BMJ Open

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Journal:	*BMJ Open*
Manuscript ID	bmjopen-2023-077716
Article Type:	Original research
Date Submitted by the Author:	12-Jul-2023
Complete List of Authors:	Gmünder, Myriam; Inselspital Universitätsspital Bern Kinderklinik, emergency department Gessler, Noemi; Inselspital Universitätsspital Bern Kinderklinik, emergency department Buser, Sina; Inselspital Universitätsspital Bern Kinderklinik, emergency department Feuz, Ursula; Inselspital Universitätsspital Bern Kinderklinik, emergency department Fayyaz, Jabeen; The Hospital for Sick Children, emergency department Jachmann, Anne; Inselspital Universitätsspital Bern Kinderklinik, Emergency Medicine Keitel, Kristina; Inselspital Universitatsspital Bern, Paediatric Emergency Department Brandenberger, Julia; The Hospital for Sick Children, emergency department; Inselspital Universitätsspital Bern Kinderklinik, emergency department
Keywords:	ACCIDENT & EMERGENCY MEDICINE, Health Equity, PAEDIATRICS

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The satisfaction of caregivers with limited language proficiency with the quality of pediatric emergency care related to the use of professional interpreter services – a mixed methods study

Myriam Gmünder MD[1*], Noemi Gessler MD[1*], Sina Buser MD [1], Ursula Feuz[1], Jabeen Fayyaz[2], Anne Jachmann MD[3], Kristina Keitel MD PhD [1+] and Julia Brandenberger MD PhD [1, 2, 4+]

[1] Pediatric Emergency department, University Hospital of Bern, Bern, Switzerland

[2] Division of Pediatric Emergency Medicine, Hospital for Sick Children, Toronto, Ontario, Canada

[3] Emergency Department, University Hospital of Bern, Bern, Switzerland

[4] Edwin S.H. Leong Centre for Healthy Children, University of Toronto, Toronto, ON, Canada

* shared first authors; [+] shared last authors

Corresponding author

Julia Brandenberger, MD PhD

Notfallzentrum für Kinder und Jugendliche (NZKJ)

University Hospital of Bern, Bern, Switzerland

Freiburgstrasse 15, 3010 Bern, Switzerland

Phone: +41 31 632 92 77

E-mail: julia.brandenberger@extern.insel.ch

Supported by: the "Stiftung KinderInsel Bern" (formerly known as Batzebär foundation) and the Edwin S.H. Leong Centre for Healthy Children, Toronto, Canada to JB.

COI: The authors declare that they have no conflict of interest.

Keywords: migrant health; children; immigrant; refugee, interpreter, emergency department, Europe, equity, communication, limited language proficiency, self-advocacy

Abstract

Objectives

Communication is a main challenge in migrant health and essential for patient safety. The aim of this study was to describe the satisfaction of caregivers with limited language proficiency (LLP) with care related to the use of interpreters and to explore underlying and interacting factors influencing satisfaction and self-advocacy.

Design

A mixed-methods study

Setting

Pediatric emergency department (PED), a tertiary care hospital in Bern, Switzerland

Participants and methods

Caregivers presenting at the PED were systematically screened for their language proficiency. Semi-structured interviews were conducted with all LLP-caregivers agreeing to participate and their administrative data was extracted.

Results

The study included 181 caregivers, 14 of whom received professional language interpretation. Caregivers who were assisted by professional interpretation services were more satisfied than those without (5.5[SD] ±1.4 versus 4.8[SD] ±1.6). Satisfaction was influenced by 5 main factors (relationship with health workers, patient management, alignment of health concepts, personal expectations, health outcome of the patient) which were modulated by communication. Of all LLP-caregivers without professional interpretation, 44.9% were satisfied with communication due to low expectations regarding the quality of communication, unawareness of the availability of professional interpretation, and overestimation of own language skills, resulting in low self-advocacy.

Conclusion

The use of professional interpreters had a positive impact on the overall satisfaction of LLP-caregivers with emergency care. LLP-caregivers were not well—positioned to advocate for language interpretation. Health care providers must be aware of their responsibility to guarantee good quality communication to ensure equitable quality of care and patient safety.

Strengths and limitations of this study

- The mixed methods approach allowed to measure the satisfaction with care of caregivers with LLP and also to explore underlying reasons.
- Through the qualitative data, additional important findings were discovered like reasons for limited caregiver self-advocacy for professional language interpretation.
- By systematically assessing and comparing comprehension of diagnosis and treatment to the self-reported comprehension of caregivers, important discrepancies were detected.
- Participation of professional interpreters and study participants in designing and analysing the data increased the validity of the study and accuracy of the findings.
- The study group where an interpreter was used was small, not allowing for interferential statistical testing.

Abbreviation

LLP = Limited language proficiency

PED = Pediatric emergency department

Introduction

Language barriers and insufficient communication are major challenges in migrant health care delivery leading to decreased access and quality of care (1-7). In Switzerland, an estimated 10% of the population face language barriers on a daily base as they either do not speak one of the four national languages or have another preferred language (8, 9). This proportion was further increased by the recent influx of Ukrainian refugees (10). Successful communication, preferably with professional interpreters, is widely described as essential to minimize disparities in the quality of health care for these patients (1, 4, 8, 11-13). Yet, international evidence clearly shows that professional interpreters are underused in health care settings (1, 14-23).

A literature review including studies from the United States, Australia, the United Kingdom, Ireland, and Canada investigated the impact of language proficiency on the patient's experience in health care and found that impaired communication, relationship, discrimination, and cultural safety were main concerns. Factors improving the health care experience of patients with limited language proficiency (LLP) were mitigating language barriers through interpreters, offering translated patient resources and improve transcultural competencies of health care professionals (24). Other studies recommended systematic communication pathways for LLP patients (10) including improved guidelines on the use of interpreters, minimized barriers to access interpreter services, including sufficient financial coverage, and raised awareness about the importance of the use of interpreters among health workers (1, 14-16, 25-27). Improvements of the health care delivery to LLP patients were most successful if a participatory approach was chosen (28). Despite the considerable proportion of the population in Switzerland with LLP, evidence focusing on their perspective on the quality of health care related to communication is missing.

The goal of this study was to describe the satisfaction of LLP-caregivers related to the use of interpreters as a driver of quality of pediatric emergency care and to explore underlying, interacting factors influencing satisfaction.

Methods

Study setting

The study was conducted at the pediatric emergency department of the University Hospital of Bern, Switzerland. The department provides the full range of emergency care for children and adolescents aged 0-16 years to an average of over 30,000 patients per year. Since 2021 it is part of the "Swiss health network for equity".

Study design

This study is a concurrent design mixed-method study (supplemental figure 1). As this study aimed to explore caregivers' satisfaction related to the use of interpreters as part of health care management and delivery, it explored satisfaction in the context of a broad, complex, and multidimensional field. In such cases, a mixed-methods research design is known to offer multiple advantages (29), including the examination of the research question from multiple perspectives (30), the triangulation of two different methods and several forms of data (31-34) and the pragmatic flexibility of the methodology to adapt to the specific research question and context (35, 36). Following recommendations of Creswell and Zhang (37), quantitative and qualitative data were collected simultaneously. The quantitative data included electronic health records and quantitative measurements of the caregivers' satisfaction. The qualitative data consisted of semi-structured interviews. Both datasets were analyzed in parallel and relationships between the condensed qualitative and quantitative results were visualized to obtain an in-depth understanding of caregivers' satisfaction and its underlying factors. The most recent Equator network recommended standardized mixed-method research guidelines were used for the reporting of the study (supplemental table 1) (38).

The primary outcome was to compare the LLP-caregivers' satisfaction with health care with and without the use of professional interpreters. Secondary outcomes were the analysis of self-reported versus assessed language proficiency, the comprehension of diagnosis and received therapy of their child, and their communication strategy and desire for professional interpreters.

This study was nested into an interventional study intended to increase the use of professional interpreter service (23). Consequently, data collection for this study was done during the predefined two time periods.

Study population

All patients presenting to the emergency department between 1st April 2021 and 30th June 2021 (first recruitment period) and between 1st October and 5th December 2021 (second recruitment period), were screened for the following inclusion criteria using the administrative records: i) Nationality other than Swiss AND ii) Swiss nationality with national language other than German (G), French (F) or English (E) AND iii) not presenting only for a COVID-19 swab test.

All caregivers of patients who visited the emergency department and fulfilled the inclusion criteria were systematically called and screened for their language proficiency within one week after their consultation. If two caregivers were present at the consultation, the one with better language skills was screened. The ABC-Tool (39),a globally used standardized language proficiency screening tool, was adapted by the study team to the local context. The language proficiency was classified, using the scoring system defined by the 'Goethe Institute', the most established international language school for German (40). It ranges from A1 (very LLP) to C1 (fluent). All caregivers screened as A1 or A2 were classified as caregivers with LLP. If informed consent was given, the LLP caregiver was contacted a few days later for a semi-structured phone interview with a professional interpreter. The caregivers who completed the study interview represented the final study population.

Data collection

Quantitative and qualitative data collection, including phone call screenings and interviews, was conducted by Myriam Gmünder (MG) and Sina Buser (SB). During the study period they were employed as doctoral candidates at the pediatric emergency department of the University's Hospital in Bern in the migrant health service research group. Both researchers had previous experience in pediatric migrant health research and were trained by JB and NG in the conduction of diversity-sensitive, semi-structured interviews using presentations, role-play, and educational videos. JB has extensive experience in qualitative research and pediatric migrant health.

Qualitative data

A semi-structured interview guide was designed by an interprofessional team using different versions for consultations with and without the use of professional interpreters (supplemental table 2). The questionnaires entailed closed (quantitative data) and open (qualitative data) questions. Core qualitative questions explored reasons for the perceived quality of care with a focus on communication and the caregiver's confidence while communicating. All of these

questions were mandatory. Questions were followed by non-mandatory prompts, allowing the interviewer to further explore interesting comments made by the caregiver.

The interview guide was reviewed by a professional and experienced interpreter with migrant background. After external revision, pilot interviews were performed to verify comprehensibility, acceptability and duration. A further revision was done based on experiences from pilot interviews..

All interviews were conducted with a professional phone interpreter who translated the caregiver's preferred language to German using iPhone SE/6's conference mode (Version iOS 15.1/12.5.5).

Quotes from interviews of caregivers during health encounters using a professional interpreter were cited with A. Those without interpreter services were cited with B, followed by the interview number.

Quantitative data

For each participant, quantitative variables were extracted from routine administrative health records: nationality, age, gender, date of visit, diagnosis, therapy, and triage score. An Emergency Triage Scale (STS), ranging from 1: acute life-threating to 5: non urgent problems, was used (41). Further variables were collected during the phone interview: satisfaction, accompanying person/s, native language, self-reported and estimated language skills in G/E/F, interpreter use, the child's diagnosis, \therapy received, recency of immigration to Switzerland, caregiver's education, and resident status.

Caregiver were asked about their satisfaction with the health encounter ranging from 1 (very unsatisfied) to 6 (very satisfied). To describe the self-reported language comprehension, caregivers were asked if the information they received during the emergency department visit was understandable. The answers were classified as yes, partially, or no. To assess comprehension, the study team asked caregivers to explain the diagnosis and the treatments the child received during the health visit. If the caregivers' answers corresponded to the diagnosis and treatments recorded in the electronic medical report, they were marked as match. Partial matches or discrepant answers were documented as partially correct or incorrect.

