BEST OF UNICEF RESEARCH 2022

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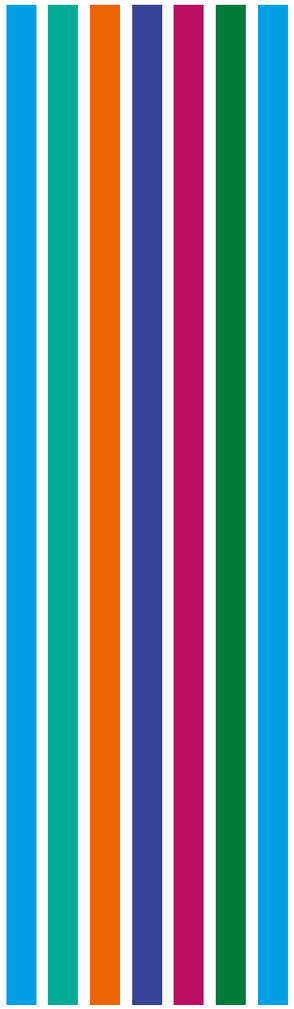

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UNICEF Innocenti – Global Office of Research and Foresight tackles the questions of greatest importance for children, both current and emerging. It drives change through research and foresight on a wide range of child rights issues, sparking global discourse and actively engaging young people in its work.

UNICEF Innocenti equips thought leaders and decision-makers with the evidence they need to build a better, safer world for children. The office undertakes research on unresolved and emerging issues, using primary and secondary data that represents the voices of children and families themselves. It uses foresight to set the agenda for children, including horizon scanning, trends analysis and scenario development. The office produces a diverse and dynamic library of high-level reports, analyses and policy papers, and provides a platform for debate and advocacy on a wide range of child rights issues.

UNICEF Innocenti provides, for every child, answers to their most pressing concerns.

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Cover photo: © UNICEF/UN0424181/Avagyan
Children lean on a wooden ladder outside their houses. UNICEF works in Hartashen to establish preschool services for the village using a tested model for small communities, so that every child has the opportunity to learn and develop their full potential in early childhood. Syunik, Armenia, 2020.

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Foreword

Imagine creating a machine learning model that uses data about rainfall to forecast disease outbreaks.

Or sharing life-saving information across 13 countries in real time – during a global pandemic – and then seeing that effort multiply across 84 countries.

Imagine saving over 690,000 children from death and 21.4 million from stunting by 2050 by investing in early childhood development, with a return on investment of at least 18 to 1.

These examples – from UNICEF Brazil, Burundi, Latin America and the Caribbean, Peru and the Office of Innovation – are some of the ambitions realized in this report. The 12 projects reveal research that delivers results for children. How? By informing decision-making, shaping policy, raising public awareness, driving social change, and giving children and young people a voice on the issues that affect them most through participatory research. These endeavours showcase not only the power of innovation in the face of emergency and crisis, but also the virtues of agility, endurance and scalability.

The projects featured here uncover daunting problems. For example, we know preschool boosts children's cognitive and socioemotional skills, but how can children who do not attend – such as those in conflict-affected areas in the Philippines – catch up?

They also present solutions and ways to learn from each other. Each example offers a set of adaptable tools: validated methodologies, templates for emergency response plans, methods of monitoring and measuring progress, and examples of successful collaboration between stakeholders.

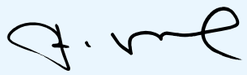
Crises – of health, livelihood and development – caused by war, stigma, exclusion and a collapse of trust in information and governance push us to test our limits. Such crises have occurred throughout history. But natural disasters and disease outbreaks driven by the warming of our planet are relatively new and unfolding at a frightening pace. While felt globally, they are taking the highest toll on the most vulnerable groups, including children.

Threats to children are also found in the digital sphere, where policy work struggles to keep pace with new tools, such as social media tactics used to convince mothers in China to choose formula over breastfeeding. Meanwhile, in Morocco, teachers are missing crucial tools to reach their students during distance learning.

In terms of gender issues, knowing that poverty, stigma and harmful social norms block girls' access to mental and reproductive health services in Lebanon, or that about 90 per cent of young Jordanian and Syrian women are unable to find a job, gives programme designers and policymakers the information they need to target interventions and effect change.

A key function of research is to reveal truth. Across this collection, we see that misinformation continues to flourish, while a lack of information halts growth. Data gaps have previously blocked progress in measuring change – whether it comes to social norms related to female genital mutilation in Ethiopia and Guinea, or understanding the rapid evolution of protective behaviours in response to COVID-19 in Eastern and Southern Africa and South Asia, or improving access to safe drinking water worldwide. But new data, methods and frameworks are turning the tide. In Brazil, the first ever national dataset on the staggering levels of lethal and sexual violence against children now provides the basis for action to protect children more effectively.

As any adult knows, breaking a promise to a child is not an option. Although faced with hardships, parents, teachers, doctors, scientists, community workers – and researchers – must deliver on their promise to save and improve children's lives. High-quality research plays a vital role in helping us do that. It provides the evidence that change is needed, highlights gaps in our understanding and generates rich insights to guide policy and programme design. Crucially, it also demonstrates how much difference our shared efforts are making.



Bo Viktor Nylund
Director
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Global Office of Research and Foresight

8-year-old Anya looks into a microscope in a classroom at her damaged school in Buzova, Ukraine, 2022.

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Selection Process and Criteria

About *Best of UNICEF Research*

For the past 10 years, the Best of UNICEF Research annual competition, run by UNICEF Innocenti, has invited UNICEF colleagues around the world to submit their latest and best research for children.

The aim is to promote research best practices, in order to identify where they may be scaled up, and to award quality submissions with high potential for impact on policies and programmes that benefit children.

To avoid potential conflicts of interest and ensure impartiality in the review process, research conducted by UNICEF Innocenti, or co-authored by a UNICEF Innocenti staff member, is ineligible for consideration.

Submissions are assessed on the basis of originality, relevance of the topic, conceptualization, methodology, clarity and appeal of presentation, ethical standards, and potential for future impact. In addition to these established criteria, in 2022 the reviewers also screened and scored the submissions for local engagement and ownership.

Eligibility and assessment criteria

All UNICEF offices, including country and regional offices, headquarters divisions and National Committees, are invited to submit research outputs undertaken or commissioned by UNICEF and completed within the last two years. Submissions must meet the following UNICEF definition of research:

"Research is the systematic process of the collection and analysis of data and information, in order to generate new knowledge, to answer a specific question, or to test a hypothesis. Its methodology must be sufficiently documented to permit assessment and replication. Research at UNICEF should examine relevant issues and yield evidence for better programme and policy advice."

– United Nations Children's Fund, 'Taxonomy for Defining and Classifying UNICEF Research, Evaluation & Studies', UNICEF Innocenti, Florence, 2014.

Review process for 2022

- **Internal peer review:** Each of the Best of UNICEF Research 2022 submissions was pre-screened for eligibility. Those deemed eligible were peer-reviewed by six thematic review groups – each comprising 10 to 15 UNICEF Innocenti researchers with relevant expertise – overseen by a coordinating group to ensure consistency in process and scoring. A shortlist of the top 12 submissions was agreed by the coordinating group and then sent for external assessment.

- **External panel assessment:** Four international experts with extensive academic and policy experience and good knowledge of UNICEF reviewed the research of the 12 finalists. After providing comments on each entry, the panel selected three final winners, awarding them bronze, silver and gold status.

Summary Reports

Goal Area ONE
Every child survives

CHINA

OFFICE OF GLOBAL INNOVATION HQ AND LACRO IN COLLABORATION WITH PERU AND BRAZIL

LEBANON

Goal Area TWO
Every child learns

MOROCCO

PHILIPPINES

Goal Area THREE
Every child is protected from violence and exploitation

BRAZIL

SOCIAL AND BEHAVIOUR CHANGE AND CHILD PROTECTION TEAMS, PROGRAMME GROUP, HQ

Goal Area FOUR
Every child lives in a safe and clean environment

LACRO

DIVISION OF DATA, ANALYTICS, PLANNING AND MONITORING HQ

Goal Area FIVE
Every child has an equitable chance in life

BURUNDI

Cross-cutting research

JORDAN

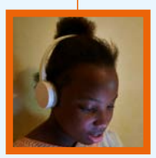
EVALUATION OFFICE, HQ; SOCIAL AND BEHAVIOUR CHANGE TEAM, PROGRAMME GROUP, HQ; ROSA; ESARO

Division of Data, Analytics, Planning and Monitoring HQ

Office of Global Innovation HQ and LACRO in collaboration with Peru and Brazil

LEBANON

CHINA



MOROCCO

JORDAN

Social and Behaviour Change and Child Protection Teams, Programme Group, HQ

Evaluation Office HQ, Social and Behaviour Change Team, Programme Group, HQ; ROSA; ESARO

LACRO

BRAZIL

BURUNDI

PHILIPPINES

Note: The designations employed in this publication and the presentation of the material do not imply on the part of UNICEF the expression of any opinion whatsoever concerning the legal status of any country or territory, or of its authorities or the delimitations of its frontiers.

GOAL AREA ONE

Every child survives

CHINA

How does formula milk marketing influence mothers' feeding decisions?

OFFICE OF GLOBAL INNOVATION HQ AND LACRO IN COLLABORATION WITH PERU AND BRAZIL

How can we forecast dengue fever epidemics more accurately?

LEBANON

Are adolescent girls in Lebanon able to access the healthcare they want and need?

A mother breastfeeds her child in Liping, Guizhou Province, China, 2016.

© UNICEF China/2016/Xia Yong

CHINA

A Multi-country Study of Early Infant Feeding Decisions: China report

How does formula milk marketing influence mothers' feeding decisions?

Authors:
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Editorial insights

This multi-faceted study of formula milk marketing in China demonstrated the pervasiveness of marketing activity across multiple channels, and how it directly and indirectly influences mothers' decisions about how to feed their children. The evidence provides a solid basis for more robust regulations on aggressive formula milk marketing, as well as insight into how the benefits of breastfeeding could be communicated more effectively.

INTRODUCTION

The active promotion of formula milk continues to be a substantial global barrier to breastfeeding and has been shown to negatively affect breastfeeding practices.[1] In China, sales of formula milk grew by nearly 50 per cent between 2015 and 2019, making China the world's biggest market for infant formula milk. Meanwhile, only 1 in 5 infants under 6 months are exclusively breastfed.[2]

Commissioned by UNICEF as part of a global review covering eight countries, this report examined how formula milk marketing impacts early infant feeding decisions through a network of influencers.[3] The research involved surveying more than 1,000 pregnant women's attitudes towards formula milk, and gathering views of the family members, friends and health professionals who may influence their choices.

In a unique element to the Chinese strand, interviews were also conducted with marketing professionals working in the formula milk sector, to gather insights about how they seek to influence pregnant women and mothers.

The findings clearly show that higher exposure to marketing among pregnant women and mothers led to more positive attitudes towards formula milk and to wider acceptance of the disinformation promoted by the industry about the equivalence or even superiority of formula milk compared with breast milk. Marketing was conducted across a variety of established media channels, and increasingly through e-commerce, digital platforms and social networks. Several marketing practices were found to defy the International Code of Marketing of Breast-milk Substitutes and subsequent resolutions,[4] such as the misuse of health claims, approaches to health professionals, and directly targeting mothers through social networks.

