

Final project report: www.coronabambini.ch – a mixed method evaluation

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Detailed Results, Methods and Background of this project are published here:

[Frontiers | Public health communication: Attitudes, experiences, and lessons learned from users of a COVID-19 digital triage tool for children \(frontiersin.org\)](#)

[Frontiers | The Utility of a Pediatric COVID-19 Online Forward Triage Tool in Switzerland \(frontiersin.org\)](#)

[www.coronabambini.ch: Development and usage of an online decision support tool for paediatric COVID-19-testing in Switzerland: a cross-sectional analysis | BMJ Open](#)

Background

The Swiss Federal Office of Public Health (FOPH) published the first national paediatric COVID-19 testing guidelines in June 2020.¹ The testing algorithm was developed in conjunction with the national association of paediatrics and intended to guide parents and healthcare providers to decide which children should be tested for COVID-19 and regarding school/daycare attendance. Special focus was laid on (1) minimising testing burden on children <12 years of age, (2) allowing school and daycare attendance as much as possible, (3) strengthening the role of paediatric primary care providers as gatekeepers and (4) avoiding changes in care-seeking behaviour when children are acutely ill. The resulting testing guideline was elaborate but also complex to interpret for laypersons as well as for healthcare providers.

To support the implementation of these paediatric COVID-19 testing guidelines, we developed an online decision support tool in collaboration with the FOPH, www.coronabambini.ch. Such a decision tool may provide a current, credible and practical source of information for caregivers and healthcare personnel in decisions around testing and attendance of school and daycare. Decision support tools to support public health policies, rather than medical decision support tools, are relatively new. However, during the current COVID-19 pandemic, several online triage decision tools for adults have been developed to relieve stretched healthcare systems. The requirements for such online decision supports tools in terms of timeliness and flexibility in adapting to changing guidelines are high and represent a major challenge in operating such an instrument. Tools for children are even more challenging as they have to consider various user groups and more complex

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guidelines. The potential of such online tools may go beyond decision support as they could serve as surveillance tools for disease epidemiology and policy implementation. However, important and inherent methodological limitations include selection bias, such as an over-representation of users with high education status.

Faced with a potential health system overload, rapidly evolving knowledge about a new virus, uncertainties in the population, specifically about the role of children within the pandemic, rapidly changing or complex guidelines, and public health recommendations, OFTTs can act as information sources, triage patients, and assist with public health communication.

In contrast to adult OFTTs, the environment and social contexts play a more prominent role in pediatric OFTTs. A myriad of factors influence how individuals and families follow or disregard tool recommendations, consequently affecting the OFTT utility. These factors include, but are not limited to, the severity of the child's illness, the family environment, and child care arrangements.

The introduction of online forward triage tools (OFTTs) for healthcare and public health communication has created a new and potentially scalable, public health communication channel. This channel has the potential to reach large numbers of people, irrespective of the time of tool use and location of the user. OFTTs have been developed to communicate public health recommendations regarding testing, isolation/quarantine, as well as advice regarding accessing healthcare services, and school or day-care attendance. Unique attributes of a child-specific OFTT are the different levels and recipients of the recommendation, ranging from the affected patients, the children, their families, and caregivers to a population-wide audience.

Objectives

The objectives of this study were to:

- to describe the development and usage of www.coronabambini.ch as an example of a paediatric electronic public health application
- to explore its potential and challenges in providing information on disease epidemiology and public health policy implementation.
- to assess the utility and usability of the pediatric COVID-19 OFTT www.coronabambini.ch, as well as to elicit reasons for adherence or non-adherence with the overall goal of providing recommendations to improve future OFTT development.
- To explore attitudes, experiences, and challenges faced by Swiss OFTT users in regard to public health recommendations given by a child-specific COVID-19 OFTT (pandemic context).