Data management and analysis

All data were entered into a REDCap-database (Vanderbilt University/IC 6.9.4, 2018).

For quantitative data, entry fields were designed as binary radio button fields or scroll down lists. Branching logic was used where appropriate.

REDCap data quality control tests were performed before analysis. STATA (Stata/IC Version 13.1. 2013) was used for statistical analysis.

Qualitative data was transcribed simultaneously to the phone interview and directly entered in the REDCap database. Three free-text fields summarized statements about the general patient satisfaction, two text fields documented caregivers' descriptions of his/her comprehension during the health visit, and one additional text field was used for further interesting statements. For each of the 3 groups of free-text fields, answers from all participants were pooled together in one document and coded deductively and inductively by two coders (NG and MG) using the text analysis approach according to Mayring (42). Citations from LLP-caregivers in the interpreter group were compared to those from the non-interpreter group. Saturation of the material was reached in both groups.

During multiple online and in-person meetings, data was analyzed in a stepwise approach in an interprofessional team. The team included the authors of this study, a professional interpreter with migrant background, and one migrant caregiver. Stepwise aggregation of the qualitative data resulted in the following categories: Satisfaction, communication, expectation, health concept, relationship, and patient management. The relationships between the condensed qualitative and quantitative results were visualized in multiple networks, illustrating the final outcomes of this study.

Ethics

The Study protocol was reviewed (abbreviated process) and approved by the Ethics Committee of the canton Bern on 08 March 2021.

Results

Study population

A total of 181 caregivers were included in this study. 14 had a consultation with, and 167 a consultation without, an interpreter (supplemental figure 2).

In consultations using an interpreter the most frequent nationalities were Eritrean 6/14 (42.9%), Syrian 3/14 (21.4%) and Sri Lankan 2/14 (14.3%). A total of 57.1% (8/14) received an urgent triage score. Most caregivers graduated from primary school 6/14 (42.9%) followed by secondary school 5/14 (35.7%), while 2/14 (14.3%) were illiterate.

The most common nationalities in consultations without an interpreter were Syrian 37/167 (22.2%), Eritrean 26/167 (15.6%), and Portuguese 13/167 (7.8%). A total of 25.1% (42/167) received an urgent triage score. The most frequent educational degree of these caregivers was secondary school 64/167 (38.3%), followed by primary school 56/167 (33.5%). 12.6% (21/167) were illiterate (table 1).

Overall satisfaction

The satisfaction was high in both groups with a total mean of 4.9 (Standard Deviation [SD] ±1.6). Caregivers in consultations with an interpreter were more satisfied than those in the non-interpreter group (5.5 [SD] ±1.4 versus 4.8 [SD] ±1.6; table 2). Satisfaction was influenced by 5 main factors: relationship with the health workers, patient management, alignment of health concepts, caregivers' personal expectation, and health outcome of the patient (figure 1). Satisfaction was optimal when the patient management met the caregiver's expectation, the relationship between health workers and caregivers was respectful and trustful, and when there was agreement on the same health concept (figure 2). Communication was the main tool able to modulate relationships, expectations, and health concepts influencing satisfaction through these factors.

Satisfaction related to the use of interpreters

In both groups, caregivers mentioned good communication as a key precondition for their satisfaction with the health encounter. In the group with an interpreter, all caregivers described the organization of interpreters as a sensible and helpful part of the patient management. The opinion on how often and when an interpreter was needed varied. Two caregivers thought an interpreter was only necessary for complex conversations.

> "At the beginning I could communicate well, but when it became more complicated, the hospital organized an interpreter. That was great!" (A 8; Satisfaction score 6)

In the group without interpreter services, important language barriers were mentioned by 53.7% (88/167) of the caregivers. Around 21% (35/167) explicitly described miscommunication and frustration during their visit. Some also thought of the health workers perspective and acknowledged that the situation was frustrating for them as well.

Despite not having language interpretation, 44.9% (75/167) were satisfied with the communication. Of all caregivers in the group without language interpretation, 100 (59.9%) had a higher self-reported language proficiency score than the score they received during the

standardized language screening done by the researchers. Of those, 59% did not think a professional interpreter was necessary.

A total of 58/167 (34.7%) caregivers reported that they communicated through a non-professional interpreter. Of these, 43.1% (25/58) were minors with a mean age of 12.4 (11-14 IQR). The youngest non-professional interpreter was 7 years old.

Some caregivers preferred professional interpreters for reasons of confidentiality whereas some favoured non-professional interpreters with the argument that they knew and trusted them or that they were more rapidly available than professional interpreters. One caregiver explained that they decided not to ask for language interpretation because they were worried about prolonged waiting times. As consequence, s/he guessed the answer to questions:

> "I would have liked an interpreter, but I was afraid that the organization would take too long. Therefore, I did not say that I did not understand certain things and simply said 'yes'. If I had known that there were also phone interpreters, I would have been very happy to use one." (B 17; Satisfaction score 4)

A minority of 22.2% (37/167) of caregivers knew they were entitled to receive free of charge language interpretation during health consultations. A total of 61/167 (36.5%) caregivers explicitly said they would have asked for an interpreter had they known about that option.

As for the overall communication, satisfaction with comprehension differed between the two study groups. Caregivers with interpreters were more likely to describe comprehension as good (85.7% (12/14) versus 68.3% (114/167)). In contrast to caregivers without interpreter services, they never classified communication as insufficient. With one exception, all parents recalled the diagnosis and therapy of their children at least partially correctly whereas some caregivers in the group without interpreters could not recall diagnosis (13.2% 22/167) or therapy (7.2% 12/167). In both groups, strong discrepancies existed between self-reported and assessed language comprehension (table 2).

Expectation

A key factor for satisfaction were the caregivers' personal expectations which were shaped by cultural background, health concepts, and previous experiences with health care systems (figure 1). Many caregivers were used to experiencing communication barriers in daily life. Using their children as interpreters was often considered normal routine. One mother reported that her 8-year-old child translated for her and admitted:

> "I did not understand what exactly was done during the operation."
>
> (B 90; Satisfaction score 6)

Nevertheless, she did not criticise that no interpreter was consulted for her and was highly satisfied. About 4.2% (7/167) of caregivers reported that they requested during this or previous health visits language interpretation at the emergency department, but their request was rejected.

> "I asked for an interpreter, but I was told it was too expensive and I couldn't get one. Then I called a friend, she translated for me. But it was about very intimate things and then everyone noticed. You can't do that!" (B 99; Satisfaction score 3)

Expectations also influenced satisfaction with patient management. Depending on expectations, caregivers experienced wait times as long or short (long: 44.8% (81/181) short: 15.5% (28/181)) without correlation to the objective wait time. The degree to which the wait time affected satisfaction also varied strongly. Some caregivers who expected to receive medical treatment very quickly had lower satisfaction scores. Others appreciated the 24 hours service and attended the emergency department after their working hours or on weekends, preferring to wait in the emergency department to waiting for an appointment with their pediatrician.

Unmet expectations negatively influenced the relationship with the health-workers. If mismatches in health workers' actions and caregivers' expectations remained unsolved, satisfaction decreased. Misunderstandings and miscommunication contributed to dissatisfaction as they impeded the ability of the staff to identify and respond to the caregivers' expectations. If gaps between health workers' actions and caregivers' expectations could not be identified and bridged, it resulted in dissatisfaction.

"I am very dissatisfied. The doctor was not a real doctor. She only talked for 1 hour and did not do a good examination nor a lab." (B 10; Satisfaction score 1)

Health concepts

Another key factor influencing satisfaction was the alignment of health workers' and caregivers' health concepts. The cultural background of the caregivers influenced the health concept and therefore the concept of the child's disease and the expectation what the child needed. Satisfaction decreased if there was an unresolved mismatch between the caregivers' and the health workers' health concepts. Most caregivers expected more diagnostics (blood

work) and therapies (antibiotics, intravenous fluids). In two cases (assessed and reported comprehension: good in both cases), the caregivers' health concept was transformed during and after the health encounter. As the outcome for the child was favourable by the time of the interview, caregivers understood that the initially expected blood work in the emergency department had not been necessary. Good communication and comprehension, a trustful relationship, and a positive health outcome mediated the transformation of the caregivers' health concept leading to alignment with the health workers' practice. The only case in the interpreter group with very low satisfaction was due to a mismatch of health concepts that could not be resolved despite good communication assured by an interpreter.

> "I was not satisfied with the consultation. The situation of my child was very serious, so I wished for an infusion. The nursing staff did not agree and did not do anything." (A 14; Satisfaction score 1)

Relationship

A trustful and respectful health worker–caregiver relationship also represented a key factor for satisfaction (figure 1 and 2). For some caregivers, friendly and respectful treatment gave the impression that the child's medical team was competent.

> "The respect! I felt taken seriously and treated well." (A 2; Satisfaction score 6)

All statements describing the relationship with the staff were positive in the interpreter group. Once established, trustful relationships also helped to keep satisfaction high despite existing language barriers; like in the following example where the caregiver was satisfied with the whole health visit:

> "The nursing staff and doctors are very nice and competent, they treated us with love." (A 4; Satisfaction score 6)

Patient management

A fourth key factor influencing the caregiver's satisfaction was the patient management. This included waiting times, the triage system, organization of language interpretation, COVID-19 restrictions, and quality improvement.

Many caregivers were not familiar with the triage system of prioritizing sicker patients. Seeing children get treated earlier although they arrived later triggered the feeling of inequity and injustice.

> "Not all patients were treated the same. I don't know if it has to do with the language. Other children got treated before us and we had to wait for so long. I felt discriminated." (B 117; Satisfaction score 2)

Due to COVID-19 restrictions only one person was allowed to stay with the child during the health visit. This was mentioned as a problem, as sometimes one caregiver knew more about the child's health condition but the other was more language-proficient. As one had to leave, the ability to communicate was impaired:

> "The father translated the medical history on the phone because he speaks German well. After that, there were communication difficulties because I don't speak German very well. I did not understand a lot of what the doctor said." (B 87; Satisfaction Score 4)

Most of the caregivers were very satisfied with the patient management. They also appreciated being contacted for the interview for quality improvement and receiving information about interpreters being available anytime and free of charge.

> "All people who can't speak German well have difficulties with communication at the hospital and would like to have an interpreter. Thank you for your work and effort."
>
> (B 74; Satisfaction score 4)

Discussion

This study exploring the perception of the quality of pediatric emergency care among LLP-caregivers showed increased satisfaction of caregivers when professional language interpretation was used. The most frequently mentioned factors contributing to satisfaction, modulated by interpreter use were satisfied personal expectations, aligned health concepts, a respectful and trustful caregiver-health worker relationship, and good patient management. Caregivers were generally satisfied with their emergency department experience, but many had low expectations regarding communication quality. Overestimation of personal language skills was common and caregivers were often unaware of the option to get professional language interpretation.