The results from this study were incorporated into the global report, produced by the World Health Organization (WHO) and UNICEF, which created substantial publicity around the aggressive marketing strategies used by the formula milk industry.[5]

The findings were publicized by UNICEF in 2021, accelerating the launch of a five-year Breastfeeding Promotion Action Plan by the National Health Commission and 14 other government sectors.[6] The Plan aims to promote breastfeeding and enforce existing regulations that prohibit the use of misleading information to market formula milk. UNICEF is continuing to work with the National Health Commission to ensure that women have access to accurate information about the benefits of breastfeeding and can make informed choices in feeding their infants. Meanwhile, advocacy for the development of a new National Code of Marketing of Breast-milk Substitutes is ongoing.

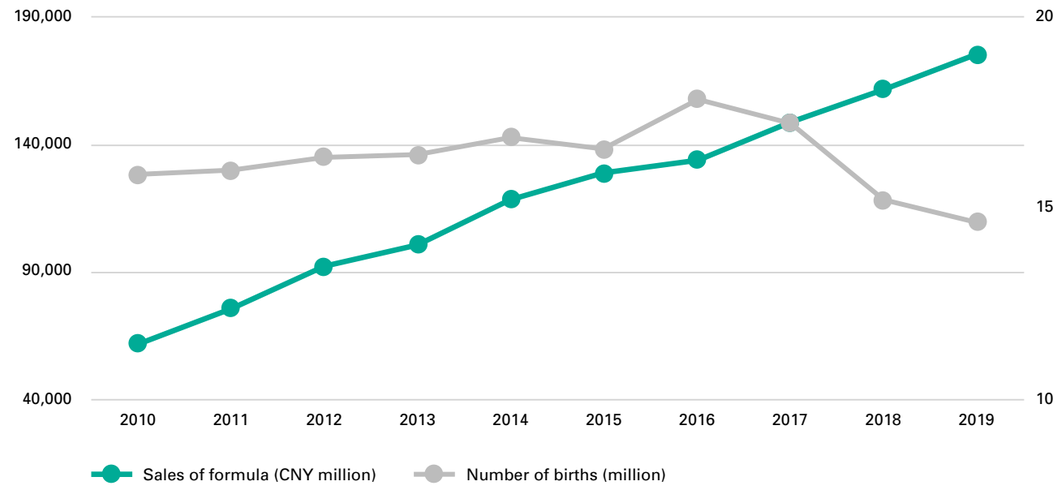
Why was the research done?

Breastfeeding gives children the healthiest start in life, with substantial benefits in terms of growth and development. It plays a vital role in tackling neonatal mortality, in line with Sustainable Development Goal target 3.2 to end preventable deaths of newborns and children under 5 years of age by 2030. WHO and UNICEF have made a global public health recommendation that children "should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health".[7]

Yet the marketing of formula milk has been shown to negatively affect breastfeeding practices. Formula milk products are often positioned as equivalent or superior to breast milk, which can undermine mothers' confidence in breastfeeding and has been shown to negatively affect breastfeeding practices.[8]

In China, the exclusive breastfeeding rate was 20.8 per cent, well below the 50 per cent target set by the National Health Commission.[9,10]

Figure 1: Sales of formula milk and number of births in China, 2010–2019



Source: Euromonitor International, National Bureau of Statistics of China.

Despite a falling birth rate, sales of formula milk have grown rapidly over the past decade, increasing by almost 50 per cent from 2015 to 2019 (Figure 1).[11] By June 2020, there were 1,302 formula milk products registered in China, 76 per cent of which were Chinese brands.[12] China has become the world's biggest market for infant formula milk.

The study sought to hear directly from Chinese women and those who influence them – including health professionals, partners, family members and friends – about their exposure to and experience of formula milk marketing. It sought to document the extent of formula milk marketing, how formula milk marketing messages are perceived by women and influencers, and their effect on knowledge and values. The findings of this study will be employed to shape strategies to support informed decision-making around infant feeding.

> **"There is a pervasive culture of doubt around the availability and benefits of breast milk amongst women, influencers, and health professionals."**

How was the research done?

The study sought to examine the different factors that influence women's decisions about how to feed their babies. It applied consumer-focused methodologies used in commercial marketing but rarely applied in public health research.

Following an initial desk review, 20 women were asked to keep a diary, on their phone, of all the formula milk marketing they were exposed to in a week across all channels and what messages were used. Ten of these women were then interviewed about the marketing they had seen, and their perceptions of formula milk.

Focus group discussions and an online survey reaching 1,050 women (750 mothers with infants aged 0–18 months and 300 pregnant women) were used to examine and quantify exposure to formula milk marketing and attitudes regarding infant feeding practices.

Focus groups or interviews were conducted with potential influencers on women's decisions, such as partners, friends and family members and health professionals, to explore

their views on formula milk and its marketing. Health professionals were also asked about any interactions they had with formula milk companies.

Finally, a third-party market research firm was appointed to interview marketing executives about how they had promoted formula milk and how tactics were evolving.

Limitations

The research focused on two cities – Beijing and Jinan – and participants were a sample from specific target groups, rather than nationally representative. Research sites were selected by identifying suburbs with sufficient population density and socioeconomic variance. Survey participants were recruited using convenience methods and street-based recruitment.

What are the key findings?

The findings demonstrated the extent to which formula milk marketing shapes decision-making. Among all respondents, the majority of pregnant women (76 per cent) planned to breastfeed exclusively. While 78 per cent of the women surveyed agreed that breastfeeding is best for the baby, only 47 per cent were aware of the superiority of breastfeeding over formula milk.

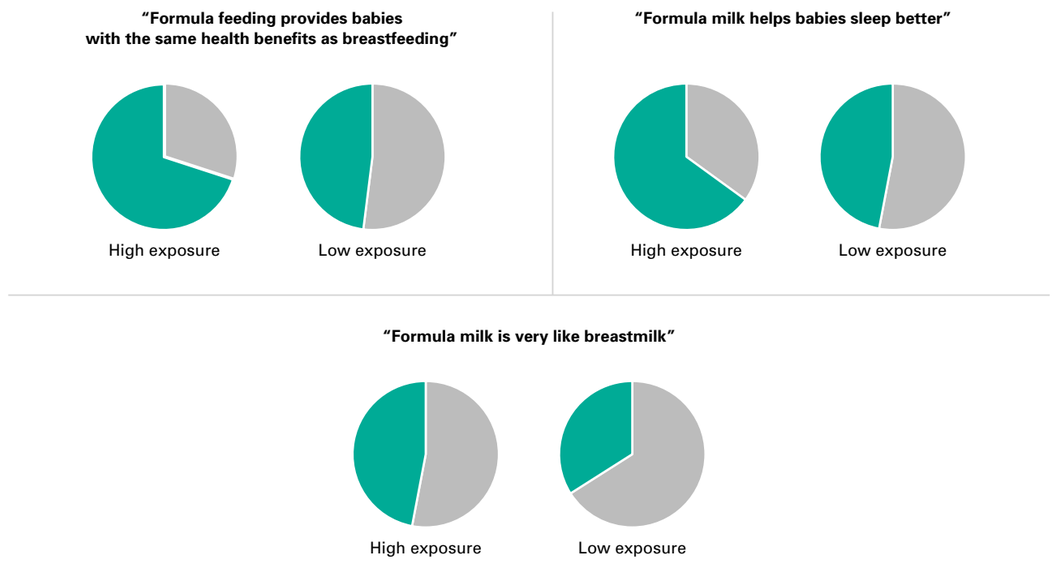
- **Formula milk marketing was prevalent and systematic across a wide range of channels**, with 97 per cent of women surveyed reporting seeing or hearing formula milk messaging through marketing (television, radio, online, in print or outdoor) and promotions (free sample offers and recommendations of formula milk on social media, such as in dedicated mothers' groups on WeChat[13]). In terms of marketing channels, television achieved the greatest reach: 72 per cent of respondents exposed to marketing reported having seen formula milk marketed on television during the past year.

> "One emerging trend was the increased role of online retail – with e-commerce algorithms recommending formula milk products to customers buying other baby products. This automated cross-promotion is not covered by the International Code of Marketing of Breast-milk Substitutes."

- **Increased exposure to marketing messages was strongly correlated with more positive attitudes towards the claims made in the advertising.** More than half of women who had been exposed to marketing in the past year reported that formula milk advertisements helped them make decisions about how to feed their baby (Figure 2). Higher levels of exposure to marketing were also significantly related to more positive attitudes towards formula feeding. Almost two thirds of women who had high exposure to marketing agreed with the statements "formula feeding provides babies with the same health benefits as breastfeeding" and "formula milk helps babies sleep better".

- **The widespread belief that formula milk should be introduced to supplement breast milk reflected the heavy influence of marketing messages.** A pervasive culture of uncertainty exists around women's supply of breast milk and its benefits for babies. Many perceived formula milk supplementations to be necessary, even when breastfeeding was working well. This is the result of a widely used advertising tactic positioning formula milk as providing superior nutrition that is not available through breastfeeding exclusively. The analysis of marketing materials found that advertisements frequently made misleading claims about the nutritional value of formula milk, such as that it would increase immunity and improve brain development. Also, formula milk companies used subtle and overt nudges to play on mothers' hopes and anxieties around feeding.

Figure 2: Impact of exposure to marketing on attitudes towards formula milk



Source: United Nations Children's Fund, *A Multi-country Study of Early Infant Feeding Decisions: China report*, UNICEF, 2021 <https://www.unicef.cn/media/23031/file/A%20Multi-country%20Study%20of%20Early%20Infant%20Feeding%20Decisions%20-%20China%20Report.pdf>, accessed 17 August 2022.

- **Marketing executives acknowledged that they increasingly use digital marketing to influence feeding decisions.** Partnering with influencers, key opinion consumers and key opinion leaders, formula milk companies are exploring popular digital platforms (WeChat, TikTok, Little Red Book), mother and baby apps (Baby Tree, Mama.cn), and e-commerce stores (JD.com) to raise women's awareness and to recommend products. Marketing executives identified WeChat as the most effective marketing tool, particularly when combined with other online and offline methods.

Other main findings included that friends and family were a key source of information on infant feeding, health professionals supported breastfeeding but occasionally contradicted themselves, and the return to work was identified as a key time when women turned to formula feeding.

Influence on policy and programming

The study findings were incorporated into a WHO/UNICEF global report published in February 2022,[14] but some key messages were made public in August 2021 during World Breastfeeding Week, creating substantial interest around the topic.

The coverage of Xinhua News Agency, a major state media outlet, of the key messages had immediate impact: stock prices of several Chinese formula milk companies dropped, while the National Health Commission accelerated the development of policy guidance in support of breastfeeding.

In November 2021, the five-year Breastfeeding Promotion Action Plan was launched. As well as actively promoting breastfeeding and health education around it, the Action Plan includes measures to increase the capacity of breastfeeding counselling, prohibit marketing of breast-milk substitutes in health facilities, and promote family-friendly policies in workplaces.

These measures were given further emphasis by their inclusion in China's National Programme of Actions for Children (2021–2030) and National Programme of Actions for Women (2021–2030) – the country's top guidelines for advancing the wellbeing of children and women.

During World Breastfeeding Week 2022, the National Health Commission formally launched the National Infant and Young Child Feeding Counselling Training Programme, which is set to reach over 290,000 primary health workers across 1,200 counties in all provinces, municipalities and autonomous regions of Mainland China. This programme will equip frontline health workers with the capacity to deliver quality breastfeeding and complementary feeding counselling services, benefiting more than 5 million children under 2 years of age and their families by the end of 2023.

