors	Country	Aim	Data	Research design	Patient			Physician				Interpreter				Quality appraisal
					No	Language	Recruitment	No	Language	Recruitment	Setting	No	Language	Recruitment	Type	
Butow et al. [27]	AUS	To examine how physicians, patients, family members and interpreters negotiate culturally appropriate exchange of poor prognostic information	Verbal	Quantitative  Comparison between monolingual consultations, language discordant consultations without an interpreter, IMCs with professional interpreters and IMCs with nonprofessional interpreters  <u>Tools:</u> 2 coding systems:  1. To assess the content & process of prognostic discussion  2. To assess the interpretation	78	31 English 24 Chinese 11 Arabic 12 Greek	Patients were identified as potentially eligible by their oncologist	10	6 English 2 Chinese 1 Hungarian 1 Iranian	M	Oncology	M	M	M	13 professional interpreters physically present  10 family members without medical knowledge  4 professional interpreters over the phone  4 family members with medical knowledge  1 health professional (nurse or physician)	84%
Butow et al. [28]	AUS	To identify group differences: i) in the amount of time spent overall with patients and family members in each group, ii) in the time spent giving information to patients and discussing psychosocial issues, iii) and number of informational and emotional cues given and	Verbal	Quantitative  Comparison between monolingual consultations, language discordant consultations without an interpreter, IMCs with professional interpreters and IMCs with nonprofessional interpreters  <u>Tools:</u> 2 coding systems:	78	31 English 24 Chinese 11 Arabic 12 Greek	Patients were identified as potentially eligible by their oncologist	10	6 English 2 Chinese 1 Hungarian 1 Iranian	M	Oncology	M	M	M	39% professional interpreter who was physically present  33% a family member without medical knowledge  14% a professional interpreter over the phone	86%

Authors	Country	Aim	Data	Research design	Patient			Physician				Interpreter			Quality appraisal	
Raymond [29]	USA	the proportion to which physicians responded	Verbal & nonverbal	1. CanCode	24	8 English 16 Spanish	M	4	English	M	Paediatric genetics	4	M	M	8% a family member with medical knowledge	49%
		To identify predictors of communication differences, if they existed		2. Physician responses to cues for information or emotional support											4% a health professional (nurse or physician)	
		To introduce the concept of epistemic brokering in interpreter-mediated medical visits and illustrate how it can be used to effectively convey information between providers and patients/parents		Qualitative											Focus on IMCs with professional interpreters	
				<u>Tools:</u> Conversation analysis												
Sleptsova et al. [30]	CHE	To assess the quality of interpreters' proficiency in the correct translation of content from one language into another	Verbal	Quantitative	19	14 Turkish 5 Albanian	M	19	German	M	10 Internal Medicine  1 Anaesthesiology  1 Academy of Swiss Insurance Medicine  7 Unit treating victims of torture or war	17	M	Interpreters were employed by the hospitals involved or by interpreter services of the respective canton	Professional	77%
Rosenberg et al. [31]	CAN	To describe and compare encounters involving trained interpreters and family interpreters	Verbal	Quantitative	16	9 Punjabi 2 Bengali 2 Vietnamese 2 Tamil 1 Dari	Patients were identified as potentially eligible by their physician	16	English	M	Primary care	16	M	M	10 professional 6 ad hoc	81%

Authors	Country	Aim	Data	Research design	Patient			Physician				Interpreter			Quality appraisal	
Street et al. [32]	USA	To elicit the perceptions of physicians and interpreters about the role of the interpreter  To evaluate physician-patient affective vocal tone within the medical encounter and its relationship to treatment adherence in ethnically diverse patients with rheumatoid arthritis	Nonverbal	Quantitative  Comparison between monolingual consultations (in English or Spanish) and IMCs with professional interpreters  <u>Tools:</u> MEDICODE	17 4	141 English 33 Spanish	Permission to contact patients was obtained from the treating rheumatologist prior to contact.	77	English	M	Rheumatology	33	M	M	M	74%
Leanza et al. [33]	CAN	To explore the different ways physicians and interpreters interact with patients' Lifeworld  To describe and compare communication patterns in consultations with professional and those with family interpreters	Verbal	Qualitative  Comparison between IMCs with professional and family interpreters  <u>Tools:</u> Content discourse analysis  Codes and criteria developed by Barry et al. [34] and further specified by Leanza [35]	16	2 Bengali 9 Punjabi 1 Dari 2 Tamil 2 Vietnamese	Patients were identified as potentially eligible by their physician.  Consenting interpreters sought the consent of the patients.	16	English	M	Primary care	16	M	Professional interpreters were hired from the Montreal interregional interpreters bank  The research associate sought the consent of the interpreters.	10 professional 6 family interpreters	74%