Overall Methodology

We developed and maintained a non-commercial online decision support tool, www.coronabambini.ch, to translate the Swiss Federal Office of Public Health (FOPH) paediatric (age 0–18 years) COVID-19 guidelines around testing and school/daycare attendance for caregivers, teachers and healthcare personnel.

We performed a sequential mixed method evaluation combining quantitative and qualitative methods. The detailed Methods are published in the respective manuscripts

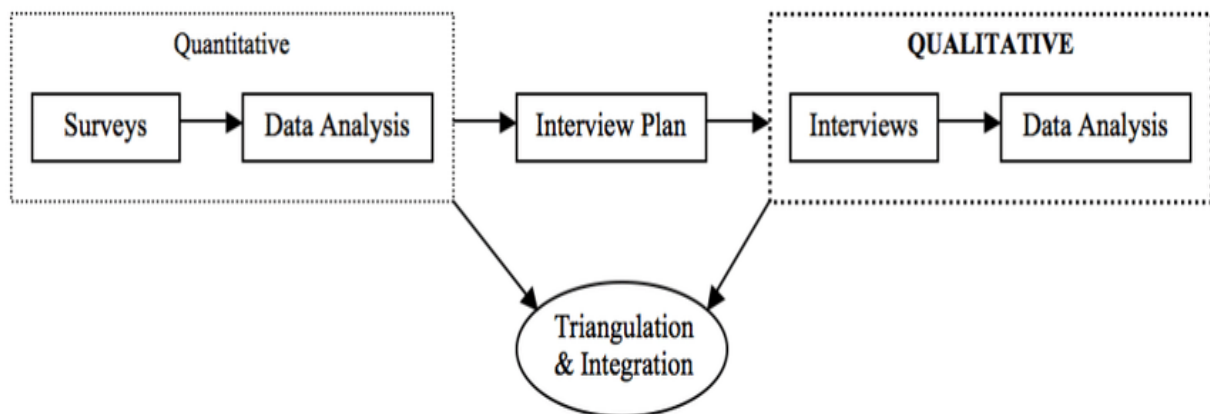


Figure 1: overall methodological approach

For the quantitative part, we analyzed the online decision tool as well as a voluntary follow-up survey from October 2020 to September 2021 to explore its potential as a surveillance tool for public health policy and epidemiology.

For the qualitative part, video interviews were held with key informants (n = 20) from a population of parents, teachers, guardians, as well as doctors who had used the child-specific COVID-19 OFTT and had consented to a further study. Convenience and quota sampling were done to include a variety of key informants. Interviews were recorded, transcribed verbatim, and analyzed for themes.

Results

Quantitative Analysis

Detailed Results are published [here](#)

Certain dynamics of the pandemic and changes in testing strategies were reflected in the data captured by www.coronabambini.ch, for example, in terms of disease epidemiology, gastrointestinal symptoms were reported more frequently in younger age groups (13% (3308/26 180) in children 0–5 years vs 9% (3934/42 089) in children ≥ 6 years, $\chi^2=184$, $p \leq 0.001$). As a reflection of public health policy, the proportion of users consulting the tool for a positive contact without symptoms in children 6–12 years increased from 4% (1415/32 215) to 6% (636/9872) after the FOPH loosened testing criteria in this age group, $\chi^2=69$, $p \leq 0.001$. Adherence to the recommendation was generally high (84% (1131/1352)) but differed by the type of recommendation: 89% (344/385) for ‘stay at home and observe’, 75% (232/310) for ‘school attendance’.