Recommendations

The policy brief published alongside the main report included the following high-level recommendations:

- Strive for comprehensive implementation of the International Code of Marketing of Breast-milk Substitutes – including by enforcing existing regulations on aggressive and misleading marketing.
- Expand access to high-quality counselling on infant and young child feeding – with a strong emphasis on educating health workers.
- Apply family-friendly policies in the workplace to enable working mothers to breastfeed, such as providing time, space and support for women to breastfeed in the workplace.
- Communicate more proactively with women on the benefits of breastfeeding, directly addressing some of the myths and misconceptions identified in the research.

Looking ahead

UNICEF China is continuing to work closely with the National Health Commission to support the implementation of the Breastfeeding Promotion Action Plan and the development of a new National Code of Marketing of Breast-milk Substitutes. In particular, its focus is on ensuring that pregnant women have accurate information about the benefits of breastfeeding, so they can make an informed choice, and regulating the marketing of breast-milk substitutes. Figure 3 highlights key communication touchpoints that could be relevant.

Meanwhile, the findings of the study have underlined the need to update the International Code to enable more effective regulation of digital marketing – including on social media and e-commerce platforms.

A Multi-country Study of Early Infant Feeding Decisions: China report (UNICEF)

How the Marketing of Formula Milk Influences our Decisions on Infant Feeding (WHO and UNICEF global report)

Figure 3: Key communication touchpoints and opportunities at different stages

Pregnancy Seeking guidance and advice before birth	**Birth** Attempting to breastfeed for the first time	**First 6 months** Intentions to breastfeed often fall through	**Return to work** An unsupportive work environment for breastfeeding	**6+ months** Belief that breast milk quality declines
Touchpoints ■ Mums' groups ■ Social and digital media (e.g. WeChat, TikTok. Little Red Book) ■ Traditional media (e.g. TV, print) ■ E-commerce sites (e.g. JD.com) ■ Word of mouth (e.g. friends, family) ■ Antenatal classes ■ Key Opinion Leaders and Key Opinion Consumers ■ In stores	**Touchpoints** ■ Hospital ■ Advice from health professionals ■ Mums' groups ■ Promotional marketing (e.g. free samples)	**Touchpoints** ■ Public spaces (e.g. judgement) ■ Home environment ■ Advice from a Yuesao[15] ■ In stores ■ Mums' groups, baby care apps ■ Digital media and online search ■ Traditional media	**Touchpoints** ■ Workplace (e.g. lack of designated spaces to express milk) ■ Workplace policies (e.g. lack of support or policies on breastfeeding) ■ Home (e.g. limited childcare, fatigue) ■ Education (on pumping, and the quality of pumped breast milk)	**Touchpoints** ■ Advice from health professionals ■ Mums' groups and social media ■ In stores ■ Word of mouth (e.g. friends, family) ■ E-commerce sites (e.g. JD.com) ■ Digital and traditional marketing
Establish personal and professional support and prime expectant mothers on the benefits of breastfeeding	Limit exposure to formula milk marketing, motivate health professionals to provide accurate advice	Target a broader audience to create an enabling environment, support mums through challenges	Advocate for a more supportive environment at work and help mothers to know their rights and the benefits of continuing to breastfeed	Provide ongoing support for breastfeeding and increase knowledge on the superiority of breast milk

Source: United Nations Children's Fund, *A Multi-country Study of Early Infanct Feeding Decisions: China report*, UNICEF, 2021, <https://www.unicef.cn/media/23031/file/A%20Multi-country%20Study%20of%20Early%20Infant%20Feeding%20Decisions%20-%20China%20Report.pdf>, accessed 17 August 2022.

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2 Yang, Z., et al., 'Breastfeeding rates in China: A cross-sectional survey and estimate of benefits of improvement', *The Lancet*, vol. 388, suppl. 1, October 2016, p. S47.

3 Influencers include partners, family members, friends and community members.

4 World Health Organization, *The International Code of Marketing of Breast-milk Substitutes: Frequently asked questions*, WHO, Geneva, 2017, <https://apps.who.int/iris/bitstream/handle/10665/254911/WHO-NMH-NHD-17.1-eng.pdf>, accessed 14 August 2022.

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Children play in the mud inside their home, following floods in La Quinta , a rural community in Sullana district, 35 kilometres from the city of Piura, Peru, 2017.

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OFFICE OF GLOBAL INNOVATION HQ AND LACRO IN COLLABORATION WITH PERU AND BRAZIL

Climate-based ensemble machine learning model to forecast dengue epidemics

How can we forecast dengue fever epidemics more accurately?

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Editorial insights

In a changing global climate, the ability to predict accurately the location, severity and timing of a disease outbreak is vital to taking targeted proactive control measures. Using an ensemble machine learning model involving satellite-based meteorological products and socioeconomic data, this study was able to forecast dengue epidemics more accurately in Brazil and Peru. The same innovative approach could be applied in other countries, and possibly even for other diseases.

INTRODUCTION

One of the consequences of climate change is the increased risk of certain diseases, such as dengue fever. The year 2019 saw the largest number of dengue cases ever reported and the disease is now deemed by the World Health Organization to be endemic in more than 100 countries.[1] Peru is one such country, with over 17,000 reported cases in 2019, of which more than a third were among those under 18 years of age.[2]

Because dengue is a vector-borne disease – carried by mosquitoes, and then by those infected with it – it spreads rapidly, particularly under climate conditions where mosquitoes thrive. Being able to predict such outbreaks would help health authorities to implement effective control measures and mitigate the effects of the disease. Though there are broad seasonal patterns to infection rates, plus an understanding of the climate conditions that may lead to an outbreak, this information alone does not enable a targeted response. The approach used in this multi-agency study, however, could.

Researchers from UNICEF Office of Innovation worked alongside colleagues from the Latin American and Caribbean Regional Office (LACRO) – plus data scientists from the European Space Agency and researchers across a wide range of universities and institutions – to develop a climate-based ensemble machine learning model to forecast dengue epidemics more accurately.

Combining 20 years of data about dengue cases from Brazil and then Peru, satellite-based meteorological products and socioeconomic data, they 'trained' the ensemble machine learning model to learn from the past in order to forecast the near future. The model then autonomously correlated dengue cases with meteorological conditions like temperature, rainfall and altitude, as well as the socioeconomic conditions of the area under analysis, to enable it to forecast caseloads under the different conditions.

The forecasts proved to be notably more accurate than estimates using previous approaches, including those that had been based on single machine learning architectures. This indicates that the new ensemble-based approach could provide local health authorities with the timely information they need to prepare for a likely outbreak.

First piloted in Brazil, the model appeared to be as accurate when tested in a second country – Peru – giving the team confidence that it could be reproduced in other countries.

Why was the research done?

Since 2018, UNICEF has worked with the Peruvian Government on climate change adaptation, with a particular focus on reducing the population's vulnerability to the effects of climate change on public health.

One such effect has been increased rates of vector-borne diseases, such as dengue, as rising temperatures and changing rainfall patterns have created more favourable conditions for mosquitoes. Health authorities, particularly in the most susceptible areas, are having to deal with more dengue cases and more frequent outbreaks.

Various previous studies have applied regression analysis to forecast dengue cases in different countries – essentially predicting future patterns based on computer analysis of large volumes of historical data only. However, Peru's diverse geography, ranging from the mountains of the Andes to the Amazon rainforest, meant that there was substantial regional variation in the dengue incidence rate. In some areas, dengue occurs year-round; in others, it is seasonal. Single regression analysis, even with a machine learning model, cannot address this variation.

> **"An ensemble-machine learning approach allows us to capture the transmission dynamics of dengue across three groups: low, seasonal, and year-round transmissions."**

To provide more accurate forecasting on a regional level rather than a national one, a research team from the European Space Agency and UNICEF proposed applying an innovative ensemble machine learning approach, which had been developed in the neighbouring country, Brazil. This involved using a wide range of satellite data and combining four machine learning models, to:

- provide a climate-based machine learning ensemble model to forecast dengue incidence rate; and
- develop a reproducible workflow that UNICEF can use to construct, test, validate and implement a working forecast model for other dengue-endemic countries.

How was the research done?

The ensemble machine learning model was primarily designed and used by a team from the European Space Agency, to meet the needs defined by UNICEF's Office of Innovation and LACRO.

Together, the researchers identified the relevant data – beginning with monthly reports on dengue cases from 2001 to 2019 for each region, plus population data to create an incidence rate per 100,000.

Satellite data were then collected to obtain land use information (e.g., covering vegetation index and altitude), together with satellite-based products from meteorological variables: air temperature, dew point temperature, total precipitation, sea level pressure, surface pressure, and wind speed and direction. Population weighted average (mean) figures for each region were established for every month from January 2010 to December 2019. This provided a rich range of contextual data through which the dengue incidence rate could be examined for each department.

> **"There is no specific antiviral treatment for dengue. Determining the association between weather patterns and the surge of dengue cases is therefore an important policy measure for an early response to future outbreaks."**

Four different machine learning models were then applied in parallel:

- a Long Short-Term Memory (LSTM) model – chosen for its ability to apply contextual data from earlier in a sequence when processing time-series data;
- a Categorical Boosting (CATBOOST) model – chosen to help deal with learning problems based on noisy data and complex dependencies;
- a Support Vector Machine (SVM) model – chosen due to its efficiency in high dimensional spaces and dealing with large numbers of variables; and
- a Random Forest (RF) model – to merge the results from the other three machine learning models.

The first three models independently learned different features from the training dataset to forecast future dengue cases, given an input time-series of 12 months. The last model (RF) combined all predictions from the previous models to generate the final forecast, adding uncertainty estimation – valuable information when dealing with modelled data.

Data from 2001 to 2016 were used to 'train' the ensemble machine learning model to correlate the different source variables with the dengue incidence rate for each month. Data from 2017 to 2020 were then used to 'validate' the machine learning model, also against benchmark models.

Limitations

The ability of the ensemble model is still limited for those regions reporting dengue incidence rates that are outside the main behaviour found in the training set. For example, in Brazilian states where the number of dengue cases was close to zero, the model was not able to provide optimal performance. This limitation in dealing with extreme values is a well-known weakness with machine learning. However, this only affects the accuracy of forecasting very low numbers of cases – which would apply to situations where accurate predictions are less important than in states with recurrent outbreaks.

What are the key findings?

The single most important finding was that the ensemble machine learning model provided considerably more accurate predictions of dengue outbreaks than any previous approach. It was able to predict outbreaks one month ahead, which clearly has the potential to help departmental health authorities implement timely control measures.

The study also looked at the factors that appeared to have the greatest influence on dengue incidence. While it was no surprise that the case rate for the previous month came out on top, followed by temperature, the next most influential factors were wind speed and direction.

The analysis was conducted first in Brazil, which had a longer time-series of dengue cases freely available compared with Peru. The ensemble machine learning model was first trained and validated using the Brazilian dataset, then transferred to the Peruvian context. This proved to be a highly effective solution for countries that lack sufficient dengue data to train machine learning models.