Table 3: study characteristics of the seven included studies

The included studies were published after 2010. Two studies were conducted in the USA [29, 32], one in Switzerland [30], two in Australia [27, 28] and two in Canada [31, 33]. Four studies obtained a quality appraisal score of 75% or higher [27, 28, 30, 31], two studies scored 74% [32, 33] and one study scored below 50% [29] (Appendix B).

The patients sample size ranged from 16 to 174. The languages in the patient sample ranged from 2 to 5 languages. Language combinations between physicians (left) and patients (right) included: English <> Spanish, Punjabi, Bengali, Vietnamese, Tamil, Dari; German <> Turkish, Albanian; English, Chinese, Hungarian, Iranian <> Chinese, Arabic, Greek. In 5 studies the patients were recruited by their physicians who identified them as potentially eligible for the study [27, 28, 31-33]. Two studies did not report on the patients' recruitment [29, 30].

The number of physicians ranged from 4 to 77. The consultations were recorded in oncology, paediatric genetics, internal medicine, anaesthesiology, insurance medicine, a unit treating victims of torture or war, primary care and rheumatology. Most physicians spoke one of the official languages of the host country, such as English or German. In two studies the physicians spoke other languages, such as Chinese, Hungarian or Iranian [27, 28]. One study did not report on the physician's language [33]. None of the studies reported on the physicians' recruitment.

The sample of interpreters ranged from 4 to 33. Two studies did not mention the interpreter's sample size [27, 28]. Next to professional interpreters, non-professional were included in four studies [27, 28, 31, 33]. Two studies reported that the professional interpreters were hired by the hospital or the respective interpreter services [30, 33]. One study reported that the research associate sought the interpreters' consent [33]. Three

studies reported on the professional interpreter's training [30, 31, 33]. None of the included studies specified the interpreters' first language.

Five studies used a quantitative research design. They first coded the interaction by means of the RIAS-coding system [30, 32], the MEDICODE coding system [31], the CanCode coding system [28] or a personally developed coding system [27, 28] and afterwards they quantified their results [27, 28, 30-32]. Two studies employed a qualitative research design and used Conversation Analysis [29] or content discourse analysis [33] to study interaction. Five studies compared different types of consultations (monolingual consultations, language discordant consultations without an interpreter, IMCs with a professional interpreter or IMCs with a non-professional interpreter) [27, 28, 31-33] and two studies focused on IMCs with professional interpreters alone [29, 30].

### 3.2 Definition of EC and emotions

All included studies investigated aspects pertaining to what we in this paper call EC. Authors referred to aspects such as *emotion focused behaviours, emotional support, psychosocial information, affective talk, emotions about the problem, emotional cues, physician's responses and empathy* [27, 28, 30, 31]. Two studies used *affiliation* (i.e. participants' ability to understand patients' emotional display and express that understanding [29]), *emotional stance* (i.e. participants' emotional standpoint on occurring events [29]) and *the Voice of Lifeworld (VOL)* (i.e. speech pattern characterized by a lay language; questions or interventions which include contextualized facts, historically situated, accompanied by affective comments [33]) as descriptions of a specific communication pattern or framework to discuss participants' emotional statements in IMCs. None of the included studies provided



a definition of emotions. One study provided examples of studied negative emotions [27] without justifying their inclusion in the study (Table 4).