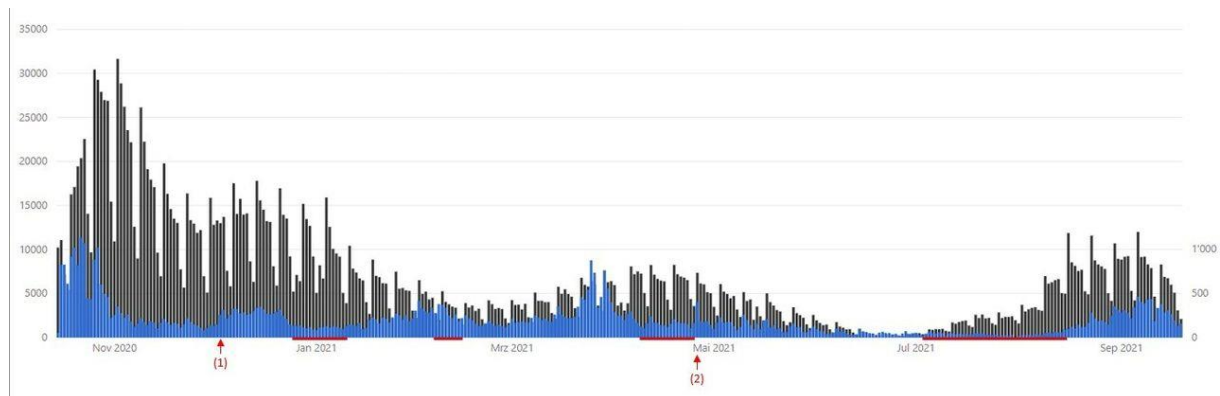


Figure 2 Use of the online decision tool (right scale, blue) compared with the reported cases by the FOPH (left scale, black). (1) marks the day that www.coronabambini.ch was integrated to the COVID-checker of the FOPH. (2) marks the day the algorithm changed. The red bars mark the school-holidays of the city of Bern. FOPH, Federal Office of Public Health.

Qualitative Analysis

Detailed results are published [here](#) and [here](#).

Regarding the utility and usability of the pediatric COVID-19 OFTT www.coronabambini.ch, as well as to elicit reasons for adherence or non-adherence with the overall goal of providing recommendations to improve future OFTT development, three main themes emerged:

i) the usefulness of the OFTT to the users, ii) expectation management and importance of stakeholder involvement in OFTT development, and iii) OFTT limitations.

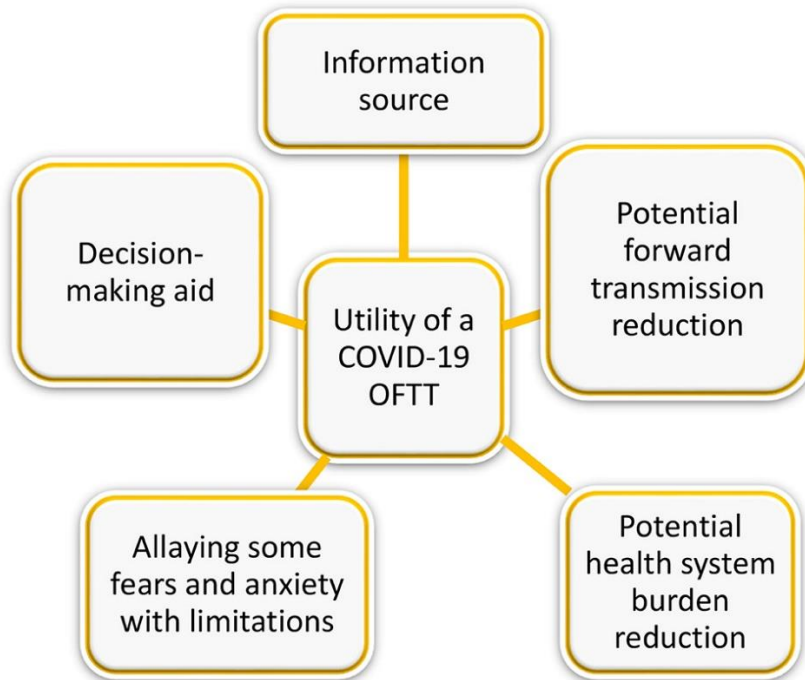


Figure 3: Utility of a COVID-19 OFTT.