> **"The study identified that departments in Peru located at higher altitudes have weather conditions that are less favourable to dengue transmission, while proximity of other departments to the Amazon rainforest has a significant influence in creating an environment in which the endemic thrives."**

Influence on policy and programming

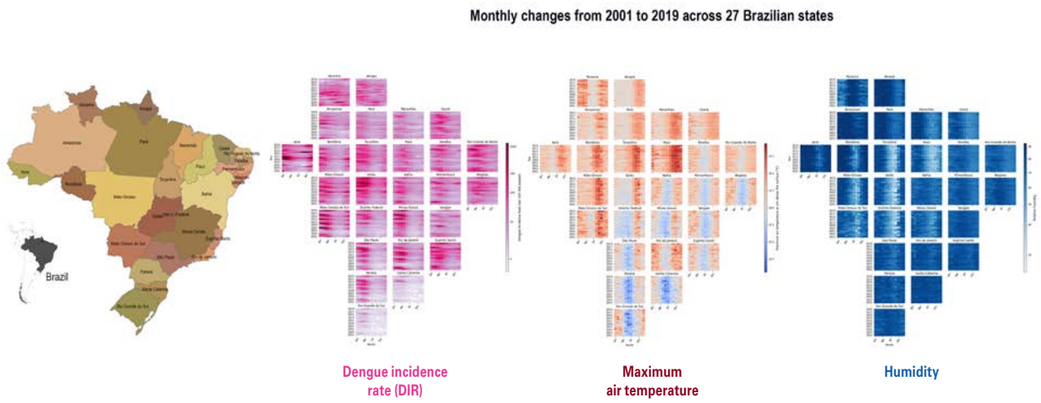
This project has already been used to inform the development, with UNICEF's support, of a regional contingency plan for managing dengue outbreaks. It has also underpinned further training for health personnel on control and mitigation of vector-borne diseases and how their spread can be monitored. While this has focused to date on dengue, the same principles could apply to other vector-borne diseases, such as Zika.

UNICEF's initial engagement around dengue in Peru was predominantly in areas of high incidence, such as rainforest regions, as part of a wider programme around climate change adaptation. However, rising temperatures will mean that departments currently with lower dengue rates – such as those at higher altitudes – may experience more frequent outbreaks. The ability to forecast transmission accurately will be of value to those departments as they adapt to a changing climate.

With evidence from two countries suggesting the model is accurate, UNICEF LACRO is now working with health authorities in both countries to understand how they can best use the data. This may range from simple alerts of forthcoming outbreaks to providing them with user-friendly mapping and modelling tools to help target control measures or public health messaging.

Figure 1: Correlation between dengue incidence rate (DIR), maximum temperature and humidity by state in Brazil

The charts to the right use indicative geographic locations for each state in Brazil. Monthly DIR is calculated per 100,000 people (x-axis) by year (y-axis).

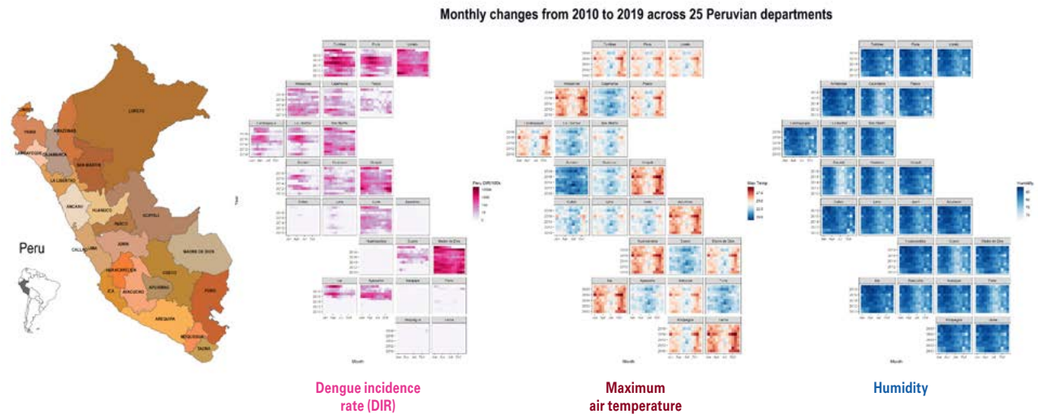


Source: United Nations Children's Fund, 'Climate-based ensemble machine learning model to forecast dengue epidemics', Schneider et al., 2021, <https://s3.us-east-1.amazonaws.com/climate-change-ai/papers/icml2021/10/paper.pdf>, accessed 17 August 2022.

Note: The designations employed in this publication and the presentation of the material do not imply on the part of UNICEF the expression of any opinion whatsoever concerning the legal status of any country or territory, or of its authorities or the delimitations of its frontiers.

Figure 2: Correlation between dengue incidence rate (DIR), mean temperature and humidity by department in Peru

The charts to the right use indicative geographic locations for each department state in Peru. Monthly DIR is calculated per 100,000 people (x-axis) by year (y-axis).



Source: United Nations Children's Fund, 'Climate-based ensemble machine learning model to forecast dengue epidemics', Schneider et al., 2021, <https://s3.us-east-1.amazonaws.com/climate-change-ai/papers/icml2021/10/paper.pdf>, accessed 17 August 2022.

Note: The designations employed in this publication and the presentation of the material do not imply on the part of UNICEF the expression of any opinion whatsoever concerning the legal status of any country or territory, or of its authorities or the delimitations of its frontiers.

Recommendations

- Local health authorities can continue to engage with experts, including the research team, to understand the most helpful ways to present them with forecast data.
- National authorities can use the data to explore whether they need to revise policies, given the long-term trends in dengue incidence associated with climate change.
- UNICEF country offices and partners operating in regions where dengue is endemic can apply the machine learning model to provide more accurate forecasts of outbreaks.
- Further work can be commissioned to enhance the model, incorporating additional variables to make it even more accurate and comprehensive.

Looking ahead

This study is one of a growing number of UNICEF (and United Nations-wide) initiatives that make use of machine learning to draw valuable insights from large volumes of data, including increasingly powerful satellite data. It highlights two common challenges for machine learning: firstly, how to collect sufficient quality data over time to enable the training of machine learning models; and secondly, how best to apply the insights gained.

In this instance, the machine learning model relates directly to Sustainable Development Goal target 3.3 to end epidemics. UNICEF's regional teams are working closely with authorities in Peru and Brazil to help them make use of the data to improve control and prevention measures.

At the same time, the research team has already enhanced the model, focusing more specifically on children, who are the most vulnerable to severe dengue. This serves as an example of where UNICEF's focus can add a new dimension to understanding the risks of climate change.

More broadly, there is a clear opportunity to use the model in other regions and countries, both for short-term forecasting of disease outbreaks, including potentially other vector-borne diseases, and in relation to longer-term climate adaptation. The European Space Agency and UNICEF Office of Innovation are working together in the development of a peer-reviewed journal paper – a technical document with detailed descriptions of the processes from data collection to model training and validation.

The intention is that all data and algorithms developed by this project will become freely available via a user-friendly platform that will provide a foundation for authorities and data experts in different countries to develop their own ensemble-based machine learning tools, whether for forecasting disease or other purposes.

Climate-based ensemble machine learning model to forecast dengue epidemics

Endnotes

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An adolescent helps clear the mud in the Lurigancho Chosica district, 30 kilometres outside Lima, Peru, 2017. Sudden and abnormal warming of Pacific waters led to deadly rainstorms, affecting more than 250,000 children. Water, sanitation and hygiene were prioritized to limit the rapid spread of waterborne and vector diseases.

19-year-old Rana is training as a healthcare worker on the Skills for Youth programme, powered by UNICEF in collaboration with Anera.

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LEBANON

Adolescent Girls Access to Primary Health Care Services in Lebanon: Barriers and Facilitating Factors

Are adolescent girls in Lebanon able to access the healthcare they want and need?

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Editorial insights

The participative approach this study took to engaging with adolescent girls provided compelling insights into their challenges when it comes to accessing primary healthcare, in particular mental and reproductive health services. The findings have informed the Ministry of Public Health strategy for youth healthcare and the development of youth-friendly services in primary care.

INTRODUCTION

Adolescent girls face disproportionate health risks compared with the rest of the population, including higher risk of exposure to early marriage and gender-based violence, and poor sexual and reproductive health outcomes. Global literature confirms that they also face greater barriers to accessing healthcare services – from practical barriers, such as the accessibility of clinics and costs of care, to issues resulting from patriarchal social norms.

This qualitative study explores the perceived barriers and facilitating factors facing Lebanese, Syrian and Palestinian adolescent girls aged 10–18 years in accessing primary healthcare services in Lebanon, including mental and reproductive health services and clinical management of rape.

Unlike most previous research into the topic, it engaged directly with adolescent girls from the Lebanese, Syrian and Palestinian communities, with a particular focus on girls from the most economically and socially vulnerable groups, including those at high risk of gender-based violence.

The findings highlighted a wide range of psychological, sociological and environmental factors that affected access. There was a widespread view that primary care was of poor quality and there were issues with geographical accessibility and opening times that made it hard for girls to attend. Poverty was also identified as a common barrier.

A recurring theme was the social stigma associated with seeking support for sexual or reproductive health matters, including for victims of gender-based violence. However, the biggest unmet need identified by girls themselves related to mental health.

The findings have been endorsed by the Ministry of Public Health (MoPH) and other relevant government departments. They have already informed MoPH's new strategy for youth healthcare, providing vital insight into the needs of adolescent girls and where these are not being met. MoPH is also using the evidence to support the development of youth-friendly services in primary care.

Why was the research done?

In Lebanon, adolescent girls constitute a particularly high proportion of the population, which is also highly diverse, including by nationality, with the main groups being Lebanese, Syrian and Palestinian. Adolescent girls form a particularly vulnerable demographic group, and face disproportionate risks compared with the rest of the population. These include higher risk of exposure to early marriage, violence and abuse, and poor sexual and reproductive health outcomes. Providing adequate healthcare and support during adolescence is critical to their future.

MoPH and UNICEF wanted to understand whether girls from each community are able to access the healthcare they need – and if not, why. Previous research on access to healthcare in the country had focused on service use data or the views of health professionals and caregivers.

This time, the aim was to hear the voices of adolescent girls themselves – in particular, those from the most vulnerable groups.

The study sought to identify the perceived barriers and facilitating factors for adolescent girls accessing primary healthcare services in Lebanon, including clinical management of rape, and mental and reproductive health services. The specific objectives were:

- to identify specific priorities for enhancing adolescent girls' access to primary healthcare and gender-based violence services across Lebanon;
- to generate evidence that can help in designing health services that address the needs, roles and power dynamics at home and in the community that might deprive adolescent girls of equal access to health services; and
- to further understand the gaps in terms of healthcare services available for adolescent girls in Lebanon, the needs and dynamics that affect health-seeking behaviours, and the barriers and bottlenecks that can hinder their access.

How was the research done?

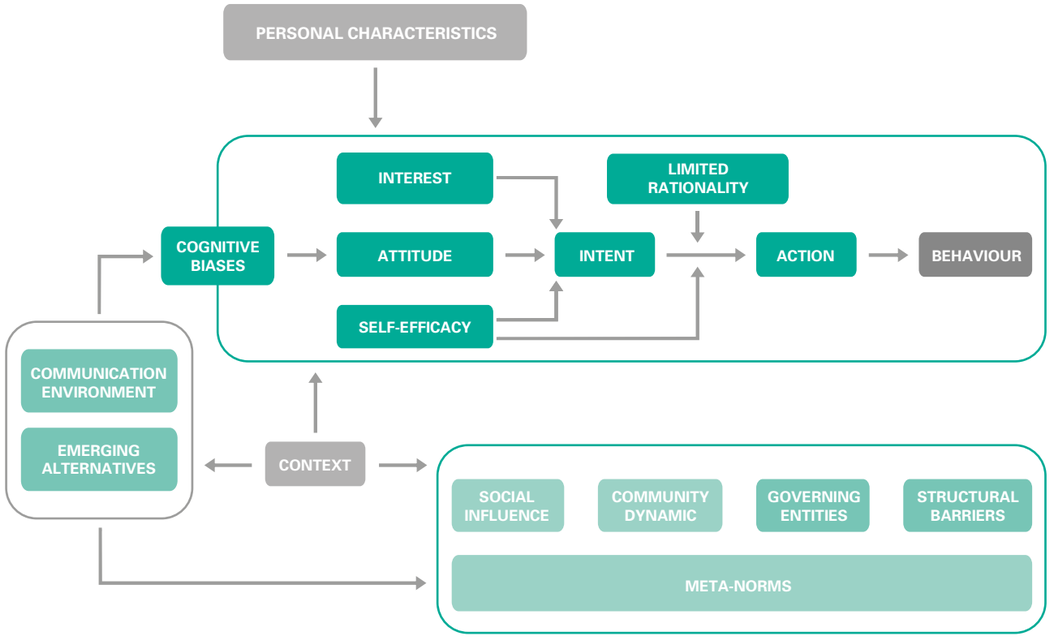
The research consisted of focus groups with adolescent girls and primary caregivers, and key informant interviews with healthcare professionals, including mental health specialists.

