

Can We Do Better than Gesturing? Requirements for a Digital Communication Aid to Support Non-Verbal Communication in Paediatric Emergency Care

Beatrice Kaufmann^a, Anouk Haldemann^b, Christopher Lueg^c, Loraine Olalia^a,
Friederike Thilo^b, Kerstin Denecke^c

^a Institute of Design Research, Bern University of Arts, Bern, Switzerland

^b Department of Health, Bern University of Applied Sciences, Bern, Switzerland

^c Institute for Medical Informatics, Bern University of Applied Sciences, Bern, Switzerland

Abstract

Providing urgent and emergency care to migrant children is often hampered or delayed. Reasons for this are language barriers when children, and their care givers, don't speak any of the languages commonly spoken in Switzerland, which include German, French, Italian, and English. By a participatory design process, we want to develop a novel image-based digital communication aid tailored to the needs of migrant patients and nurses within Swiss paediatric clinics.

Keywords

Communication barriers, language, emergency care, migrant, paediatric, communication aid.

Introduction

About 200,000 people living in Switzerland don't speak English or any of the official languages including German, French, and Italian. Compared to the general Swiss population, the health status of the migrant population has deteriorated [1]. Language barriers often impact on the quality of the treatment and care those migrants receive [2, 3] and are the most frequent obstacle for providing urgent and emergency care to refugee children and young people [4]. Language barriers affect the quality of healthcare and increase the risk of adverse events and fatal outcomes in both hospital and primary care settings [5]. To address these challenges, we aim at developing a digital communication aid for migrant children, their relatives and caregivers that supports non-verbal, image-based communication when collecting the medical history of children in emergency departments. In this paper, we report on the requirement collection.

Methods

An interdisciplinary team of researchers from communication design, nursing research and medical informatics was formed to develop a concept for a targeted communication aid on the basis of prior research by the first author [6,7]. The approach adheres to the general principles of human centered design, aka interaction design [8]. This means that the design process is participatory, iterative, and uses prototyping at various stages of the development process.

We used a questionnaire to collect information from the heads of 9 paediatric emergency units across Switzerland and conducted interviews with 10 nurses working in emergency units for children. We were interested in communication flow and

assessment tools. We asked what they consider the most challenging communication situations when dealing with language barriers during their daily practice, and what strategies and communication aids they use to cope with these barriers. Finally, we asked about features they would like to see in a communication aid.

We collected requirements using case examples. For three different concrete and frequently occurring emergency cases, we discussed in the interview which questions are asked in which order and whether the procedure differs between the different interview partners. We also asked in detail which information is difficult to obtain in cases of language barriers and which is relevant for treatment.

Findings

Communication strategies of emergency nurses

Five out of eight of the interviewed emergency departments use the Australasian Triage Scale (ATS, [9]) for triage. Three of them mentioned that the nursing staff structures their interrogation along the SAMPLE schema (incl. SAMPLER and PSAMPLER) (Acronym for Symptoms, Allergies, Medication, Patient data / medical history, Last (oral intake/stool/urine), Events leading to symptoms). With an estimated proportion of non-German-speaking patients is stated to be between 15 and 50%, depending on the clinic it is obvious that language barriers are an everyday problem. In the case of language barriers, the following information was frequently mentioned as difficult to record: pre-existing conditions, allergies, medication taken (which, how much and when?). The most common reasons for hospitalization in pediatric emergencies reported were falls/commotio, respiratory illness/infections, abdominal pain and fractures. From the nurses' point of view, communication is most difficult with patients who have not been in the country for long (e.g. refugees), with illiterate people or members of a language group that does not use the Latin script. Digital devices are available in half of the units. Large clinics are fully digitalized with accessible computers and Wi-Fi in every room. In addition, many nurses and patients have their private smartphones with them. The following digital communication aids were mentioned as being used: Translator tools (mostly Google Translate, but also Leo or PONS), a pictogram database and telephone interpretation services. Eight out of nine units rate the acceptance of the nursing staff and patients to use digital communication aids in case of language barriers as high or very high, one as neutral.