In our study, caregivers' satisfaction with health care was higher when professional interpreters were involved and understanding of diagnosis and treatment improved. This is well in line with strong evidence including 3 literature reviews, describing higher patient satisfaction, fewer interpretation mistakes, and increased quality of care when using professional interpreters during health visits for LLP-patients (4, 43, 44). While all the caregivers in the interpreter group described positive effects of professional language interpretation, a total of 44.9% of LLP-caregivers in the non-interpreter group were also satisfied with the communication. Findings showed a common overestimation of the personal language proficiency, low expectations regarding communication quality, and unawareness of the option to get professional language interpretation as explanations. This is in line with other studies describing that LLP-patients overestimated their language skills (45), rarely advocated for language interpretation, and were unaware of their own right to good quality communication (27). The finding of low caregivers' expectation related to communication is a concerning safety risk. If good communication is not ensured, caregivers are not allowed to play their role as important advocates for their child's health and safety. Being used to inferior standards to the extent that a person accepts the inferior treatment as normal is described in the literature as part of internalized discrimination (46). A Norwegian study exploring satisfaction among migrant women in an obstetric hospital setting showed that patients with lowest language proficiency or education were less likely to express dissatisfaction compared to those with better education or a Norwegian husband (47). As many were unaware of their right to receive professional language interpretation, many caregivers' organized non-professional interpreters - not uncommonly minors - to bridge the language gap. This practice is unsafe and can have severe negative consequences for the patients (48-50). In the U.S, language

interpretation provided by minors is also legally prohibited by Section 1557 of the Affordable Care Act (51). These findings highlight that organization of language interpretation should not be considered a shared responsibility between caregivers and health workers but must be the full responsibility of health workers. A most recent North American publication described a significant increase of the use of professional language interpretation in a pediatric emergency department over a period of 5 years. The multidimensional strategy included staff education, data feedback, reduction of barriers to interpreter use and improved identification of patient's language for care (52). Similar long term strategies may be needed in our research context to achieve comparable results.

One caregiver reported that his/her request to receive professional language interpretation was rejected by health workers, arguing that these services would be too costly. Structural discrimination of immigrant minorities including denial of services has also been described in other studies (53). Improving personal skills and attitudes of staff to identify and counter-act different forms of discrimination and to establish a diversity sensitive institutional culture is therefore key when improving the quality of care for these patients (54-56).

Other studies also described patients' expectations as key factor for patient satisfaction. Expectations were shaped by many sociocultural factors and experiences from previous health encounters (57, 58). In this study unmet expectations were mostly due to diverging health concepts and misunderstandings about the patient management and or treatment.

Divergent health concepts shaped by different cultural contexts e.g. about the perceived need for antibiotics are well described and language barriers increased the difficulty to align these as shown in different studies (59, 60). Like our findings, a qualitative study from the UK on recent migrants' health beliefs, values and experiences of health care described the transformation of health concepts or at least an agreement on common ground between caregiver and health worker was achieved through effective communication, a trusting relationship, and a positive health outcome for the patient. High caregiver satisfaction was the consequence.

All statements describing the relationship with the staff were positive in the interpreter group, suggesting that the organization of an interpreter and the improved ability to communicate contributed to a trustful relationship. Also in settings with no language barriers, a strong association between patient-centred communication, the patient-provider relationship, and patient satisfaction was found (58, 61, 62).

As also described in other studies, respect, friendliness and kindness led to trustful relationships and were described as important reasons for caregivers' satisfaction with care (63). Complaints about the relationship often derived from misconceptions and misunderstandings. Transcultural communication training enabling health workers to be culturally sensitive, reduce personal assumptions and professionally address and respond to differences in health concepts has proven to reduce misunderstandings and ultimately increase patient satisfaction (54). Clear communication while managing patients including explanations of the triage system and transparent communication of waiting times are known to increase the satisfaction of patients with LLP and those fluent in the local language alike (64).

Strengths and limitations

The greatest limitation of this study was the small number of included caregivers for whom an interpreter was used. Although saturation was reached for both groups in the qualitative material, the small number did not allow inferential statistical testing of the quantitative data. The language screening was conducted by phone, which might have led to a slightly different assessment of language proficiency compared to an in-person assessment during the PED visit. An important strength of this study was the mixed method approach, allowing to measure the satisfaction with care of LLP-caregivers and other secondary outcome parameters while also allowing to explore underlying reasons for satisfaction. Through the qualitative data, additional important findings were discovered like reasons for limited caregiver self-advocacy for professional language interpretation. The validity of the study increased by the interdisciplinarity of the team including professional interpreters and study participants in designing and analysing the data.

Conclusion

The use of professional interpreters had a positive impact on the overall satisfaction of LLP-caregivers with emergency care through modulating personal expectations, aligning health concepts, and helping to create respectful and trustful caregiver-health worker relationships. LLP-caregivers were not well-positioned to advocate for language interpretation. Health care providers must be aware of their responsibility to guarantee good quality communication to ensure equitable quality of care and patient safety.

Funding information

The study was funded through the "Stiftung KinderInsel Bern" (formerly known as Batzebär foundation). JB received a research grant from the Edwin S.H. Leong Centre for Healthy Children, Toronto, Canada.

Conflict of interest

The authors declare that they have no conflict of interest.

Acknowledgements

We thank all participating families for taking part in the study and providing feedback. We thank Angelika Louis, head of the interpreting service "Comprendi" and all the intercultural interpreters for interpreting during the interviews, Miss Bohlouli for providing feedback on our interview guideline, Mr Omar and Mr Al Faraj for discussing our results, Diego Lareida and Isabelle Schwerzmann for their help with data collection, Beatrice Lussi for her help in all the administrative tasks and Ante Wind for her linguistic support.

Authors' contributions

Myriam Gmünder: Conceived the study, conducted the interviews, performed data extraction, performed data analysis, drafted the initial manuscript, revues and revised the manuscript, and approved the final manuscript as submitted.

Noemi Gessler: Conceived the study, performed data analysis, drafted the initial manuscript, revues and revised the manuscript, and approved the final manuscript as submitted.

Sina Buser: Conceived the study, conducted the interviews, performed data extraction, reviewed and revised the manuscript and approved the final manuscript as submitted.

Ursula Feuz: Conceived the study, reviewed and revised the manuscript and approved the final manuscript as submitted.

Fayyaz Jabeen and Anne Jachmann: Reviewed and revised the manuscript and approved the final manuscript as submitted.

Kristina Keitel: administrative project leader, conceived the study, supervised analysis, reviewed and revised the manuscript and approved the final manuscript as submitted.

Julia Brandenberger: scientific project leader, conceived the study, supervised analysis, reviewed and revised the manuscript and approved the final manuscript as submitted.

Figures and Tables (4)

Figure 1: Framework of factors influencing satisfaction

Figure 2: Framework prerequisite for a high satisfaction

Table 1: Baseline Characteristics

Table 2: Quantitative Data

Supplementary data (4)

Supplemental figure 1: concurrent mixed-method approach (modified from Banyard & Williams, 2007)(65).

Supplemental figure 2: Flow chart - Study population

Supplemental table 1: Checklist for MMR Manuscript preparation and review

Supplemental table 2: Interview guide

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Table 1: Baseline Characteristics

	With interpreter (14)				Without interpreter (167)			
	N/ years		%		N/ years		%	
Most frequent **nationalities**	ER	6	42.9		SY	37	22.2	
	SY	3	21.4		ER	26	15.6	
	LK	2	14.3		PT	13	7.8	
	AF	1	7.1		AF	11	6.6	
	IQ	1	7.1		TR	10	6	
	SO	1	7.1		LK	9	5.4	
Most frequent **languages**	Tigrinya	6	42.9		Arabic	38	22.6	
	Arabic	3	21.4		Tigrinya	25	15	
	Tamil	2	14.3		Kurdish	16	9.5	
	Dari	1	7.1		Portuguese	14	8.4	
	Kurmanji	1	7.1		Turkish	13	7.8	
	Somali	1	7.1		Albanish	12	7.2	
Language **proficiency**	estimated	self-reported	estimated	self-reported	estimated	self-reported	estimated	self-reported
- A1	7	5	50	35.7	66	30	39.5	18
- A2	7	4	50	28.6	100	35	59.9	21
- B1	0	5	0	35.7	1	45	0.6	26.9
- B2						39		23.4
- C1						12		7.2
- C2						4		2.4
*missing						2		1.2
Duration of stay in CH (min – max)	5.07 years (20d – 12y)				6.71 years (6d – 30y)			
Triage score:								
- 1-3: urgent	8		57.1		42		25.1	
- 4-5: non-urgent	6		42.9		124		74.3	
*missing	0				1		0.6	
Highest education degree of caregiver:								
- Illiterate	2		14.3		21		12.6	
- Primary School	6		42.9		56		33.5	
- Secondary School	5		35.7		64		38.3	
- University	0		0		26		15.6	
Asylum permission/Residence status:								
- N-Permit	0		0		3		1.8	
- F-Permit	5		35.7		33		19.8	
- B-permit	6		42.9		93		55.7	
- C-permit	1		7.1		25		15	
- not known	1		7.1		9		5.4	

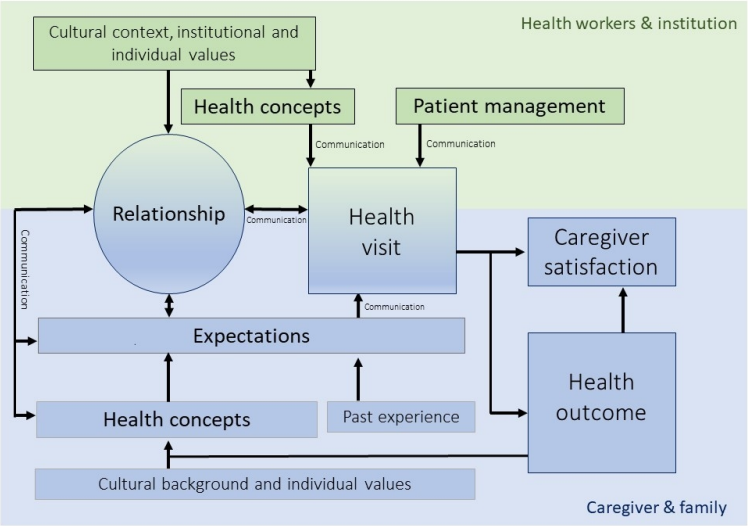
y = year, d = day, N-permit = asylum-seeker, F-permit = temporarily admitted refugee, B-permit = temporary resident foreign nationals, C-permit = settlement permit