In total, 24 focus groups were set up with adolescent girls – three in each of Lebanon's eight regions. The groups were divided into three age brackets – 10–13 years, 14–17 years and 18–19 years. While most were with Lebanese girls, three were held with Syrian refugees and three with Palestinian refugees. One focus group involved married girls within the target age group.

Participatory techniques were used to explore the healthcare needs of adolescent girls, how they access health services, the type of health problems they face, and how access was influenced by societal constructs and socioeconomic status. For example, in character journey mapping exercises, girls worked in groups to map the journey of a fictional peer who was seeking care for a health complaint they had selected. They were asked what the character would do, who she might speak to and what her concerns might be.

This approach aimed to get the participants to discuss potentially sensitive issues without requiring them to draw on personal experience. As part of the project design, referral mechanisms were in place to support participants if necessary.

Figure 1: Behavioural drivers model



Source: United Nations Children's Fund, *Adolescent Girls Access to Primary Health Care Services in Lebanon: Barriers and Facilitating Factors*, UNICEF, 2021.

One focus group was held with caregivers in each region and one each with caregivers from Palestinian and Syrian communities. These, and the key informant interviews with 30 healthcare professionals, allowed researchers to identify common themes and differences.

Findings were analysed using a behavioural drivers model that recognizes how behaviour is a result of multiple psychological, social and environmental determinants.[2]

Limitations

With the research specifically seeking to engage with hard-to-reach girls who had not previously accessed UNICEF services, recruitment was a particular challenge. In addition, the data collection coincided with social unrest and nationwide demonstrations which further hindered access.

The researchers had also intended to interview adolescent girls with disabilities about their needs but the arrival of COVID-19 created additional practical challenges in conducting such interviews. Instead, all focus groups and interviewees were asked to consider the needs of adolescent girls with disabilities and the findings were compiled into a specific subsection of the final report.

What are the key findings?

The research highlighted a wide range of economic, physical, social, cultural and systemic barriers that affected the ability of adolescent girls to access healthcare as well as identifying some vital enabling factors.

The main influencing factors are summarized in Figure 2.

In terms of psychological barriers, the research highlighted a significant fear of social stigma among adolescent girls around accessing sexual and reproductive healthcare. Some of this related to social norms, and prevailing assumptions that girls only access such services if they are sexually active and/or pregnant. In their character journeys, girls frequently mentioned enduring pain rather than seeking services – whether for a reproductive or other health issue – due to their fears around disclosing illness or wanting help.

> **"The gynaecologist only treats pregnant women. This is a major problem for us, so if she has any infections, she's scared thinking: I'm not pregnant, I'm not married, how can I go to a gynaecologist to be examined?"**
>
> – Key informant at a primary health centre (PHC)

Girls and caregivers agreed that girls need more information around sexual and reproductive health. According to key informants, adolescent girls typically seek such information online, or from peers, leaving them at risk of misinformation.

Under the sociological factors, families were identified as crucial gatekeepers to healthcare. Adolescent girls were found to have low agency and self-efficacy, with families acting as enablers or barriers. This reflects the fact that access to healthcare is often prohibited when unaccompanied by parents.

This was a particular issue for girls who married early, where the husband and his family also exerted influence. Girls across all groups and nationalities mentioned early marriage as an issue with its own physical health and psychosocial consequences, including heightened risk of early pregnancy and domestic violence.

Girls also indicated a fear of being sexually abused or harassed by healthcare professionals. While there was no specific evidence to support this fear, it is apparent from the focus groups that harassment, in both physical and verbal forms, is widely faced by adolescent girls in a range of settings. Girls also expressed the view that their peers with disabilities were at greater risk of harassment and abuse.

Figure 2: Summary of factors influencing how adolescent girls access healthcare

Psychology	Sociology	Environment
■ Fear ■ Low perceived self-efficacy ■ Information and awareness	■ Family structure ■ Concern about social norms ■ Community dynamics ■ Friends ■ Meta-norms ■ Gender norms ■ Socioeconomic and political context ■ Refugee situation ■ Discrimination	■ Accessibility (economic and physical) ■ Infrastructure ■ Channels of communication ■ Services ■ Schools ■ Governing entities ■ Structural barriers ■ Poverty ■ Systemic barriers

Source: United Nations Children's Fund, *Adolescent Girls Access to Primary Health Care Services in Lebanon: Barriers and Facilitating Factors*, UNICEF, 2021.

Key environmental barriers identified by adolescent girls and caregivers alike included a lack of PHCs in easy reach. Another was opening times, which often overlap with school or working hours.

A particular gap identified by adolescent girls related to mental health support. In character journey exercises, many of the girls chose to assign a mental health issue as their character's main health complaint. By contrast, caregivers specifically highlighted the need for improved sexual and reproductive health services and awareness initiatives.

> **"There is a certain group of people that is afraid of going to a mental health specialist, or they worry that society will consider them to be ill, or to be … for example crazy …"**
>
> – Key informant at a PHC

Another recurring theme, across all age groups and nationalities, was having to rely on financial assistance – such as from a non-governmental organization (NGO) – to access care, because they or the family could not afford it. This was notable given that PHCs offer free or subsidized treatment; however, there are costs associated with travel, medication and follow-up care. NGOs were therefore seen as enablers of healthcare.

> **"I can't pay [for healthcare], I can't drive, and I can't pay transportation costs. The money barrier is a humanitarian barrier."**
>
> – Focus group with 14–17-year-old Lebanese girls

Influence on policy and programming

From the start, this research was intended to inform MoPH's strategy for youth healthcare. This has now been progressed and MoPH is also using the evidence to support the development of youth-friendly services in primary care, explicitly addressing some of the barriers identified. The findings have also informed the 2021 Clinical Management Care of Rape Strategy[3] developed by UNICEF in partnership with the United Nations Population Fund (UNFPA) and MoPH, as well as UNICEF programming around gender-based violence, health, and social and behavioural change.

UNICEF organized a full-day workshop with representatives from different ministries and NGOs, including relevant United Nations agencies. The research was also shared widely through social media, with key findings highlighted.

As well as the national-level focus, many of the findings may be relevant to deepening understanding of the barriers faced by adolescent girls in accessing healthcare across the world.

Recommendations

The report included 19 recommendations, related to governance, service provision, inter-sectoral coordination and community working. The recommendations included:

Governance

- Strengthen collaboration and coordination mechanisms between the different ministries responsible for services for adolescent girls at the national and field levels.
- Develop guidance on the package of services that need to be included in adolescent-friendly services for girls.
- Have a minimum number of adolescent-friendly healthcare facilities available in each governorate with accommodation for adolescents with disabilities.

Service provision

- Establish adolescent-friendly health services at schools, since this is the preferred venue expressed by adolescent girls.
- Promote PHC services through mass media with a focus on adolescent girls and girls with disability, while ensuring that messaging clarifies the services provided by PHCs, their inclusivity (nationality, age, disability) and confidentiality.

Community

- Develop tools and activities that tackle or challenge harmful gender norms hindering access to health services.
- Enhance awareness of mental health services to decrease stigma around seeking services for adolescent girls and their caregivers.

Looking ahead

MoPH is actively taking forward some of the recommendations and UNICEF is seeking to support the delivery of others – particularly those that contribute towards the achievement of Sustainable Development Goal target 3.4, promote mental health and well-being, and target 3.7, ensure universal access to sexual and reproductive healthcare services.

More broadly, the project has demonstrated the viability of conducting this kind of qualitative research into sensitive matters with a vulnerable group of adolescent girls. The methodology, including sampling – where particular effort was made to go beyond those already in contact with NGOs or health services – has proven effective for gathering substantive insights. Further, the analytical approach, built on a behavioural drivers model, provides a robust framework for prioritizing opportunities for action.

Building on this, UNICEF is developing two new studies involving vulnerable young people in Lebanon using a similar approach. The first focuses on access to learning in the aftermath of the pandemic, and the second on risky behaviours.

Adolescent Girls Access to Primary Health Care Services in Lebanon

On World Mental Health Day, young people from all over Lebanon discussed with UNICEF staff the importance of mental health and how they feel since the Beirut Blast, COVID-19 and the economic collapse. They all emphasized a common message, "It is okay not to be okay" to encourage others to seek help and not be afraid to say they have a problem. Beirut, Lebanon, 2020.

Endnotes

1 The authors were supported by Jihane Bou Samra, Dana Jumaa and the Ministry of Public Health Team (Randa Hamadeh and Wafaa Kanaan).

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GOAL AREA TWO

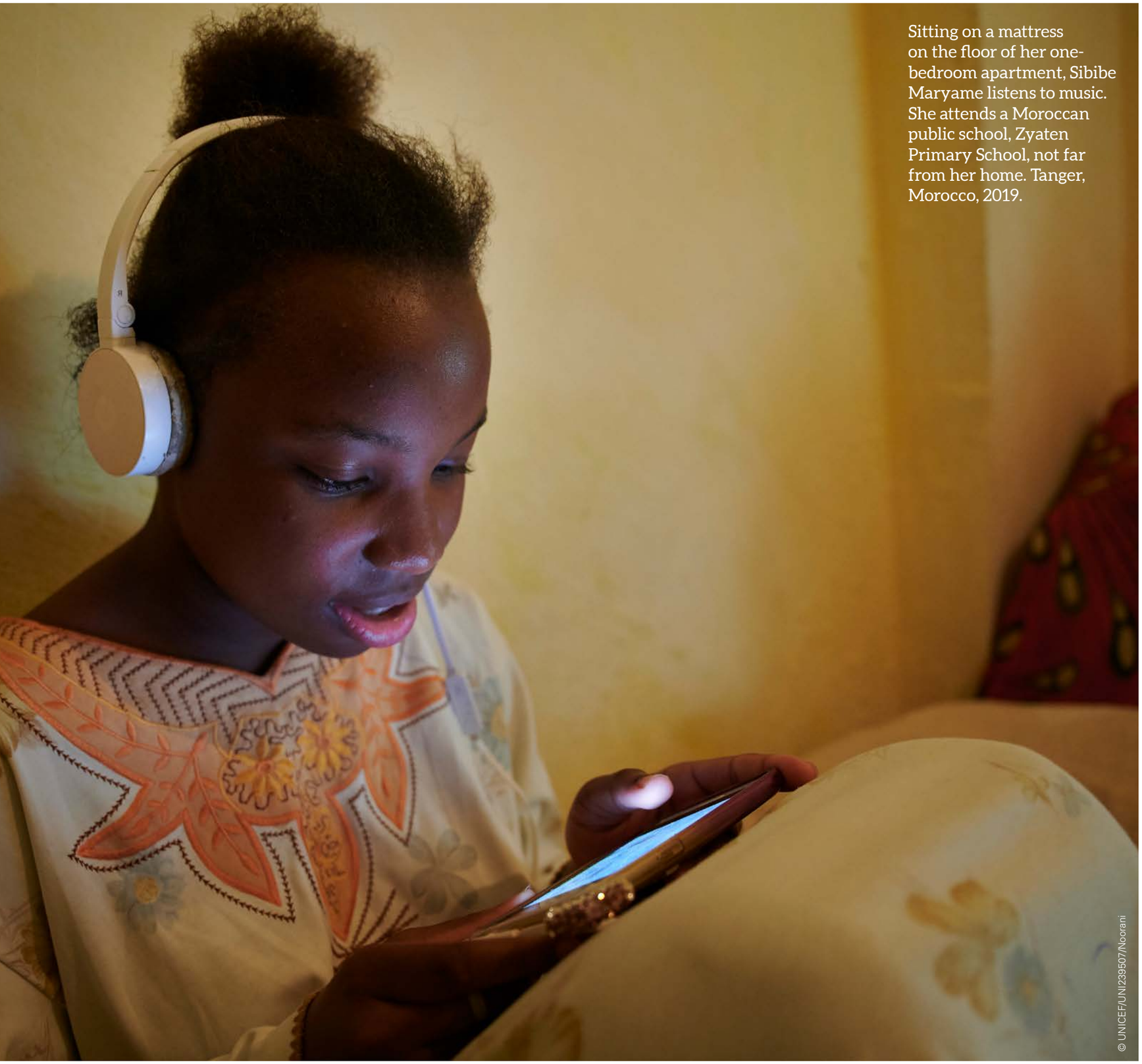
Every child learns

MOROCCO

What was it like to teach under COVID-19 lockdown?