	Studied aspects of emotional communication	Working definition of emotions	Studied emotions
Butow et al. [27]	Emotion focused behaviours Emotional support	M	Fear Hope Concern
Butow et al. [28]	Psycho-social talk Emotional cue Physician's response to emotional cue Empathy	M	M
Raymond [29]	Emotional stance Affiliation	M	M
Sleptsova et al. [30]	Psycho-social information Affective talk	M	M
Rosenberg et al. [31]	Emotions about the problem	M	<u>M</u>
Street et al. [32]	Affective tone	M	M
Leanza et al. [33]	Voice of Lifeworld (VOL)	M	M

Table 4: Investigated aspects of emotional communication and emotions in the seven included studies

### 3.3 Patient's emotional display in IMCs

Patients in IMCs seem to rely both on verbal and paraverbal semiotic resources, such as their verbal speech and vocal tone, to actively participate in the emotional interaction and display their emotions [28, 29, 32]. On a verbal level, Butow et al. [28] also found that patients in IMCs display a similar amount of emotional cues as patients in monolingual consultations. However, patients in IMCs discuss less psychosocial topics and display more intense (i.e. direct) cues than patients in monolingual consultations [28]. On a nonverbal level, Street et al. [32] suggest that patient's affective tone (i.e. paraverbal semiotic resources such as, intonation contour, speed, rhythm, that express emotional states or emotional information [36]) seems less expressive in IMCs.

### 3.4 Physician's reaction to emotional display in IMCs

Physicians also seem to use both verbal and paraverbal semiotic resources to actively participate in the emotional interaction and validate the patient's emotional display [27-29, 33]. Physicians will do so by verbally interrupting the interpreter's rendition with their own verbal responses and adjusting their paraverbal intonation and voice quality [29]. Butow et al. [28] also found that when physicians responded to patients' emotional cues in IMCs, their responses had a similar empathy level as their responses to patients' emotional cues in monolingual consultations. What is more, Leanza et al. [33] found evidence of physicians discussing the patient's *Lifeworld* (e.g. patient's emotions) in two communication patterns. In the Mutual Lifeworld pattern, physicians and patients initiate a dialogue in which they primarily use the Voice of Lifeworld, including affective statements, which might contribute to creating, maintaining or re-establishing their relationship [33]. In the Integration of Medicine and Lifeworld pattern, physicians simultaneously validate their patient's concern and integrate a link to medical knowledge in their response [33].

However, three of the included studies also report a decrease in the amount and intensity of the physicians' contributions to EC in IMCs [27, 28, 32]. According to Butow et al. [28], physicians rarely discuss their patients' emotions and psychosocial issues and show less emotion focused behaviours in IMCs than in monolingual consultations [27]. Physicians also seem to ignore, delay or not respond to more of their patients' emotional cues in IMCs [28]. On a nonverbal level, Street et al. [32] also found that physician's affective tone was less expressive in IMCs.

### 3.5 Interpreter's coordination of the emotional interaction

Finally, interpreters will use verbal and paraverbal semiotic resources to coordinate the emotional interaction in IMCs [27-33]. According to Raymond [29] and Leanza et al. [33], interpreters present themselves as “active co-participants” (p.44) [29] who actively participate in the co-construction of EC in IMCs not only by translating the patients and physicians' utterances, but by also coordinating the interaction. They do so by expressing verbal acknowledgement tokens (e.g. 'oh' or 'hmhm') when they are listening [29], adopting the same paraverbal vocal tone and quality of voice as the patient when they are interpreting [29] and introducing new pieces of information in an attempt to clarify the patients' concerns [33]. In so doing, Leanza et al. [33] and Raymond [29] suggest that interpreters allow for the patient's Lifeworld to be heard (e.g. patient's emotional display is validated by the interpreter with acknowledgement tokens and by the physician with more elaborate responses) [33], create the possibility for physicians to respond to the patient's emotional display (i.e. thanks to the interpreters accurate retelling of the patient's emotional statement, physicians are able to react to the patient's emotional display as they would in monolingual consultations) [29] and promote mutual understanding [33] and common ground [29, 33] between physicians and patients (e.g. the interpreter's accurate translation of physicians' and patients' verbal and paraverbal emotional statements, allows for physicians and patients to understand each other and co-construct EC).