Table 2: Quantitative Data

			With interpreter (14)		Without interpreter (167)	
			N/ mean	%/ SD	N/ mean	%/ SD
General satisfaction°	Mean/ SD		5.46	1.39	4.8	1.59
	1 2 3 4 5 6 *missing		1 0 0 0 2 10 1	7.1 0 0 0 14.3 71.4 7.1	11 11 12 16 31 84 2	6.6 6.6 7.2 9.6 18.6 50.3 1.2
Communication						
Language barrier	yes		NA	NA	88	52.7
	- A1 - A2		NA	NA	43 45	48.9 51.1
	no		NA	NA	75	44.9
	- A1 - A2 - B1		NA	NA	18 54 1	24 72 1.3
	*missing		NA	NA	4	2.4
Non-professional Interpreter	yes		NA	NA	58	34.7
	- siblings -family member - friend - hospital staff - patient - other		NA	NA	8 10 17 5 17 1	13.8 17.2 29.3 8.6 29.3 1.7
	Of which minors		NA	NA	25	43.1
	no		NA	NA	105	62.9
	*missing		NA	NA	4	2.4
Self-reported and assessed comprehension						
Understandable Information	Self-reported comprehension = good		12	85.7	114	68.3
	Correct **Diagnosis**	yes partial insufficient *missing	4 8 0	33.3 66.7 0	49 45 18 2	43 39.5 15.8 1.8
	Correct **Therapy**	yes partial insufficient *missing	5 6 1	41.7 50 8.3	47 55 8 4	41.2 48.3 7 3.5
	Self-reported comprehension = partial		2	14.3	36	21.6
	Correct **Diagnosis**	yes partial no *missing	2 0 0	100 0 0	15 17 3 1	41.7 47.2 8.3 2.8
	Correct **Therapy**	yes partial insufficient *missing	0 2 0	0 100 0	16 15 4 1	44.4 41.7 11.1 2.8
	Self-reported comprehension = insufficient		0	0	11	6.6
	Correct **Diagnosis**	yes partial insufficient	0 0 0	0 0 0	4 6 1	36.4 54.5 9.1
	Correct **Therapy**	yes partial insufficient	0 0 0	0 0 0	4 7 0	36.4 63.6 0
	*missing		0	0	6	3.6

Interpreter use					
Interpreter – sensible and helpful?	yes	14	100	NA	NA
Interpreter desired	yes	NA	NA	89	53.3
	no	NA	NA	74	44.3
	*missing	NA	NA	4	2.4
Knowledge about interpreter entitlement	yes	7	50	37	22.2
	no	6	42.9	125	74.9
	*missing	1	7.1	5	3

°General Satisfaction: 1= not satisfied, 6= very satisfied
NA = not applicable



Framework of factors influencing satisfaction

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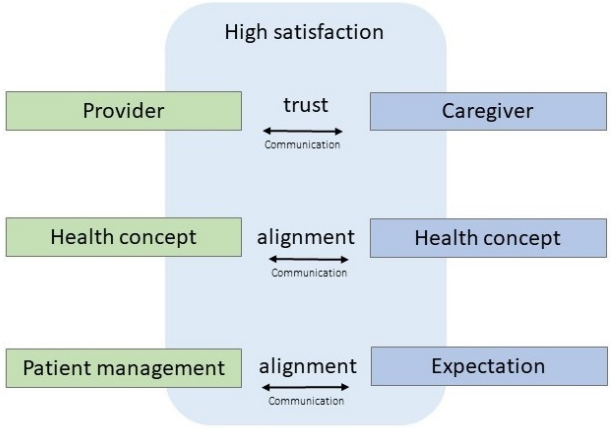

Framework prerequisite for a high satisfaction

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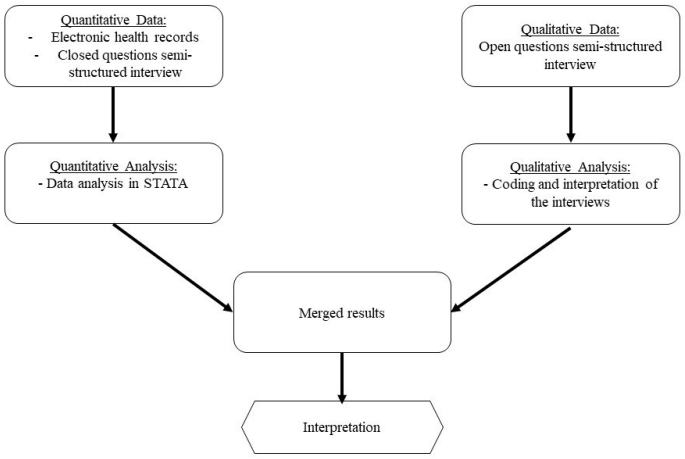

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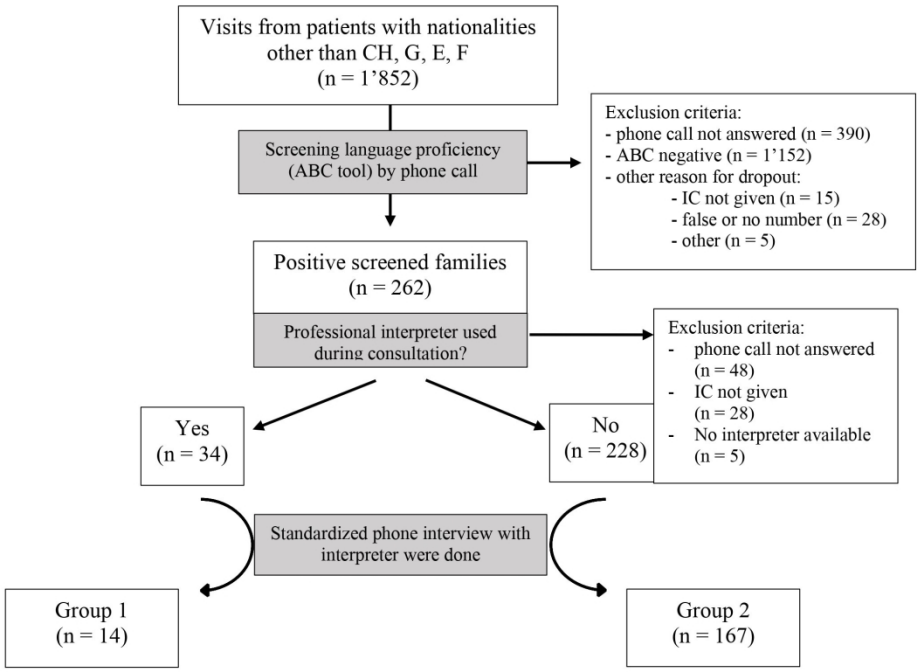

189x160mm (300 x 300 DPI)

Supplemental table 1: Checklist for MMR Manuscript preparation and review

Rational and description of MMR design	☐ Provide a clear statement of the study purpose
	☐ Explicitly describe the MMR design in accordance with Creswell's (2015) typology and use a diagram to illustrate the relationship and sequence of qualitative and quantitative research components
	☐ Justify why the MMR design is appropriate for meeting the study purpose
Transparency in describing method details	☐ Describe the study population(s) and sample(s; e.g., who, what, how many)
	☐ Describe the sampling procedures (including inclusion and exclusion criteria, recruitment)
	☐ Describe qualitative data collection processes (how often data were collected, who collected the data, what kind of data collection instruments were used, how data were recorded—e.g., notes, transcripts)
	☐ Describe quantitative data collection processes (how often data were collected, who collected the data, what kind of data collection instruments were used measurements, validity/reliability)
	☐ Describe qualitative data analysis processes (coding, single or multiple coders, replication logic, credibility)
	☐ Describe quantitative data analysis procedures (missing data and how they are handled, statistical tests used)
Integration of qualitative and quantitative research components	☐ Interpret qualitative analysis results with appropriate quotes if necessary
	☐ Interpret quantitative analysis results in consideration of statistical significance, selection bias, and threats to validity
	☐ Compare qualitative and quantitative results
	☐ Address divergencies and inconsistencies between qualitative and quantitative results

Supplemental table 2: Interview guide

Introduction	Introduction (Name, doctoral Student, Interpreter) Phoneinterview to quality improvement at NZKJ Double check right person? Confidentiality/ Anonymisation Informed consent	Hello Ms/Mr XX, my name is YY and Mrs/Mr ZZ will translate. Phoneinterview for quality improvement at the NZKJ, duration approx. 10-15 minutes Who was at the emergency department with your child on the XX(date)? If present, can your partner speak better G/E/F? Your information will be treated confidentially and anonymized. Do you mind if I ask you a few questions?
Communication without interpreter	Security in D/E/F language? Scale 1-6 Spoken language at emergency department? Difficulties of comprehension? Someone translated? Age of non-professional interpreter? Wished for interpreter? Entitelment to interpreter	How confident do you feel in G/E/F language on a scale of 1-6? (1 = very uncertain, 6 = very certain)? What language did you use talking to the doctor/nurse? In your view, were there any linguistic difficulties in comprehension? Did anyone else (child, relative, colleague,…) translate during your visit? How old was he/she who translated? Would you have liked an interpreter? Do you know that you may always ask for an interpreter in the hospital?
Communication with interpreter	Native language? Confident in D/E/F language? Scale 1-6 Interpreter: Interpreter on site or phone? Who whised for an interpreter? Entitelment to interpreter When was interpreter used? Communication before? How often? Sensible and helpful?	What is your native language? How confident do you feel in G/E/F language on a scale of 1-6? (1 = very uncertain, 6 = very certain)? During your visit, an interpreter was translating: Was the interpreter on site or was translation done via telephone? Did you ask for an interpreter? Or was the interpreter organized by the hospital staff? Do you know that you may always ask for an interpreter in the hospital? At what point was the interpreter brought in? How was communicated before? How often was the interpreter needed? Did you also request an interpreter at any other time during your consultation? Do you think that involving the interpreter was sensible and helpful?
Satisfaction	Satisfaction from 1-6? Why? Diagnose? Informations? Therapy? Dosage? What was missing? Improvement proposal? Particularly good? Come back to NZKJ?	On a scale of 1-6, how satisfied were you with your visit to the emergency department? (1 = very dissatisfied, 6 = very satisfied). Why? What was the diagnosis of your child? Was the information provided during your visit clear and understandable? → If no: why not? What did your child receive as therapy? What was the dosage? What would you have wished differently? Any suggestions for improvement? What did you particularly like? If you had another emergency with one of your children, would you feel comfortable coming back to the NZKJ?
Personal facts	Arrival in CH? Age? Education? Current profession? Asylum status?	How long have you been in Switzerland? How old are you? What is your highest graduation? What is your current profession? What is your current residency/ asylum status?
Wrap up	Answered all the questions	From my point of view, you answered all my questions. Thank you for your valuable time and answers.