PHILIPPINES

How effective is early child education and what influences its success?



Sitting on a mattress on the floor of her one-bedroom apartment, Sibibe Maryame listens to music. She attends a Moroccan public school, Zyaten Primary School, not far from her home. Tanger, Morocco, 2019.

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MOROCCO

Teaching in COVID times in Morocco

What was it like to teach under COVID-19 lockdown?

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Editorial insights

This investigation of teachers' experiences during the lockdown was able to provide timely insights to the Government of Morocco about the practical challenges posed by the implementation of distance learning across the country. It informed the revision of a government-powered e-learning platform and a national strategy for safe return to schools.

INTRODUCTION

Across the world, COVID-19 lockdowns led to school closures and disruptions to education, prompting a rapid adaptation to new modalities of distance learning.

While most of the evidence focused on students' experiences with online learning, limited research has examined teachers' practices. This study was an exception. Commissioned by INE, an agency of the Higher Council for Education, Training and Scientific Research of Morocco, and in partnership with UNICEF Morocco, it combined a telephone survey with focus groups to understand teachers' experiences of distance learning, including implementation and pedagogical challenges, and the impact on students' performance.

The findings revealed that – despite widespread commitment to continuing to teach remotely – teachers faced considerable practical difficulties. These ranged from access to suitable technology, both for teachers and students, to a lack of digital skills, to issues around monitoring student engagement and performance. These issues were magnified among primary-age children and more vulnerable groups.

While e-learning platforms were made available on a national scale, teachers resorted to more accessible social media to communicate with their students, with over 70 per cent teaching via WhatsApp and Facebook. Despite best efforts, there was a strong sense of dissatisfaction with distance learning, deep concern about its impact on student achievement, and a desire to return to face-to-face education as soon as possible.

The findings were delivered at a crucial time, just as Morocco's education authorities were planning for the start of the 2021/22 school year. They sparked a media debate about the effectiveness of distance learning and informed the Ministry of Education's decision to reopen schools, moving from a shift-based attendance model (combining distance learning and two to three days a week in school) to a full return to face-to-face education.

Recognizing that the need for distance learning might recur, the Ministry of Education also used the findings to help enhance its distance learning platform, increasing its usability and interactivity.

Why was the research done?

As in many other countries, the COVID-19 pandemic in Morocco led to the rapid closure of schools, in a bid to slow down infection rates. Educational lockdown began in March 2020. For the 2020/21 academic year, there was partial return, on a hybrid basis, which continued to make extensive use of distance learning.

With the pandemic ongoing, Morocco's education authorities needed to assess how distance learning had been deployed in practice, and how effective different techniques and technologies – including the TelmidTice distance learning platform supported by the Ministry of Education[1] – had been in terms of children's engagement and performance.

In partnership with UNICEF Morocco, INE commissioned a study to explore teachers' views of the impact of lockdown on their work, and on their students' educational performance. The research focused on:

- teachers' experiences of distance learning during the lockdown period;
- the practice of distance education and levels of student learning;
- methods of teaching adopted since the start of the 2020/21 school year;
- the relationship of teachers with new technologies; and
- the future of distance education in Morocco.

By focusing on teachers, the project would bring a different perspective to much global educational research around COVID-19, where a common focus was on whether children were able to participate. It was also designed to provide findings in time for the Government to make decisions about the 2021/22 school year.

> **"I basically used WhatsApp, because it's so easy to use, to communicate with my students and send educational content."**
>
> – Female teacher, secondary school, Souss-Massa region

How was the research done?

The research consisted of quantitative data collection, via a telephone questionnaire with a representative sample of 386 teachers, conducted during February and March 2021, and complemented by a series of face-to-face focus groups.

The focus groups took place after preliminary findings from the questionnaire had been analysed. This meant that discussions could be shaped around key themes emerging from the analysis. There were 14 focus groups, conducted in three regions: Rabat-Salé-Kénitra, as an example of urban experiences, l'Oriental, a more traditional region, and Souss-Massa, a more rural region. While the majority of these were with teachers, four were conducted with students.

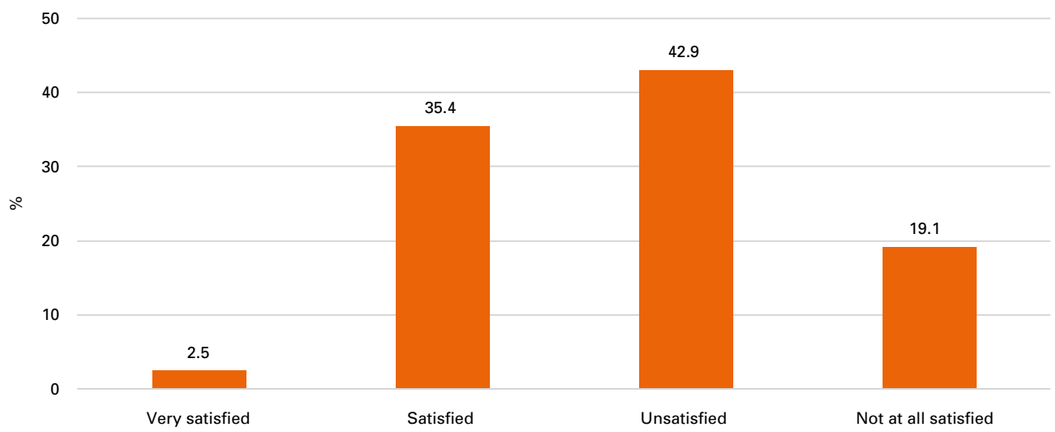
As well as regional variation, the research sought to cover teachers working with different age groups, from primary to secondary, and to offer gender balance. Of the questionnaire respondents, 42.5 per cent were female and 57.5 per cent male. Just over half taught primary-age children and 57.3 per cent worked in urban areas.

Four of the ten focus groups with teachers focused on those working with primary-age children; two of the four focus groups with children were with primary school students. Gender balance was close to 50:50 in both sets of focus groups.

Limitations

The sampling aimed to reach a representative mix of teachers, in terms of their age, gender, whether they taught in a primary or secondary school, and whether they were in an urban or rural area. Though a representative balance was achieved, the results cannot be generalized to the entire population of teachers.

Figure 1: Satisfaction of teachers with the experience of distance learning



Source: INE-CSEFRS, *Enseignement au temps de Covid au Maroc*, 2021, <https://www.unicef.org/morocco/media/2581/file/Rapport%20Enseignement%20au%20temps%20de%20COVID.pdf>, accessed 18 October 2022.

What are the key findings?

Over 80 per cent of teachers used some form of distance learning during the COVID-19 lockdowns (85 per cent of all female teachers, 81 per cent of all male teachers). Though many were unfamiliar with the practice, they were motivated by a sense of moral obligation and duty.

However, some chose not to teach using distance learning or were unable to for a variety of reasons. At primary level, 21 per cent of teachers said they did not attempt distance learning. Overall, an estimated 1.1 million students in the country did not have any access to distance learning during the pandemic.

Though commitment among teachers was high, satisfaction with distance learning was low, with 62 per cent of teachers unsatisfied with the experience.

Further, 36 per cent of those questioned believed that the absence of normal education had a negative effect on children's overall progress.

Several reasons were given for these negative perceptions. One common reason cited by teachers was that they could not control participation, and were aware of a substantial minority of students not attending; progress levels dropped accordingly.

> **"Even where a smartphone is available, it's shared between the brothers and sisters of the family, and the parents. How are they supposed to organize that? Without even mentioning problems around charging and connection."**
>
> – Focus group with primary teachers, Rabat-Salé-Kénitra

Other key issues related to the available technology. Overall, 67.4 per cent of teachers felt that schools did not have sufficient infrastructure in place to support distance learning when school restarted in 2020/21.

Many ended up using personal IT equipment for teaching. However, though three quarters of teacher respondents said they owned a computer, it was generally used by all members of the family – limiting the time they were able to use it. This same issue affected many students, who either did not have access to a computer or lacked sufficient internet access to participate adequately in lessons.

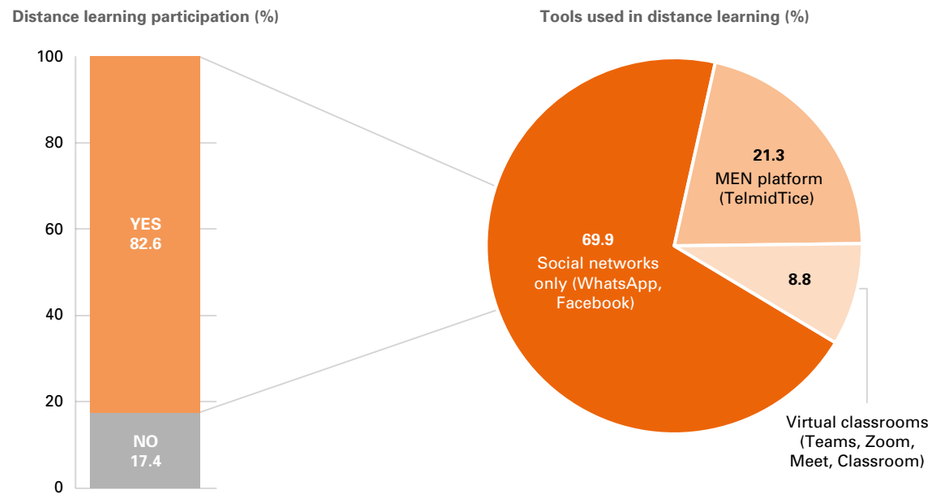
Where there was only one computer in a household, families had to decide which child would use it for distance learning. The evidence indicated that older male children were more likely to be allowed to use the computer than other groups.

In this context, mobile phones became a key tool for engaging with students; some 70 per cent of teachers said they used social networks, such as WhatsApp and Facebook, to contact students, set tasks and respond to questions. With high levels of phone ownership, this approach proved effective.