However, four of the included studies also report that interpreters omit and change physicians' and patients' emotional display in IMCs [27, 28, 30, 31]. The amount of omissions in the interpreters' renditions of patients' emotional expressions ranges from 20% [28] to 59% [27] and of physician's emotional responses from 23% [27] to 75,5% [31]. Butow et al. [27] argue that 11% of the omitted or non-equivalent interpretations are deliberate

attempts to misinform or change the subject. On a paraverbal level, interpreters seem to make physicians' and patients' affective tone less expressive [27, 32], more euphemistic [27], more confident or harsher [27].

## 4 Discussion and Conclusion

### 4.1 Discussion

We set out to investigate the ways in which patients, physicians and interpreters display emotions, react to emotional display and/or coordinate the interactional process of EC in IMCs. We identified 7 studies that addressed EC in IMCs.

The findings of our review provided a response to our research question and allowed us to identify that patients, physicians and interpreters co-construct EC by employing a set of different verbal [29, 33] and paraverbal [29] semiotic resources in interaction with each other. What is more, both verbal and paraverbal semiotic resources seem to have different communicative functions depending on the role the participant assumes at that point in the interaction. For example, prosody might be used by patients (speaker) as a means to express emotions, while the same semiotic resource might simultaneously be used by physicians and interpreters (listeners) as a means to deduce meaning. All of the participants in IMCs seem to make use of this dual functionality of semiotic resources to understand emotional display as a listener [29] and to display emotions/react to emotional display/coordinate the emotional interaction as a speaker [29, 33]. Previous research in monolingual consultations affirms the diverse use of both verbal and nonverbal resources (i.e. both kinetic and paraverbal resources) in consultations and shows that they can be used as means of attentive listening [37] or as means to display emotions [38], understand emotional display [39] or react to emotional display [38]. Therefore, physicians and interpreters should pay

attention during IMCs to all of the different ways in which emotions can be displayed, interpreted, reacted to or coordinated, in order to guarantee effective EC in IMCs. What is more, physicians and interpreters could even make strategic use of these semiotic resources, e.g. consciously express acknowledgement tokens or change their tone of voice, to enhance EC in IMCs.

Besides answering our research question, this review also showed that EC seems to be subject to the interactional co-construction process between patients, physicians and interpreters in IMCs [29, 33]. This lends support to the notion that “a successful interpreter-mediated medical encounter is the achievement among all participants” [40]. Our review also showed that interpreters seem to play a crucial role in the interactional process of co-constructing EC as they validate and/or enable the other participants’ contributions and in that way create common ground and mutual understanding which physicians and patients require in order to deliver their own contributions to EC [29, 33]. However, this key role in the interactional process makes interpreters worry about their neutrality [10]. After all, physicians and patients have been shown to mistake the interpreters’ renditions of the patients’ emotional statements for the interpreter’s own emotions [10]. These misconceptions about the interpreters’ renditions of emotional statements have been shown to cause mistrust among participants in IMCs and in that way might negatively affect the co-construction of emotional communication in IMCs [10].

Five of the included studies provide additional evidence of EC being compromised in IMCs as the overall amount and intensity of physicians’ and patients’ emotional statements and the interpreter’s rendition of those seems to decrease in IMCs. This finding further supports the notion that EC might be compromised in in IMCs due to a lack of coordination

between participants in IMCs. Previous studies have already pointed out that a lack of coordination between participants in IMCs negatively impacts the overall communication [41]. The results of our review now seem to suggest that this finding extends to EC in IMCs. What is more, considering the participants' difficulties with EC in IMCs (e.g. patient's difficulty to display emotions in presence of an interpreter [13] and physician's struggle to empathize with patients in IMCs [9]), the decrease in EC in IMCs might even suggest that patient's needs for emotional support might not be met at all times [28] resulting in the patient's quality of care being compromised [5, 7, 42].