	Additions? Questions?	Do you have any additions or questions?
Thanks and farewell	Thanks Farewell	Thank you very much for answering my questions. I wish you all the best

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	▫ Justify why the MMR design is appropriate for meeting the study purpose
Transparency in describing method details	▫ Describe the study population(s) and sample(s; e.g., who, what, how many)
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Integration of qualitative and quantitative research components	▫ Interpret qualitative analysis results with appropriate quotes if necessary
	▫ Interpret quantitative analysis results in consideration of statistical significance, selection bias, and threats to validity
	▫ Compare qualitative and quantitative results
	▫ Address divergencies and inconsistencies between qualitative and quantitative results

Reference:

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BMJ Open

Caregivers with limited language proficiency and their satisfaction with pediatric emergency care related to the use of professional interpreters – a mixed methods study

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2023-077716.R1
Article Type:	Original research
Date Submitted by the Author:	16-Nov-2023
Complete List of Authors:	Gmünder, Myriam; Inselspital Universitätsspital Bern Kinderklinik, emergency department Gessler, Noemi; Inselspital Universitätsspital Bern Kinderklinik, emergency department Buser, Sina; Inselspital Universitätsspital Bern Kinderklinik, emergency department Feuz, Ursula; Inselspital Universitätsspital Bern Kinderklinik, emergency department Fayyaz, Jabeen; The Hospital for Sick Children, emergency department Jachmann, Anne; Inselspital Universitätsspital Bern Kinderklinik, Emergency Medicine Keitel, Kristina; Inselspital Universitatsspital Bern, Paediatric Emergency Department Brandenberger, Julia; Inselspital Universitätsspital Bern Kinderklinik, emergency department; University of Toronto Faculty of Medicine, Edwin S. H. Leong Centre for Healthy Children
Primary Subject Heading:	Communication
Secondary Subject Heading:	Paediatrics, Emergency medicine
Keywords:	ACCIDENT & EMERGENCY MEDICINE, Health Equity, PAEDIATRICS

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Caregivers with limited language proficiency and their satisfaction with pediatric emergency care related to the use of professional interpreters – a mixed methods study

Myriam Gmünder MD[1*], Noemi Gessler MD[1*], Sina Buser MD [1], Ursula Feuz[1], Jabeen Fayyaz[2], Anne Jachmann MD[3], Kristina Keitel MD PhD [1+] and Julia Brandenberger MD PhD [1, 4+]

[1] Pediatric Emergency department, University Hospital of Bern, Bern, Switzerland

[2] Division of Pediatric Emergency Medicine, Hospital for Sick Children, Toronto, Ontario, Canada

[3] Emergency Department, University Hospital of Bern, Bern, Switzerland

[4] Edwin S.H. Leong Centre for Healthy Children, University of Toronto, Toronto, ON, Canada

* shared first authors; [+] shared last authors

Corresponding author

Julia Brandenberger, MD PhD

Notfallzentrum für Kinder und Jugendliche (NZKJ)

University Hospital of Bern, Bern, Switzerland

Freiburgstrasse 15, 3010 Bern, Switzerland

Phone: +41 31 632 92 77

E-mail: julia.brandenberger@hotmail.com

Supported by: the "Stiftung KinderInsel Bern" (formerly known as Batzebär foundation) and the Edwin S.H. Leong Centre for Healthy Children, Toronto, Canada to JB.

COI: The authors declare that they have no conflict of interest.

Keywords: migrant health; children; immigrant; refugee, interpreter, emergency department, Europe, equity, communication, limited language proficiency, self-advocacy

Abstract

Objectives

Communication is a main challenge in migrant health and essential for patient safety. The aim of this study was to describe the satisfaction of caregivers with limited language proficiency (LLP) with care related to the use of interpreters and to explore underlying and interacting factors influencing satisfaction and self-advocacy.

Design

A mixed-methods study

Setting

Pediatric emergency department (PED) at a tertiary care hospital in Bern, Switzerland.

Participants and methods

Caregivers visiting the PED were systematically screened for their language proficiency. Semi-structured interviews were conducted with all LLP-caregivers agreeing to participate and their administrative data was extracted.

Results

The study included 181 caregivers, 14 of whom received professional language interpretation. Caregivers who were assisted by professional interpretation services were more satisfied than those without (5.5[SD] ±1.4 versus 4.8[SD] ±1.6). Satisfaction was influenced by 5 main factors (relationship with health workers, patient management, alignment of health concepts, personal expectations, health outcome of the patient) which were modulated by communication. Of all LLP-caregivers without professional interpretation, 44.9% were satisfied with communication due to low expectations regarding the quality of communication, unawareness of the availability of professional interpretation, and overestimation of own language skills, resulting in low self-advocacy.

Conclusion

The use of professional interpreters had a positive impact on the overall satisfaction of LLP-caregivers with emergency care. LLP-caregivers were not well—positioned to advocate for language interpretation. Health care providers must be aware of their responsibility to guarantee good quality communication to ensure equitable quality of care and patient safety.

Strengths and limitations of this study

- The mixed methods approach allowed to measure the satisfaction with care of caregivers with LLP and also to explore underlying reasons.
- Root causes for unfrequent caregiver self-advocacy for professional language interpretation were detected.
- By systematically assessing and comparing comprehension of diagnosis and treatment to the self-reported comprehension of caregivers, important discrepancies were detected.
- Participation of professional interpreters and study participants in designing and analysing the data increased the validity of the study and accuracy of the findings.
- The study group where an interpreter was used was small, not allowing for further, inferential statistical testing.

Abbreviation

LLP = Limited language proficiency

PED = Pediatric emergency department

Introduction

Language barriers and insufficient communication are major challenges in migrant health care delivery leading to decreased access and quality of care (1-7). In Switzerland, an estimated 10% of the population face language barriers on a daily base as they either do not speak one of the four national languages or have another preferred language (8, 9). This proportion was further increased by the recent influx of Ukrainian refugees (10). Under the United Nations Convention on the Rights of the Child, Switzerland declares to provide every child with access to the highest attainable standard of health care (11). Successful communication, preferably with professional interpreters, is widely described as essential to minimize disparities in the quality of health care for these patients (1, 4, 8, 12-15). A Swiss legal report underscored that the right to receive language interpretation is part of any informed consent process in patients speaking other languages than the health providers (16). Yet, international evidence clearly shows that professional interpreters are underused in health care settings (1, 17-26).

A literature review including studies from the United States, Australia, the United Kingdom, Ireland, and Canada investigated the impact of language proficiency on the patient's experience in health care and found that impaired communication, relationship, discrimination, and cultural safety were main concerns. Factors improving the health care experience of patients with limited language proficiency (LLP) were mitigating language barriers through interpreters, offering translated patient resources improve transcultural competencies of health care professionals and enhance education for community resources for LLP caregivers (27, 28). Other studies recommended systematic communication pathways for LLP patients (10) including improved guidelines on the use of interpreters, minimized barriers to access interpreter services, including sufficient financial coverage, and raised awareness about the importance of the use of interpreters among health workers (1, 17-19, 29-31). Improvements of the health care delivery to LLP patients were most successful if a participatory approach was chosen (32). Despite the considerable proportion of the population in Switzerland with LLP, evidence focusing on their perspective on the quality of health care related to communication is missing.

The goal of this study was to describe the satisfaction of LLP-caregivers related to the use of interpreters as a driver of quality of pediatric emergency care and to explore underlying, interacting factors influencing satisfaction.

Methods

Study setting

The study was conducted at the pediatric emergency department of the University Hospital of Bern, Switzerland. The department provides the full range of emergency care for children and adolescents aged 0-16 years to an average of over 30,000 patients per year. Since 2021 it is part of the "Swiss health network for equity"(33). An around-the-clock phone interpreter service is provided at the facility, and it is offered to patients free of charge, with the department covering the costs. For planned conversations (mostly on the wards or in outpatient clinics), in-person interpreters can be ordered on demand. The costs are covered by the hospital.

Study design

This study is a concurrent design mixed-method study (supplemental figure 1). As this study aimed to explore caregivers' satisfaction related to the use of interpreters as part of health care management and delivery, it explored satisfaction in the context of a broad, complex, and multidimensional field. In such cases, a mixed-methods research design is known to offer multiple advantages (34), including the examination of the research question from multiple perspectives (35), the triangulation of two different methods and several forms of data (36-39) and the pragmatic flexibility of the methodology to adapt to the specific research question and context (40, 41). The most recent Equator network recommended standardized mixed-method research guidelines were used for the reporting of the study (supplemental table 1) (42).
The primary objective was to compare the LLP-caregivers' satisfaction with health care with and without the use of professional interpreters. Secondary objectives were the analysis of self-reported versus assessed language proficiency, the comprehension of diagnosis and received therapy of their child, and their communication strategy and desire for professional interpreters.
This study was nested into an interventional study intended to increase the use of professional interpreter services (26). Consequently, data collection for this study was done during the predefined two time periods.

Study population

All patients visiting the emergency department between 1st April 2021 and 30th June 2021 (first recruitment period) and between 1st October and 5th December 2021 (second recruitment period), were screened for the following inclusion criteria using the administrative records: i)

Nationality other than Swiss AND ii) Swiss nationality with national language other than German (G), French (F) or English (E) AND iii) not presenting only for a COVID-19 swab test.

All caregivers of patients who visited the emergency department and fulfilled the inclusion criteria were systematically called and screened for their language proficiency within one week after their consultation. If two caregivers were present at the consultation, the one with better language skills was screened. The ABC-Tool (43), a globally used standardized, multidimensional language proficiency screening tool, was adapted by the study team to the local context. Every caregiver who visited the PED and met the inclusion criteria was screened and their language proficiency classified, using the scoring system defined by the 'Goethe Institute', the most established international language school for German (44). The scoring ranges from A1 (very LLP) to C1 (fluent). All caregivers screened as A1 or A2 were classified as caregivers with LLP. If the screening was positive and caregivers agreed to receive a phone call, the LLP caregiver was contacted a few days later for a semi-structured phone interview with a professional interpreter. Prior to each interview, verbal informed consent was obtained from the LLP caregiver with the assistance of professional interpreters. The caregivers who completed the study interview represented the final study population.

Data collection

Following recommendations of Creswell and Zhang (45), quantitative and qualitative data were collected simultaneously. The quantitative data included electronic health records and quantitative measurements of the caregivers' satisfaction. The qualitative data consisted of semi-structured interviews. Both datasets were analyzed in parallel and relationships between the condensed qualitative and quantitative results were visualized to obtain an in-depth understanding of caregivers' satisfaction and its underlying factors. Quantitative and qualitative data collection, including phone call screenings and interviews, was conducted by author 1 and 3. During the study period they were employed as doctoral candidates at the pediatric emergency department of the University's Hospital in Bern in the migrant health service research group. Both researchers had previous experience in pediatric migrant health research and were trained by author 2 and 8 in the conduction of diversity-sensitive, semi-structured interviews using presentations, role-play, and educational videos. Author 8 has extensive experience in qualitative research and pediatric migrant health.

Qualitative data

Two semi-structured interview guides were designed by the interprofessional study team using different versions for consultations with and without the use of professional interpreters (supplemental table 2). The questionnaire entailed closed (quantitative data) and open (qualitative data) questions.

The interview guides were discussed with and reviewed by a professional and experienced interpreter with migrant background. After external revision, pilot interviews were performed to assess comprehensibility, acceptability and interview-duration as to ensure that the information needed to answer the research questions was being produced. The preliminary interviews were discussed within the research team and analyzed in joint team sessions. The final interview guideline included mandatory core questions exploring reasons for the perceived quality of care with a focus on communication and the caregiver's confidence while communicating. Core questions were followed by non-mandatory prompts, allowing the interviewer to further explore interesting comments made by the caregiver.

All interviews were conducted with a professional phone interpreter who translated the caregiver's preferred language to German using iPhone SE/6's conference mode (Version iOS 15.1/12.5.5).

Quotes from interviews of caregivers during health encounters using a professional interpreter were cited with A. Those without interpreter services were cited with B, followed by the interview number.

Quantitative data

For each participant, the following quantitative variables were extracted from routine administrative health records: nationality, age, gender, date of visit, diagnosis, therapy, and triage score. An Emergency Triage Scale (STS), ranging from 1: acute life-threating to 5: non urgent , was used (46). Further variables were collected during the phone interview: satisfaction, accompanying person/s, native language, self-reported and estimated language skills in G/E/F, interpreter use, the child's diagnosis, therapy received, recency of immigration to Switzerland, caregiver's education, and resident status.