By contrast, only 21.3 per cent of teachers reported using the TelmidTice distance learning platform. Though a majority of teachers felt the quality of the platform was good, it didn't offer the interactivity they needed. Primary teachers in particular felt it wasn't well suited to their students.

Clearly, any digital teaching relies on the teachers having sufficient information and communication technology (ICT) skills to deliver it. The study found a clear correlation between teachers who described themselves as confident ICT users and those who had a more positive view of distance learning.

Figure 2: Technology used for distance learning



Source: INE-CSEFRS, *Enseignement au temps de Covid au Maroc*, 2021, <https://www.unicef.org/morocco/media/2581/file/Rapport%20Enseignement%20au%20temps%20de%20COVID.pdf>, accessed 18 October 2022.

Influence on policy and programming

Findings from the research were shared with key stakeholders in Morocco's education sector as plans were being developed for the 2021/22 academic year.

With concerns about infection remaining high despite vaccination roll-out gaining pace, initial indications had been that Morocco would continue to follow a predominantly hybrid path, with students combining two to three days a week of face-to-face learning with distance learning. However, the teachers' assessment of the effectiveness of distance learning encouraged a rethink; instead, plans were drawn up for a safe return to schools as soon as possible.

This gained further impetus once the results were published and received extensive media coverage. A key theme of the coverage related to equity, with media outlets highlighting regional disparities in access to education, and the particular challenges faced by children from poorer backgrounds – who had less access to technology.

Alongside these strategic changes, authorities have also begun to address the more detailed feedback from teachers on the usability of the TelmidTice platform. This will include creating more interactive content and comprehensive lesson plans, including those designed to be used for classes where students are split between the classroom and home.

> **"In certain regions, there is no internet. During lockdown, I had a recurring issue because I live in the middle of nowhere. I'd go up a hill to send lessons to the children, then wait around an hour and return to the same place to check their responses and interact with them."**
>
> – Male teacher, primary school, Souss-Massa region

Figure 3: Collection of examples of media coverage

Source: UNICEF Morocco Office.

Recommendations

Alongside the primary recommendation to accelerate a return to classroom teaching, the research identified opportunities to make distance learning more effective in the future. Recommendations included:

- Apply teachers' insights into what works to enhance online learning content and usability for all ages.
- Extend digital skills training to teachers of all ages and experience.
- Develop tools to monitor the effectiveness of digital and distance learning, including uptake by teachers and assessment of how effectively children are learning.
- Explore ways to overcome inequality and a 'digital divide' in access to distance learning, to help maximize accessibility in the event of any future events requiring children to home-school. This may require extending network infrastructure in rural areas.

Looking ahead

The insights gained from this project will inform future national strategies in Morocco to make more effective use of distance learning, particularly for children and young people for whom school may be less accessible.

To date, efforts to roll out distance learning in Morocco have focused on equipping schools. However, the experience of the last two years has highlighted that more action may be needed to provide teachers and students with devices that enable them to participate, and to extend digital infrastructure to rural areas. Further, many teachers may require further digital skills training to support with distance learning.

Further, the study highlighted teachers' concerns that educational progress stalled for many students during lockdown, in particular those from poorer backgrounds and in rural areas. Some grassroots organizations have also indicated that girls' participation in distance learning was lower than that of boys, as girls were frequently required to assist with domestic duties. A key future challenge for Morocco, as for many other countries, reflects the educational inequalities that have been widened by the COVID-19 pandemic. In Morocco, these are most pronounced in relation to preschool education, children with disabilities and girls in disadvantaged areas. Morocco will need to address these inequalities as it strives to achieve the targets under Sustainable Development Goal 4, to ensure inclusive and equitable quality education for all, by 2030.

Teaching in COVID times in Morocco (published in French)

Children participate in class activities at Zyaten Primary School, Tanger, Morocco, 2019.

Endnotes

1 <https://soutiensco.men.gov.ma/>

A learner at San Jose Elementary School, San Jose, Ormoc City, Philippines, 2015.

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PHILIPPINES

Philippines Early Childhood Education: Kindergarten to Grade 4 Longitudinal Research

How effective is early child education and what influences its success?

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Editorial insights

This first of a kind, longitudinal study has generated reliable evidence on the positive impact of preschool education on students' cognitive performance and socioemotional skills in the Philippines. The robust evidence is informing advocacy strategies and curriculum decisions, but also makes a case for targeted interventions, particularly in conflict-affected areas.

INTRODUCTION

Over the last decade, the education system in the Philippines has been transformed from a 10-year system to a 13-year one, with compulsory kindergarten. This research, developed in partnership with the Republic of the Philippines' Department of Education, sought to understand what impact the additional compulsory years of education were having on children.

Across a six-year programme period beginning in 2015, the study followed the educational progress of more than 3,400 children across 65+ schools. On an annual basis, it compared the performance and cognitive and socioemotional development of those who had been to preschool with those who had not. It also explored differences in performance by location and domestic circumstances – looking at students from schools in urban poor, conflict-affected and disaster-prone areas.

The study found the majority of children, across all backgrounds, had not acquired the literacy and mathematics skills expected at each grade. Children who attended preschool had higher scores in every round of the survey; they also showed higher levels of social and emotional skills. Children in conflict-affected areas in the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) had far worse educational outcomes than those in other areas, and that gap increased over time: by the final round, they were found to be on average two years behind their peers.

The research also explored factors that may affect children's development, including teachers' skills and experience and what language children are taught in. This latter factor emerged as highly significant in the multilingual environment of the Philippines, where children are taught in their mother tongue up to Grade 3 and then in Filipino and English from Grade 4. The results helped identify key gaps and equity considerations to be addressed in order to improve the MTB-MLE policy.

From the outset, the emerging data were examined by the Department of Education, and shared with participating schools. The findings have informed the Department's ongoing review of the curriculum and have already led to changes in teacher training and deployment – with an emphasis on finding teachers who can teach in the mother tongue. They have also highlighted the urgency of focusing on the most marginalized children, such as those in conflict-affected areas.

The research was integral to the creation of the Department's Basic Education Development Plan 2030, which was published in June 2022, and sets out a roadmap towards the realization of targets under Sustainable Development Goal 4, inclusive and equitable quality education.

Why was the research done?

The education system in the Philippines has undergone a significant transformation over the last decade. In 2012, kindergarten was made compulsory as the first level of schooling. In 2013, the Enhanced Basic Education Act and Early Years Act were both passed, recognizing the importance of education and development of children before the age of 8 (Grade 4).

This research was designed to assess how effective these changes had been and to provide evidence around children's cognitive and social development to inform the ongoing implementation of the Early Years Act.

It sought to understand how children develop in three different contexts: in disaster-prone areas, conflict-affected areas and urban poor areas. It examined what impact education was having on their development and, where possible, what factors affected the impact. Factors considered were preschool attendance, students' gender and socioeconomic background, the language they spoke at home, plus various factors around the schools, including teachers' age, experience and qualifications.

It used a consistent methodology to measure progress at each stage from the first year of kindergarten to Grade 4. As a longitudinal study, conducted over five school years from 2015, it offered robust evidence over time as well as providing emerging findings each year to schools and the Department of Education.

The four central research questions were:

- How do cognitive, social and emotional skills of young children develop in different contexts?
- How does participation in preschool/day care relate to children's later cognitive, social and emotional development, learning experiences and performance in school?
- How do factors related to a child's home, community, school and classroom, in different contexts, affect cognitive, social and emotional development in children?
- How do children transition from early childhood education settings in different contexts, and what part do schools play in supporting this transition?

> **"Students who took the tests in the same language they speak at home scored significantly higher than those who did not."**

How was the research done?

The core of the research was an annual assessment of literacy, mathematics, and social and emotional skills, for a group of over 3,400 students from more than 65 schools.

The assessments were developed by the Assessment, Curriculum and Technology Research Centre[1] and assessed whether children could demonstrate the skills expected of students at each grade, according to official curriculum standards.

The first assessment was conducted in 2015 with children in the first year of kindergarten.

The research with students was complemented by contextual questionnaires for parents, teachers and school heads, and a small number of explanatory case studies with qualitative data to contextualize the quantitative findings.

Table 1 shows the total number of participants in each round of the study.

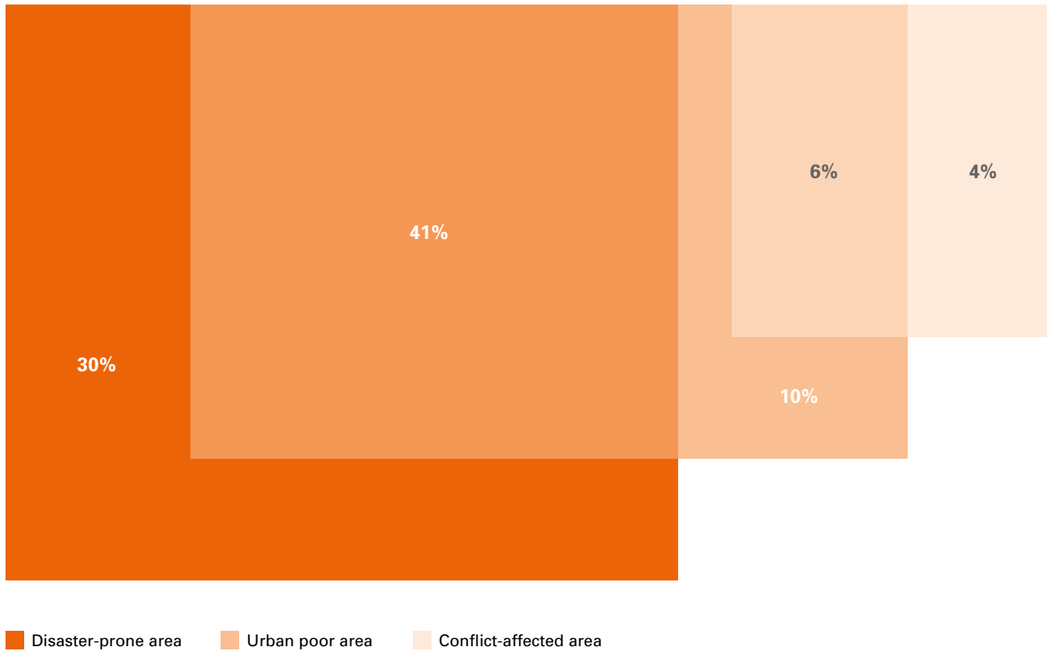
Table 1: Number of participants in each round of the study

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6
Students	4,287	4,523	3,860	3,449	3,542	3,431
Parents	0	0	3,860	0	0	3,430
Teachers	0*	174	298	307	401	393
School heads	0	65	62	67	67	66
Schools	65	67	67	67	67	66

*Round 1 teachers were the same in Round 2. Their data were gathered and included in Round 2.

Source: United Nations Children's Fund, *Philippines Early Childhood Education: Kindergarten to Grade 4 Longitudinal Research*, UNICEF, 2021, <https://www.unicef.org/philippines/reports/kindergarten-grade-4-longitudinal-research>, accessed 24 August 2022.

Figure 1: Proportion of students living in different areas in Round 6[2]



Source: United Nations Children's Fund, *Philippines Early Childhood Education: Kindergarten to Grade 4 Longitudinal Research*, UNICEF, 2021, <https://www.unicef.org/philippines/reports/kindergarten-grade-4-longitudinal-research>, accessed 24 August 2022.

Schools were selected deliberately to represent the three broad contexts: urban poor, disaster-prone and conflict-affected (with some overlap between them, as Figure 1 shows).

In each school, a cohort of pupils and their teachers were selected to take part. The sampling covered key variables, including language, socioeconomic status and preschool or day care attendance.