Nurses ask their questions depending on the current condition of the patient in a different order or in an abbreviated form. The triage schemes mentioned above are used as a guideline but not as a step-by-step procedure. Time-related information, (Since when? How often? When did it happen?), information concerning the circumstances of an accident or the history of the acute condition were reported as difficult to obtain. Communication aids are usually not used throughout the entire treatment, but in situations where communication using hands and feet is stuck and human translators are unavailable (multilingual hospital staff, relatives, translator services). Google translator is described as being helpful in these situations, although accuracy of translation is not given. Translator apps based on pre-translated phrases are considered as not helpful when they don't cover the language needed. Images are considered as supportive, for example, to depict key symptoms, medications, or pain. The interviewed carers see limitations of a communication aid in emotional and culturally conditioned topics.

Requirements for a digital communication aid

In discussions with paediatric emergency nurses, we identified requirements regarding functionality / design and content of a future communication aid. It should be a simple tool that is quickly available, cover the most common situations and enables a dialogue with both the non-German-speaking children and their families. If utilizing translations, it should cover the most frequently spoken languages by patients in Swiss emergency units. The tool should base on pictures or pictograms and has to provide well and clearly designed illustrations. This means that they have to be unambiguous, of high contrast, scalable, medically correct, and understandable by people with different cultural background. Content-wise the communication aid should cover the topics of the SAMPLE schema and consider the most frequent children's diseases and accidents. The structure should be flexible and the content individualizable to address the patient's current condition.

Conclusions

Considering our insights gained in the first investigative phase of the project, we plan a picture-based tool with a dialogue principle to ensure language-independent communication. A well-designed tool has potential to improve communication in emergency settings by lowering the language barrier. In this way, better quality of treatment for patients speaking other languages is supposed to be achieved through mutual understanding. As a next step, we will develop prototypes to be tested with nurses and migrants. The final prototype will be tested in a real hospital setting.

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References

- [1] C. Rüefli. Grundlagenanalyse zur Zukunft des Themas Migration und Gesundheit beim Bund. Büro Vatter AG. 2015.
- [2] T. Langer, S. Wirth. Overcoming language barriers with telephone interpreters: first experiences at a German children's hospital. *Zeitschrift für Evidenz, Fortbildung und Qualität im Gesundheitswesen*. 2014 Jan 1;108(5):278-82.
- [3] F.N. Jaeger, L. Kiss, M. Hossain, C. Zimmerman. Migrant-friendly hospitals: a paediatric perspective-improving hospital care for migrant children. *BMC health services research*. 2013 Dec;13(1):1-4.
- [4] R.G. Nijman, J. Krone, S. Mintegi, et al. Emergency care provided to refugee children in Europe: RefuNET: a cross-sectional survey study. *Emergency Medicine Journal*. 2021 Jan 1;38(1):5-13.
- [5] L. Schrier, C. Wyder, S. Del Torso, T. Stiris, U. von Both, J. Brandenberger, N. Ritz. Medical care for migrant children in Europe: a practical recommendation for first and follow-up appointments. *Eur J Pediatr*. 2019 Sep;178(9):1449-1467.
- [6] B. Kaufmann, T. Helfer, D. Pedemonte, M. Simon, S. Colvin. Communication challenges between nurses and migrant pediatric patients. *Journal of Research in Nursing*. 2020 May;25(3):256-74.
- [7] B. Kaufmann, M.A. Simon, T. Helfer. "It somehow worked in the end": Managing demanding communication situations between nurses and migrant families in the pediatric hospital setting through the use of communication aids. In: *Proc. 6th Intern. Conf. on Design4Health 2020*: 2, pp. 47-56.
- [8] S.R. Stoyanov, et al. Mobile app rating scale: a new tool for assessing the quality of health mobile apps. *JMIR mHealth and uHealth*. 2015;3(1):e27.
- [9] J.K. Day and N. Song. Attitudes and concerns of doctors and nurses about using a translation application for in-hospital brief interactions with Korean patients. *J Innov Health Inform*. 2017;24: 262–267.

Address for correspondence

Beatrice Kaufmann
University of Arts, Institute of Design Research
Fellerstrasse 11, 3027 Bern
beatrice.kaufmann@bfh.ch