Caregiver were asked about their satisfaction with the health encounter ranging from 1 (very unsatisfied) to 6 (very satisfied). To describe the self-reported language comprehension, caregivers were asked if the information they received during the emergency department visit was understandable. The answers were classified as yes, partially, or no. To assess comprehension, the study team asked caregivers to explain the diagnosis and the treatments

the child received during the health visit. If the caregivers' answers corresponded to the diagnosis and treatments recorded in the electronic medical report, they were marked as match. Partial matches or discrepant answers were documented as partially correct or incorrect.

Data management and analysis

All data were entered into a REDCap-database (Vanderbilt University/IC 6.9.4, 2018).
For quantitative data, entry fields were designed as binary radio button fields or scroll down lists. Branching logic was used where appropriate.
REDCap data quality control tests were performed before analysis. STATA (Stata/IC Version 13.1. 2013) was used for statistical analysis.
Qualitative data was transcribed simultaneously to the phone interview and directly entered in the REDCap database. Three free-text fields summarized statements about the general patient satisfaction, two text fields documented caregivers' descriptions of his/her comprehension during the health visit, and one additional text field was used for further interesting statements. For each of the 3 groups of free-text fields, answers from all participants were pooled together in one document and coded deductively and inductively by two coders (author 1 and 2) using the text analysis approach according to Mayring (47). Citations from LLP-caregivers in the interpreter group were compared to those from the non-interpreter group. Saturation was monitored continuously throughout recruitment and data collection and continued until new data mainly repeated information collected in previous interviews (48). Saturation of the material was reached in both groups.
During multiple online and in-person meetings, data was analyzed in a stepwise approach in an interprofessional team. The team included the authors of this study, a professional interpreter with migrant background, and one migrant caregiver. Through stepwise aggregation of the qualitative data, the resulting main categories were created. The relationships between the condensed qualitative and quantitative results were visualized in multiple networks, illustrating the final outcomes of this study.

Ethics

The Study protocol was reviewed (abbreviated process) and approved by the Ethics Committee of the canton Bern on 08 March 2021.

Results

Study population

A total of 181 caregivers were included in this study. Of those, 14 (7.7%) had a consultation with, and 167 (92.3%) a consultation without an interpreter (supplemental figure 2).
In consultations using an interpreter the most frequent nationalities were Eritrean 6/14 (42.9%), Syrian 3/14 (21.4%) and Sri Lankan 2/14 (14.3%). A total of 57.1% (8/14) received an urgent triage score. Most caregivers graduated from primary school 6/14 (42.9%) followed by secondary school 5/14 (35.7%), while 2/14 (14.3%) were illiterate.

The most common nationalities in consultations without an interpreter were Syrian 37/167 (22.2%), Eritrean 26/167 (15.6%), and Portuguese 13/167 (7.8%). A total of 25.1% (42/167) received an urgent triage score. The most frequent educational degree of these caregivers was secondary school 64/167 (38.3%), followed by primary school 56/167 (33.5%). 12.6% (21/167) were illiterate (table 1).

Overall satisfaction

The satisfaction was high in both groups with a total mean of 4.9 (Standard Deviation [SD] ±1.6). Caregivers in consultations with an interpreter were more satisfied than those in the non-interpreter group (5.5 [SD] ±1.4 versus 4.8 [SD] ±1.6; table 2). Satisfaction was influenced by 5 main factors: relationship with the health workers, patient management, alignment of health concepts, caregivers' personal expectation, and health outcome of the patient (figure 1). Satisfaction was optimal when the patient management met the caregiver's expectation, the relationship between health workers and caregivers was respectful and trustful, and when there was agreement on the same health concept (figure 2). Communication was the main tool able to modulate relationships, expectations, and health concepts influencing satisfaction through these factors.

Satisfaction related to the use of interpreters

In both groups, caregivers mentioned good communication as a key precondition for their satisfaction with the health encounter. In the group with an interpreter, all caregivers described the organization of interpreters as a sensible and helpful part of the patient management. The opinion on how often and when an interpreter was needed varied. Two caregivers thought an interpreter was only necessary for complex conversations.

> "At the beginning I could communicate well, but when it became more complicated, the hospital organized an interpreter. That was great!" (A 8; Satisfaction score 6)

In the group without interpreter services, important language barriers were mentioned by 53.7% (88/167) of the caregivers. Around 21% (35/167) explicitly described miscommunication and frustration during their visit. Some also thought of the health workers perspective and acknowledged that the situation was frustrating for them as well.

Despite not having language interpretation, 44.9% (75/167) were satisfied with the communication. Of all caregivers in the group without language interpretation, 100 (59.9%) had a higher self-reported language proficiency score than the score they received during the standardized language screening done by the researchers. Of those, 59% did not think a professional interpreter was necessary.

A total of 58/167 (34.7%) caregivers reported that they communicated through a non-professional interpreter. Of these, 43.1% (25/58) were minors with a mean age of 12.4 (11-14 IQR). The youngest non-professional interpreter was 7 years old.

Some caregivers preferred professional interpreters for reasons of confidentiality whereas some favoured non-professional interpreters with the argument that they knew and trusted them or that they were more rapidly available than professional interpreters. One caregiver explained that they decided not to ask for language interpretation because they were worried about prolonged waiting times. As consequence, s/he guessed the answer to questions:

> "I would have liked an interpreter, but I was afraid that the organization would take too long. Therefore, I did not say that I did not understand certain things and simply said 'yes'. If I had known that there were also phone interpreters, I would have been very happy to use one." (B 17; Satisfaction score 4)

A minority of 22.2% (37/167) of caregivers knew they were entitled to receive free of charge language interpretation during health consultations. A total of 61/167 (36.5%) caregivers explicitly said they would have asked for an interpreter had they known about that option.

As for the overall communication, satisfaction with comprehension differed between the two study groups. Caregivers with interpreters were more likely to describe comprehension as good (85.7% (12/14) versus 68.3% (114/167)). In contrast to caregivers without interpreter services, they never classified communication as insufficient. With one exception, all parents recalled the diagnosis and therapy of their children at least partially correctly whereas some

caregivers in the group without interpreters could not recall diagnosis (13.2% 22/167) or therapy (7.2% 12/167). In both groups, strong discrepancies existed between self-reported and assessed language comprehension (table 2).

Expectation

A key factor for satisfaction were the caregivers' personal expectations which were shaped by cultural background, health concepts, and previous experiences with health care systems (figure 1). Many caregivers were used to experiencing communication barriers in daily life. Using their children as interpreters was often considered normal routine. One mother reported that her 8-year-old child translated for her and admitted:

> "I did not understand what exactly was done during the operation."
>
> (B 90; Satisfaction score 6)

Nevertheless, she did not criticise that no interpreter was consulted for her and was highly satisfied. About 4.2% (7/167) of caregivers reported that they requested during this or previous health visits language interpretation at the emergency department, but their request was rejected.

> "I asked for an interpreter, but I was told it was too expensive and I couldn't get one. Then I called a friend, she translated for me. But it was about very intimate things and then everyone noticed. You can't do that!" (B 99; Satisfaction score 3)

Expectations also influenced satisfaction with patient management. Depending on expectations, caregivers experienced wait times as long or short (long: 44.8% (81/181) short: 15.5% (28/181)) without correlation to the objective wait time. The degree to which the wait time affected satisfaction also varied strongly. Some caregivers who expected to receive medical treatment very quickly had lower satisfaction scores. Others appreciated the 24 hours service and attended the emergency department after their working hours or on weekends, preferring to wait in the emergency department to waiting for an appointment with their pediatrician.

Unmet expectations negatively influenced the relationship with the health-workers. If mismatches in health workers' actions and caregivers' expectations remained unsolved, satisfaction decreased. Misunderstandings and miscommunication contributed to dissatisfaction as they impeded the ability of the staff to identify and respond to the caregivers'

expectations. If gaps between health workers' actions and caregivers' expectations could not be identified and bridged, it resulted in dissatisfaction.

> "I am very dissatisfied. The doctor was not a real doctor. She only talked for 1 hour and did not do a good examination nor a lab." (B 10; Satisfaction score 1)

Health concepts

Another key factor influencing satisfaction was the alignment of health workers' and caregivers' health concepts. The cultural background of the caregivers influenced the health concept and therefore the concept of the child's disease and the expectation what the child needed. Satisfaction decreased if there was an unresolved mismatch between the caregivers' and the health workers' health concepts. Most caregivers expected more diagnostics (blood work) and therapies (antibiotics, intravenous fluids). In two cases (assessed and reported comprehension: good in both cases), the caregivers' health concept was transformed during and after the health encounter. As the outcome for the child was favourable by the time of the interview, caregivers understood that the initially expected blood work in the emergency department had not been necessary. Good communication and comprehension, a trustful relationship, and a positive health outcome mediated the transformation of the caregivers' health concept leading to alignment with the health workers' practice. The only case in the interpreter group with very low satisfaction was due to a mismatch of health concepts that could not be resolved despite good communication assured by an interpreter.

> "I was not satisfied with the consultation. The situation of my child was very serious, so I wished for an infusion. The nursing staff did not agree and did not do anything." (A 14; Satisfaction score 1)

Relationship

A trustful and respectful health worker–caregiver relationship also represented a key factor for satisfaction (figure 1 and 2). For some caregivers, friendly and respectful treatment gave the impression that the child's medical team was competent.

> "The respect! I felt taken seriously and treated well." (A 2; Satisfaction score 6)

All statements describing the relationship with the staff were positive in the interpreter group. Once established, trustful relationships also helped to keep satisfaction high despite existing language barriers; like in the following example where the caregiver was satisfied with the whole health visit:

"The nursing staff and doctors are very nice and competent, they treated us with love." (A 4; Satisfaction score 6)

Patient management

A fourth key factor influencing the caregiver's satisfaction was the patient management. This included waiting times, the triage system, organization of language interpretation, COVID-19 restrictions, and quality improvement.

Many caregivers were not familiar with the triage system of prioritizing sicker patients. Seeing children get treated earlier although they arrived later triggered the feeling of inequity and injustice.

"Not all patients were treated the same. I don't know if it has to do with the language. Other children got treated before us and we had to wait for so long. I felt discriminated." (B 117; Satisfaction score 2)

Due to COVID-19 restrictions only one person was allowed to stay with the child during the health visit. This was mentioned as a problem, as sometimes one caregiver knew more about the child's health condition but the other was more language-proficient. As one had to leave, the ability to communicate was impaired:

"The father translated the medical history on the phone because he speaks German well. After that, there were communication difficulties because I don't speak German very well. I did not understand a lot of what the doctor said." (B 87; Satisfaction Score 4)

Most of the caregivers were very satisfied with the patient management. They also appreciated being contacted for the interview for quality improvement and receiving information about interpreters being available anytime and free of charge.

"All people who can't speak German well have difficulties with communication at the hospital and would like to have an interpreter. Thank you for your work and effort."