Regarding the attitudes, experiences, and challenges faced by Swiss OFTT users in regard to public health recommendations given by a child-specific COVID-19 OFTT (pandemic context), the following themes emerged: (1) definition and expectations of high-risk persons, (2) quarantine instructions and challenges, (3) blurred division of responsibility between authorities and parents, (4) a novel condition and the evolution of knowledge, (5) definition and implications of socioeconomic status, (6) new normal and societal divisions, and (7) the interconnectedness of these factors-systems thinking.

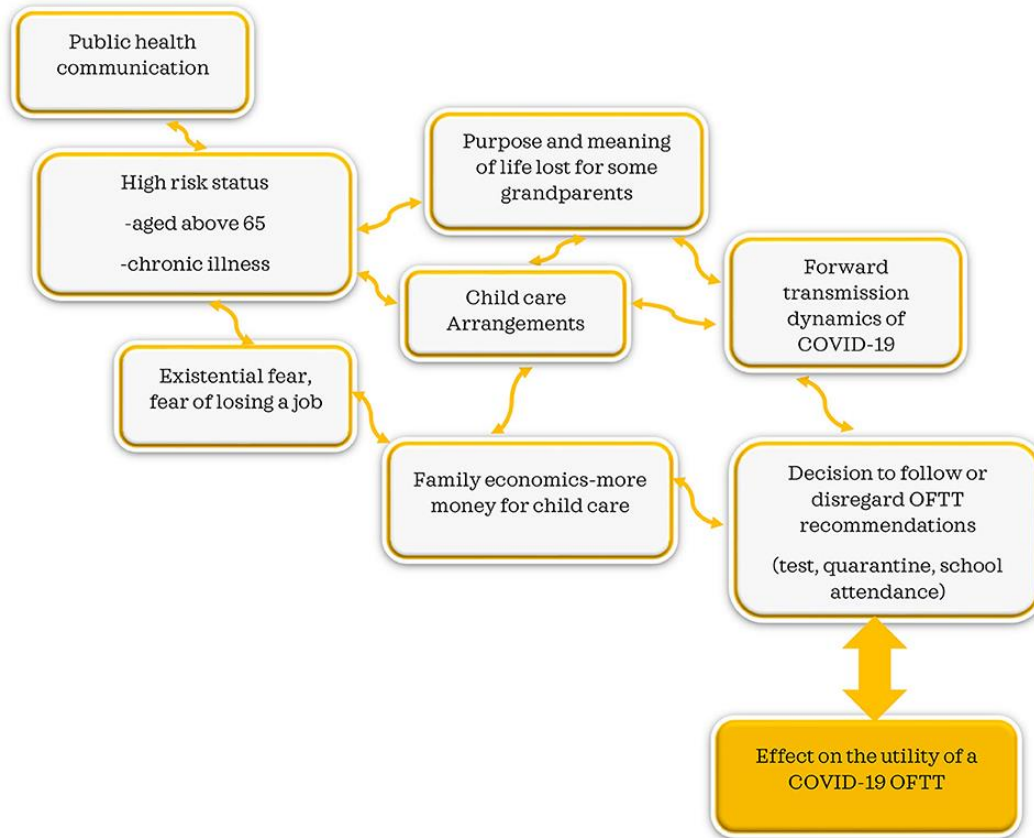


Fig 4: Public health communication interconnectedness and unintended consequences.

Conclusions:

- Usage of www.coronabambini.ch was generally high in areas where it was developed and promoted.
- Certain patterns in epidemiology and adherence to public health policy could be depicted but selection bias was difficult to measure showing the potential and challenges of digital decision support as public health tools.
- The involvement of stakeholders, parents, teachers, and health care providers in the design, set up, implementation, and evaluation of telehealth interventions is critical as this can help with expectation management and enhance OFTT utility.
- As the virus is evolving and circumstances are changing rapidly, the communication of public health to the different interest groups becomes, both an art and science, even more so when using a new technological communication channel: an OFTT. A myriad of interconnected factors seems to influence attitudes toward public health recommendations, which calls for systems thinking in public health communication.