Previous research has identified multiple barriers that might undermine the physician-patient-interpreter interaction and in that way might negatively affect EC in IMCs. For example, trust issues might impact participants' relationship with each other and have been associated with a negative impact on EC in IMCs as well [8, 10, 43]. Physicians fear that they might lose directness with the patient due to the interpreter's presence in IMCs [8]. Patients on the other hand struggle with the emotional distance they feel towards professional interpreters [10]. Interpreters at times might find it difficult to strike a balance between the physician's and patient's agenda [8, 10]. Next, control issues have been shown to negatively affect the interaction between physicians and interpreters as both parties struggle to share control over the course of the consultation [8, 33, 44]. Finally, cultural differences have also been identified as an one of the main barriers in the physician-patient-interpreter interaction [10, 33]. Since each culture and language differs on the level of displaying emotions, understanding emotional display and an appropriate reaction towards emotional display [45, 46], cultural differences in IMCs might lead to discrepancies between each participants' interpretations and actions [10, 47]. These discrepancies might compromise the emotional communication in IMCs [10, 33].

In order to overcome the existing barriers and misconceptions in IMCs, physicians and interpreters would benefit from interprofessional education where they learn about each other's normative frameworks [14, 16, 41]. In that way, they could optimize their coordinated communicative behaviours at the level of EC and improve the patient's quality of care in IMCs.

#### 4.2 Limitations

This study has some limitations. Despite our efforts, we were unable to access one full text article [48]. The diversity in the research designs and working definitions of the included studies complicated the comparison of study results. This in turn makes it difficult to fully assess how participants in IMCs co-construct EC. What is more, we relied on the available information provided in each study in order to detangle the results that reported on professional interpreters from results that reported on non-professional interpreters. However, this was not always easy due to certain key element in that study's research design, such as the interpreter's level of qualifications, that remained under-reported. This complicated the extraction and interpretation of relevant findings from the final corpus within the framework of this review. In some studies there was also limited reflection on the influence certain factors might have had on their results (e.g. interpreters' level of qualifications, medical setting, interpreters' medical knowledge, etc.). This limited us to assess the full strength and relevance of the results of the included studies in relation to our research question. Finally, some aspects of EC (e.g. expression of positive emotions, other nonverbal semiotic resources such as eye gaze, gestures, body orientation, etc. [49]) remain under investigated in the included studies which compromises our understanding of EC.

### 4.3 Conclusion

Our review shows that there is a dearth of scientific evidence on EC in IMCs. What is more, few studies investigated EC as an interactional process between participants. Most of the studies focused on the amount or intensity of participants' individual contributions to the transactional process of EC. More research is needed to identify the verbal and nonverbal ways in which participants in IMCs co-construct EC, to better understand the interactional process of EC and to assess the effect of participants' use of semiotic resources on EC in IMCs. Our review also shows that there is a need for consensus on the working definitions of *emotions* and *EC* in IMCs. Additionally, more information on the used methodology and included participants should be provided in future studies to allow for the comparison of results across studies.

### 4.4 Practice implications

In order to improve the co-construction of EC in IMCs, physicians and interpreters would benefit from interprofessional education [14, 16, 41] where they learn about each other's communicative practices so that, in daily practice, they are able to share control, trust each other as professionals and mutually identify and bridge barriers in the interaction.

Furthermore, physicians and interpreters should aim for coordination at the level of interaction and try to depart from an interprofessional stance [16] where physicians and interpreters take into account each other's, as well as the patients' own, communicative goals [41] and work closely and in a coordinated manner to the co-construction of EC in ICMs. Finally, physicians and interpreters could be more aware of the wide array of semiotic resources that can be conducive to the co-construction of EC in IMCs.



#### 4.5 Directions for future research

Future inquiries should analyze a broader spectrum of semiotic resources (including, for instance, paraverbal and kinetic resources) and not only verbal interaction in order to obtain a more advanced and nuanced understanding of EC in IMCs. Multimodal interaction analysis has been shown to be a valid and adequate approach to study verbal and visuospatial aspects of the patient-physician-interpreter interaction [41, 50, 51] and could provide new insights into the study of EC in IMCs.

Future research should also be more attentive to the impact participants' communicative goals and intentions might have on their results to further improve our current understanding of emotional communication in IMCs. Future research should combine the study of interaction with the study of participants' perspective by means of video-stimulated interviews to identify the factors that might have influenced participants' communicative behavior during interaction [15].

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### **Declarations of interest**

Declarations of interest: none.

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## Supplementary data

Appendix A: PubMed search string

Appendix B: quality appraisal of the final corpus