(B 74; Satisfaction score 4)

Discussion

This study exploring the perception of the quality of pediatric emergency care among LLP-caregivers showed increased satisfaction of caregivers when professional language interpretation was used. The most frequently mentioned factors contributing to satisfaction, modulated by interpreter use were satisfied personal expectations, aligned health concepts, a respectful and trustful caregiver-health worker relationship, and good patient management. Caregivers were generally satisfied with their emergency department experience, but many had low expectations regarding communication quality. Overestimation of personal language skills was common and caregivers were often unaware of the option to get professional language interpretation.

The large difference in study population may be due to the fact that the telephone screening does not fully reflect the situation in the emergency department. However, the results are in line with current evidence, demonstrating that a very high number of caregivers with limited language proficiency does not receive language interpretation during health visits, resulting in inferior quality of care (1, 17, 19).

In our study, caregivers' satisfaction with health care was higher when professional interpreters were involved and understanding of diagnosis and treatment improved. This is well in line with strong evidence including 3 literature reviews, describing higher patient satisfaction, fewer interpretation mistakes, and increased quality of care when using professional interpreters during health visits for LLP-patients (4, 49, 50). While all the caregivers in the interpreter group described positive effects of professional language interpretation, a total of 44.9% of LLP-caregivers in the non-interpreter group were also satisfied with the communication. Findings showed a common overestimation of the personal language proficiency, low expectations regarding communication quality, and unawareness of the option to get professional language interpretation as explanations. This is in line with other studies describing that LLP-patients overestimated their language skills (51), rarely advocated for language interpretation, and were unaware of their own right to good quality communication (31). The finding of low caregivers' expectation related to communication is a concerning safety risk. If good communication is not ensured, caregivers are not allowed to play their role as important advocates for their child's health and safety. Being used to inferior standards to the extent that a person accepts the inferior treatment as normal is described in the literature as part of internalized discrimination (52). A Norwegian study exploring satisfaction among migrant women in an obstetric hospital setting showed that patients with lowest

language proficiency or education were less likely to express dissatisfaction compared to those with better education or a Norwegian husband (53). As many were unaware of their right to receive professional language interpretation, many caregivers' organized non-professional interpreters - not uncommonly minors - to bridge the language gap. This practice is unsafe and can have severe negative consequences for the patients (54-56). Different studies showed that the use of minors as language brokers can lead to intra-familial problems, such as a shift of power relations and a reversal of roles, or can be associated with negative emotions on the part of the minors (57, 58). In the U.S, language interpretation provided by minors is also legally prohibited by Section 1557 of the Affordable Care Act (59). These findings highlight that organization of language interpretation should not be considered a shared responsibility between caregivers and health workers but must be the full responsibility of health workers. A most recent North American publication described a significant increase of the use of professional language interpretation in a pediatric emergency department over a period of 5 years. The multidimensional strategy included staff education, data feedback, reduction of barriers to interpreter use and improved identification of patient's language for care (60). Similar long-term strategies may be needed in our research context to achieve comparable results.

One caregiver reported that his/her request to receive professional language interpretation was rejected by health workers, arguing that these services would be too costly. Structural discrimination of immigrant minorities including denial of services has also been described in other studies (61). Improving personal skills and attitudes of staff to identify and counter-act different forms of discrimination and to establish a diversity sensitive institutional culture is therefore key when improving the quality of care for these patients (62-64).

Other studies also described patients' expectations as key factor for patient satisfaction. Expectations were shaped by many sociocultural factors and experiences from previous health encounters (65, 66). In this study unmet expectations were mostly due to diverging health concepts and misunderstandings about the patient management and or treatment.

Divergent health concepts shaped by different cultural contexts e.g. about the perceived need for antibiotics are well described and language barriers increased the difficulty to align these as shown in different studies (67, 68). Like our findings, a qualitative study from the UK on recent migrants' health beliefs, values and experiences of health care described the transformation of health concepts or at least an agreement on common ground between

caregiver and health worker was achieved through effective communication, a trusting relationship, and a positive health outcome for the patient. High caregiver satisfaction was the consequence.

All statements describing the relationship with the staff were positive in the interpreter group, suggesting that the organization of an interpreter and the improved ability to communicate contributed to a trustful relationship. Also in settings with no language barriers, a strong association between patient-centred communication, the patient-provider relationship, and patient satisfaction was found (66, 69, 70). A Swedish study showed that professional interpreters are associated with the improvement of relationship between the patient and caregivers, the increase of patient safety and patient involvement in care (71).
As also described in other studies, respect, friendliness and kindness led to trustful relationships and were described as important reasons for caregivers' satisfaction with care (72). Complaints about the relationship often derived from misconceptions and misunderstandings. Transcultural communication training enabling health workers to be culturally sensitive, reduce personal assumptions and professionally address and respond to differences in health concepts has proven to reduce misunderstandings and ultimately increase patient satisfaction (62). A Danish study was able to show the correlation of satisfaction with the reason of the emergency department visit, the more urgent the reason, the more satisfied the caregivers and staff (73). Clear communication while managing patients including explanations of the triage system and transparent communication of waiting times are known to increase the satisfaction of patients with LLP and those fluent in the local language alike (74).

Strengths and limitations

The greatest limitation of this study was the small number of included caregivers for whom an interpreter was used. Although saturation was reached for both groups in the qualitative material, the small number did not allow inferential statistical testing of the quantitative data. The language screening was conducted by phone, which might have led to a slightly different assessment of language proficiency compared to an in-person assessment during the PED visit. Although the language scoring system used in this study has been well established by Goethe institute, it is designed for the evaluation of day to day language and not specifically validated for the medical context. Although taking place in a health care context, this study did not evaluate health workers but caregivers, who are not required to know medical terms. Consequently, common language was dominantly used during conversations between

caregivers and health workers and therefore the use of the Goethe scoring system seemed appropriate.

An important strength of this study was the mixed method approach, allowing to measure the satisfaction with care of LLP-caregivers and other secondary outcome parameters while also allowing to explore underlying reasons for satisfaction. Through the qualitative data, additional important findings were discovered like reasons for limited caregiver self-advocacy for professional language interpretation. The validity of the study increased by the interdisciplinarity of the team including professional interpreters and study participants in designing and analysing the data.

Conclusion

The use of professional interpreters had a positive impact on the overall satisfaction of LLP-caregivers with emergency care through modulating personal expectations, aligning health concepts, and helping to create respectful and trustful caregiver-health worker relationships. LLP-caregivers were not well-positioned to advocate for language interpretation. Health care providers must be aware of their responsibility to guarantee good quality communication to ensure equitable quality of care and patient safety.

Funding information

The study was funded through the "Stiftung KinderInsel Bern" (formerly known as Batzebär foundation). JB received a research grant from the Edwin S.H. Leong Centre for Healthy Children, Toronto, Canada. Award/ Grant number is not applicable.

Data availability

All data relevant to the study are included in the article or uploaded as supplementary information. No additional data available.

Conflict of interest

The authors declare that they have no conflict of interest.

Acknowledgements

We thank all participating families for taking part in the study and providing feedback. We thank Angelika Louis, head of the interpreting service "Comprendi" and all the intercultural interpreters for interpreting during the interviews, Miss Bohlouli for providing feedback on our interview guideline, Mr Omar and Mr Al Faraj for discussing our results, Diego Lareida and Isabelle Schwerzmann for their help with data collection, Beatrice Lussi for her help in all the administrative tasks and Ante Wind for her linguistic support.

Authors' contributions

Myriam Gmünder: Conceived the study, conducted the interviews, performed data extraction, performed data analysis, drafted the initial manuscript, revues and revised the manuscript, and approved the final manuscript as submitted.

Noemi Gessler: Conceived the study, performed data analysis, drafted the initial manuscript, revues and revised the manuscript, and approved the final manuscript as submitted.

Sina Buser: Conceived the study, conducted the interviews, performed data extraction, reviewed and revised the manuscript and approved the final manuscript as submitted.

Ursula Feuz: Conceived the study, reviewed and revised the manuscript and approved the final manuscript as submitted.

Fayyaz Jabeen and Anne Jachmann: Reviewed and revised the manuscript and approved the final manuscript as submitted.

Kristina Keitel: administrative project leader, conceived the study, supervised analysis, reviewed and revised the manuscript and approved the final manuscript as submitted.

Julia Brandenberger: scientific project leader, conceived the study, supervised analysis, reviewed and revised the manuscript and approved the final manuscript as submitted.

Figures and Tables (4)

Figure 1: Framework of factors influencing satisfaction

Figure 2: Framework prerequisite for a high satisfaction

Table 1: Baseline Characteristics

	With interpreter (14)				Without interpreter (167)			
	N/ years		%		N/ years		%	
Most frequent **nationalities**	ER	6	42.9		SY	37	22.2	
	SY	3	21.4		ER	26	15.6	
	LK	2	14.3		PT	13	7.8	
	AF	1	7.1		AF	11	6.6	
	IQ	1	7.1		TR	10	6	
	SO	1	7.1		LK	9	5.4	
Most frequent **languages**	Tigrinya	6	42.9		Arabic	38	22.6	
	Arabic	3	21.4		Tigrinya	25	15	
	Tamil	2	14.3		Kurdish	16	9.5	
	Dari	1	7.1		Portuguese	14	8.4	
	Kurmanji	1	7.1		Turkish	13	7.8	
	Somali	1	7.1		Albanian	12	7.2	
Language **proficiency**	estimated	self-reported	estimated	self-reported	estimated	self-reported	estimated	self-reported
- A1	7	5	50	35.7	66	30	39.5	18
- A2	7	4	50	28.6	100	35	59.9	21
- B1	0	5	0	35.7	1	45	0.6	26.9
- B2						39		23.4
- C1						12		7.2
- C2						4		2.4
*missing						2		1.2
Duration of stay in CH (min – max)	5.07 years (20d – 12y)				6.1 years (6m – 30y)			
Triage score:								
- 1-3: urgent	8		57.1		42		25.1	
- 4-5: non-urgent	6		42.9		124		74.3	
*missing	0				1		0.6	
Highest education degree of caregiver:								
- Illiterate	2		14.3		21		12.6	
- Primary School	6		42.9		56		33.5	
- Secondary School	5		35.7		64		38.3	
- University	0		0		26		15.6	
Asylum permission/Residence status:								
- N-Permit	0		0		3		1.8	
- F-Permit	5		35.7		33		19.8	
- B-permit	6		42.9		93		55.7	
- C-permit	1		7.1		25		15	
- not known	1		7.1		9		5.4	

y = year, d = day, N-permit = asylum-seeker, F-permit = temporarily admitted refugee, B-permit = temporary resident foreign nationals, C-permit = settlement permit

Table 2: Quantitative Data

			With interpreter (14)		Without interpreter (167)	
			N/ mean	%/ SD	N/ mean	%/ SD
General satisfaction°	Mean/ SD		5.46	1.39	4.8	1.59
	1		1	7.1	11	6.6
	2		0	0	11	6.6
	3		0	0	12	7.2
	4		0	0	16	9.6
	5		2	14.3	31	18.6
	6		10	71.4	84	50.3
	*missing		1	7.1	2	1.2
Communication						
Language barrier	yes		NA	NA	88	52.7
	- A1		NA	NA	43	48.9
	- A2				45	51.1
	no		NA	NA	75	44.9
	- A1		NA	NA	18	24
	- A2				54	72
	- B1				1	1.3
	*missing		NA	NA	4	2.4
Non-professional Interpreter	yes		NA	NA	58	34.7
	- siblings		NA	NA	8	13.8
	-family member				10	17.2
	- friend				17	29.3
	- hospital staff				5	8.6
	- patient				17	29.3
	- other				1	1.7
	Of which minors		NA	NA	25	43.1
	no		NA	NA	105	62.9
	*missing		NA	NA	4	2.4
Self-reported and assessed comprehension						
Understandable Information	Self-reported comprehension = good		12	85.7	114	68.3
	Correct **Diagnosis**	yes	4	33.3	49	43
		partial	8	66.7	45	39.5
		insufficient	0	0	18	15.8
		*missing			2	1.8
	Correct **Therapy**	yes	5	41.7	47	41.2
		partial	6	50	55	48.3
		insufficient	1	8.3	8	7
		*missing			4	3.5
	Self-reported comprehension = partial		2	14.3	36	21.6
	Correct **Diagnosis**	yes	2	100	15	41.7
		partial	0	0	17	47.2
		no	0	0	3	8.3
		*missing			1	2.8
	Correct **Therapy**	yes	0	0	16	44.4
		partial	2	100	15	41.7
		insufficient	0	0	4	11.1
		*missing			1	2.8
	Self-reported comprehension = insufficient		0	0	11	6.6
	Correct **Diagnosis**	yes	0	0	4	36.4
		partial	0	0	6	54.5
		insufficient	0	0	1	9.1
	Correct **Therapy**	yes	0	0	4	36.4
		partial	0	0	7	63.6
		insufficient	0	0	0	0
	*missing		0	0	6	3.6

Interpreter use					
Interpreter – sensible and helpful?	yes	14	100	NA	NA
Interpreter desired	yes	NA	NA	89	53.3
	no	NA	NA	74	44.3
	*missing	NA	NA	4	2.4
Knowledge about interpreter entitlement	yes	7	50	37	22.2
	no	6	42.9	125	74.9
	*missing	1	7.1	5	3

°General Satisfaction: 1= not satisfied, 6= very satisfied
NA = not applicable

Supplementary data (4)

Supplemental figure 1: concurrent mixed-method approach (modified from Banyard & Williams, 2007)(75).

Supplemental figure 2: Flow chart - Study population

Supplemental table 1: Checklist for MMR Manuscript preparation and review

Supplemental table 2: Interview guide

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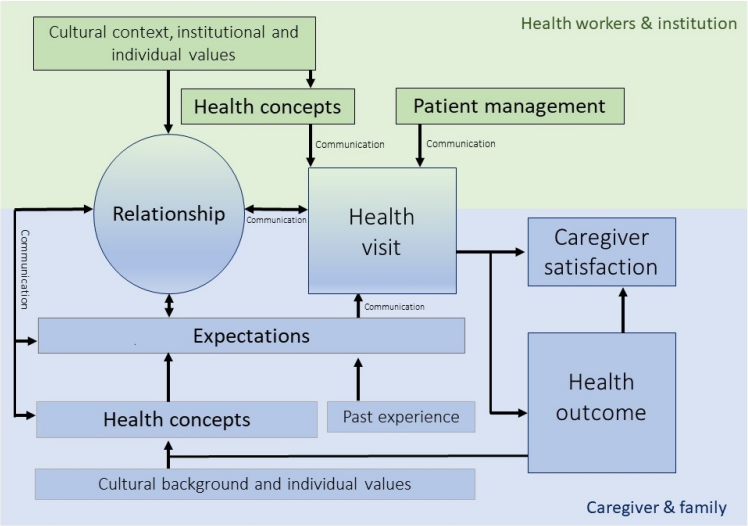

Framework of factors influencing satisfaction

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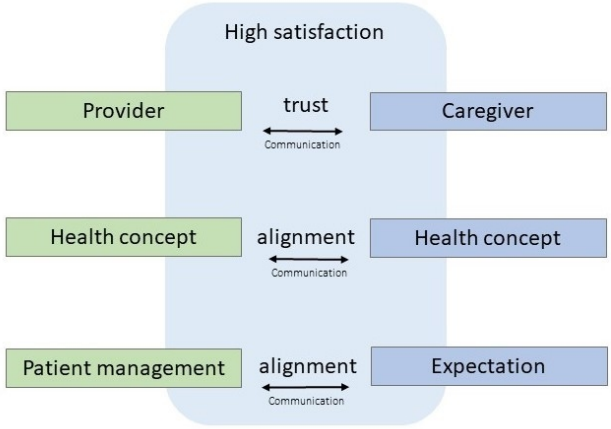

Framework prerequisite for a high satisfaction

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Supplemental table 1: Checklist for MMR Manuscript preparation and review

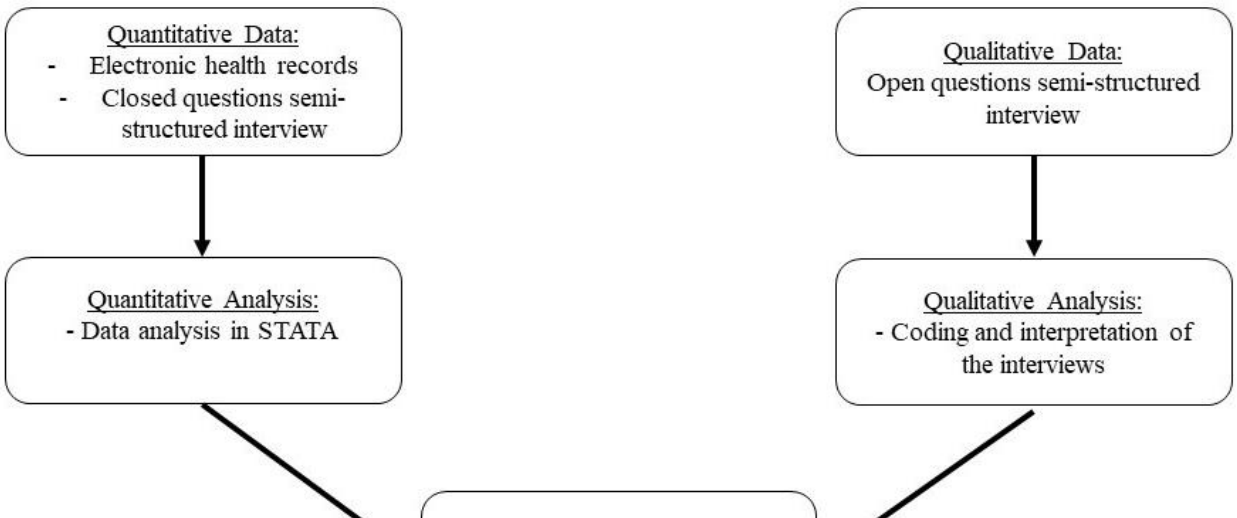
Rational and description of MMR design	▫ Provide a clear statement of the study purpose
	▫ Explicitly describe the MMR design in accordance with Creswell's (2015) typology and use a diagram to illustrate the relationship and sequence of qualitative and quantitative research components
	▫ Justify why the MMR design is appropriate for meeting the study purpose
Transparency in describing method details	▫ Describe the study population(s) and sample(s; e.g., who, what, how many)
	▫ Describe the sampling procedures (including inclusion and exclusion criteria, recruitment)
	▫ Describe qualitative data collection processes (how often data were collected, who collected the data, what kind of data collection instruments were used, how data were recorded—e.g., notes, transcripts)
	▫ Describe quantitative data collection processes (how often data were collected, who collected the data, what kind of data collection instruments were used measurements, validity/reliability)
	▫ Describe qualitative data analysis processes (coding, single or multiple coders, replication logic, credibility)
	▫ Describe quantitative data analysis procedures (missing data and how they are handled, statistical tests used)
Integration of qualitative and quantitative research components	▫ Interpret qualitative analysis results with appropriate quotes if necessary
	▫ Interpret quantitative analysis results in consideration of statistical significance, selection bias, and threats to validity
	▫ Compare qualitative and quantitative results
	▫ Address divergencies and inconsistencies between qualitative and quantitative results

Supplemental table 2: Interview guide

Introduction	Introduction (Name, doctoral Student, Interpreter) Phoneinterview to quality improvement at NZKJ Double check right person? Confidentiality/ Anonymisation Informed consent	Hello Ms/Mr XX, my name is YY and Mrs/Mr ZZ will translate. Phoneinterview for quality improvement at the NZKJ, duration approx. 10-15 minutes Who was at the emergency department with your child on the XX(date)? If present, can your partner speak better G/E/F? Your information will be treated confidentially and anonymized. Do you mind if I ask you a few questions?
Communication without interpreter	Security in D/E/F language? Scale 1-6 Spoken language at emergency department? Difficulties of comprehension? Someone translated? Age of non-professional interpreter? Wished for interpreter? Entitelment to interpreter	How confident do you feel in G/E/F language on a scale of 1-6? (1 = very uncertain, 6 = very certain)? What language did you use talking to the doctor/nurse? In your view, were there any linguistic difficulties in comprehension? Did anyone else (child, relative, colleague,…) translate during your visit? How old was he/she who translated? Would you have liked an interpreter? Do you know that you may always ask for an interpreter in the hospital?
Communication with interpreter	Native language? Confident in D/E/F language? Scale 1-6 Interpreter: Interpreter on site or phone? Who whised for an interpreter? Entitelment to interpreter When was interpreter used? Communication before? How often? Sensible and helpful?	What is your native language? How confident do you feel in G/E/F language on a scale of 1-6? (1 = very uncertain, 6 = very certain)? During your visit, an interpreter was translating: Was the interpreter on site or was translation done via telephone? Did you ask for an interpreter? Or was the interpreter organized by the hospital staff? Do you know that you may always ask for an interpreter in the hospital? At what point was the interpreter brought in? How was communicated before? How often was the interpreter needed? Did you also request an interpreter at any other time during your consultation? Do you think that involving the interpreter was sensible and helpful?
Satisfaction	Satisfaction from 1-6? Why? Diagnose? Informations? Therapy? Dosage? What was missing? Improvement proposal? Particularly good? Come back to NZKJ?	On a scale of 1-6, how satisfied were you with your visit to the emergency department? (1 = very dissatisfied, 6 = very satisfied). Why? What was the diagnosis of your child? Was the information provided during your visit clear and understandable? → If no: why not? What did your child receive as therapy? What was the dosage? What would you have wished differently? Any suggestions for improvement? What did you particularly like? If you had another emergency with one of your children, would you feel comfortable coming back to the NZKJ?
Personal facts	Arrival in CH? Age? Education? Current profession? Asylum status?	How long have you been in Switzerland? How old are you? What is your highest graduation? What is your current profession? What is your current residency/ asylum status?

Wrap up	Answered all the questions Additions? Questions?	From my point of view, you answered all my questions. Thank you for your valuable time and answers. Do you have any additions or questions?
Thanks and farewell	Thanks Farewell	Thank you very much for answering my questions. I wish you all the best

Supplemental figure 1: concurrent mixed-method approach (modified from Banyard & Williams, 2007)(75).



Supplemental figure 2: Flow chart - Study population