In each region, approximately half the sampled students took the literacy and mathematics tests in English and half took them in the school's mother tongue.

> **"Sampled students who previously attended preschool outperformed those that did not for all five years of the study in cognitive and socioemotional skills."**

Limitations

Because the research was undertaken with deliberately selected regions/demographic groups, the findings cannot be generalized to the entire population.

In different years, for both the literacy and mathematics assessments, some questions were deleted after that year's round of assessment had begun. These were questions designed to measure performance of the most able students. However, after initial results showed that even those students were struggling to answer them correctly, the questions were removed. The deletion of these questions meant it was hard to differentiate between students in the top bracket.

What are the key findings?

The core findings of the literacy and mathematics assessments were consistent across the three regions – and were in line with the findings of previous assessments of children's educational progress in the Philippines, including the Southeast Asia Primary Learning Metrics 2019 study.[3]

A wide distribution of ability was evident from kindergarten and persisted through to Grade 4. Low-achieving students were found to make little progress over the five school years and only a minority of children were able to demonstrate the skills expected at each grade.

For mathematics, around half of Grade 4 students could demonstrate only some of the skills described in the Grade 1 and Grade 2 curriculums. No student in the study appeared to have the necessary foundational skills required to understand the Grade 4 mathematics curriculum.

For literacy, just under 25 per cent of students at Grade 4 achieved the level of reading and understanding expected. However, around half

Figure 2: Literacy performance by round

Source: United Nations Children's Fund, *Philippines Early Childhood Education: Kindergarten to Grade 4 Longitudinal Research*, UNICEF, 2021, <https://www.unicef.org/philippines/reports/kindergarten-grade-4-longitudinal-research>, accessed 24 August 2022.

understood the meaning of short texts in three different languages: their mother tongue, Filipino and English. Reading skills at the end of Grade 3 are a critical predictor of future performance and achievement: this is the level at which students transition from basic reading skills to applying those skills to understand concepts. Girls performed significantly better than boys in literacy, mathematics and socioemotional skills ($p < 0.05$).

Overall, children in conflict-affected areas performed substantially worse than those from disaster-prone or urban poor areas. Further, the gap widened over the six rounds, to the extent that children from conflict-affected areas were on average two years behind their peers in the other groups. Children in conflict-affected areas also demonstrated lower levels of socioemotional skills in each round.

The study also reinforced previous global findings about the importance of preschool education. Students who had attended preschool or day care achieved higher scores in literacy and mathematics in each round. They also showed higher levels of socioemotional skills, in terms of the quality and sophistication of their skills and interactions with teachers and fellow students.

Influence on policy and programming

With the Department of Education strongly involved in the research and data analysis on an annual basis, the study has already had a significant influence on policy and strategy.

For example, findings on low literacy in all study areas prompted a review of the mother tongue policy. In BARMM in particular, there are challenges in finding teachers with the appropriate level of language skills to fulfil the mother tongue policy. The project team has discussed this, and other findings, with the education authorities in BARMM.

There have also been discussions with educational stakeholders around how to achieve the target curriculum standards. To increase capacity, aspects of teacher training are under review. With the evidence indicating that children may perform better under more experienced teachers, new career progression opportunities are being devised for teachers, rewarding long service and teaching performance rather than academic qualifications.

Recommendations

- Consideration should be given to curriculum reform to better match expectations with student learning needs, giving students more time, opportunity and support to consolidate their skills and improving training and ongoing professional support for teachers.
- Teaching in mother tongue should be treated as a basic right and sustained beyond Grade 3. For example, in BARMM qualified teachers fluent in Maguindanaon and resources in the local language are urgently needed.
- The Government and key stakeholders are encouraged to use the survey results to promote the benefits of preschool education to communities where preschool attendance is lower than desired. Although local government units are mandated by law to offer preschool, attendance and participation are not mandatory. As of the 2021/22 school year, preschool enrolment in the Philippines was below 50 per cent.
- Additional interventions are urgently required to examine teachers and learners in conflict-affected school communities. For example, there is a need to monitor the effectiveness of post-trauma socio-psychological support provided to school communities.

Findings from the study related to socioemotional, reading and mathematical skills were included in the Department's Basic Education Development Plan 2030.[4] Published in June 2022, the Plan sets out the strategic roadmap for education in the Philippines over the coming years. UNICEF was the lead agency in providing technical assistance for drawing up the Plan as Grant Agent of the Global Partnership for Education grant for developing the plan.

As well as engaging with education sector stakeholders, the research team also shared results with the schools that took part. This allows school leaders to apply relevant findings at the individual school level.

Looking ahead

UNICEF is continuing to work closely with the Department of Education as it accelerates its roll-out of the Basic Education Development Plan. Findings have been used in the national consultations for the Transforming Education Summit 2022.

With the research project now complete, UNICEF has shared the methodology, data and all relevant materials with the Department, so that it can continue to use this approach to monitor the effectiveness of early childhood education and the adoption of the K–12 system for basic education. In addition, while many of the findings were specific to the Philippines, the underlying approach may be relevant to examining the same topics in other countries.

Finally, another research project is under way using data from this study to predict the achievement and growth of this very cohort, who entered Grade 7 in 2022. The study aims to use existing data to model the likely impact of COVID-19-related school closures on achievement, and explore ways to support children and teachers to overcome such challenges in the future.

Philippines Early Childhood Education: Kindergarten to Grade 4 Longitudinal Research

Learners at Ngolos-Honeywell Elementary School, Guiuan, Eastern Samar province, Philippines.

Endnotes

1 <https://actrc.org/>

2 This adds up to less than 100 per cent due to missing data.

3 United Nations Children's Fund, *Best of UNICEF Research 2021*, UNICEF Office of Research – Innocenti, Florence, 2021, pp. 30–37, <www.unicef-irc.org/publications/pdf/Best-of-UNICEF-Research-2021.pdf>, accessed 15 August 2022.

4 Republic of the Philippines Department of Education, Order No. 024, s. 2022, Adoption of the Basic Education Development Plan, 30 May 2022, <www.deped.gov.ph/wp-content/uploads/2022/05/DO_s2022_024.pdf>, accessed 15 August 2022.

GOAL AREA THREE

Every child is protected from violence and exploitation

BRAZIL

How prevalent is lethal and sexual violence against children?

SOCIAL AND BEHAVIOUR CHANGE AND CHILD PROTECTION TEAMS, PROGRAMME GROUP, HQ

How can we measure and accelerate change in social norms around female genital mutilation?

A Brazilian adolescent, in conflict with the law, is now enrolled in UNICEF Seal, as an alternative to detention. UNICEF Seal is a UNICEF Brazil Country Office initiative to encourage and recognize real and positive advances in the promotion, realization and guarantee of the rights of children and adolescents in municipalities in the Semiarid and Amazon regions.

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BRAZIL

Panorama of lethal and sexual violence against children and adolescents in Brazil

How prevalent is lethal and sexual violence against children?

Authors:
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Research Managers:
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Editorial insights

This study provided, for the first time, a national picture of the number of incidents of lethal and sexual violence recorded against children in Brazil, and the ages of the victims. The staggering rates of violence uncovered in this research – including violence against infants – generated widespread media coverage and jolted authorities into action.

INTRODUCTION

In Brazil, children and particularly adolescents are at high risk of violent death and sexual assault. But, until now, data have not been sufficiently detailed or consistent to show the level of risk.

Working with the Brazilian Forum on Public Security, UNICEF Brazil obtained several years' worth of police records about violent deaths and rapes from each of Brazil's 27 states. The data were analysed to identify how many of these incidents involved children and the age of the children affected, their gender and ethnicity. Where possible, the analysis also looked at details of the crime itself, including where it took place and, in the case of deaths, how the child died. This included whether death occurred during a police incident.

The analysis provided the first ever national picture of the level of lethal and sexual violence against children – and the results were startling.

Between 2016 and 2020, there were 34,918 intentional violent deaths of children and adolescents in Brazil: almost 20 a day. While the overwhelming majority (31,000+) involved victims in the 15–19 age group, more than 1,000 of the deaths were of children up to 9 years old – and, between 2016 and 2020, the annual number of violent deaths of children aged 0–4 years increased by 27 per cent.

Due to the number of gaps in the 2016 data about sexual violence, figures were analysed for 2017 to 2020 only. In this period, there were 179,277 rapes recorded against children under the age of 19. Children under the age of 10 accounted for a third of the victims and most cases of sexual violence occurred in the victim's home.

The findings received extensive and immediate media coverage. The study featured in over 230 national media outlets, plus many more regional ones. The Government responded promptly, putting in place a national pact with state authorities to work together to reduce lethal violence against children.

The Ministry of Women, Family and Human Rights has also undertaken to continue to monitor the data and publish updates. UNICEF is working with authorities across Brazil to improve the recording of data and to develop targeted interventions for specific risks.

Why was the research done?

Given Brazil's persistently high violent crime figures, it has long been perceived that children in the country are at higher risk of lethal and sexual violence than those growing up in many other places. In particular, there is a degree of awareness and even acceptance around the risks of gun violence involving black adolescent boys.

However, while these crimes are typically recorded, the data are not collated or routinely analysed in terms of the age of victims. Children are just part of the overall crime figures.

That in turn makes it impossible to analyse patterns – such as the age, gender and ethnicity of victims, or where incidents occur. Such analysis is crucial to developing targeted interventions to protect children.

UNICEF Brazil wanted to compile the country's first ever national dataset about the levels of lethal and sexual violence against children. Such a dataset can provide the basis for action at all levels to protect children more effectively and reduce the risk of them becoming a victim of violent crime.

How was the research done?

The research used a consistent approach to gather crime data from the whole country, and then analysed them to provide a national picture of the dangers facing children.

UNICEF's partner, the Brazilian Forum on Public Security, made a request under Brazil's Access to Information Law to each of the 27 states, for all police reports regarding intentional violent deaths, rapes and rapes of vulnerable people in the last five years (2016–2020).

Once the data were obtained, which in some cases required repeated requests, they were standardized and validated, by comparing against previously published crime figures for each state. The data were then analysed to identify all incidents involving those aged under 19 – something that had not previously been systematically done.

This subset of data was then further explored in terms of the victim's gender and ethnicity and to look at the circumstances of the incident, such as where it took place. For deaths, other factors examined included how the young person died and whether they died during a police incident. For rapes, analysis looked at whether the victim knew their assailant.

The analysis used only the data recorded in police reports; there were no additional data sources or estimates. This was entirely deliberate, as it meant that findings would be based entirely on official records. However, it means that the numbers included in the study are certain to be an underestimate of the true picture.

Limitations

The analysis highlighted a range of issues with the quality and depth of data recorded. This led to an early decision to analyse only four years' worth of data about sexual violence; the earlier data were simply not robust enough.

Inconsistencies were identified in recording practice. For example, some states recorded femicide[1] separately from homicide; some did not record where deaths followed a police incident; some recorded the victim's age in an age bracket rather than the actual number of years.

Beyond the different practices, there were also lots of gaps in data. One recurring gap was around the relationship between victims and their assailants.

> **"Between 2016 and 2020, 34,918 intentional violent deaths of children and adolescents were identified in the country. At least 1,070 were children up to 9 years of age."**

What are the key findings?

The study found that, between 2016 and 2020, there were 34,918 recorded intentional violent deaths of children and adolescents between 0 and 19 years of age. Between 2017 and 2020, there were 179,277 recorded rape and vulnerable rape crimes with victims in the same age group. This is an average of 7,000 deaths and 45,000 rapes per year.

Violent death

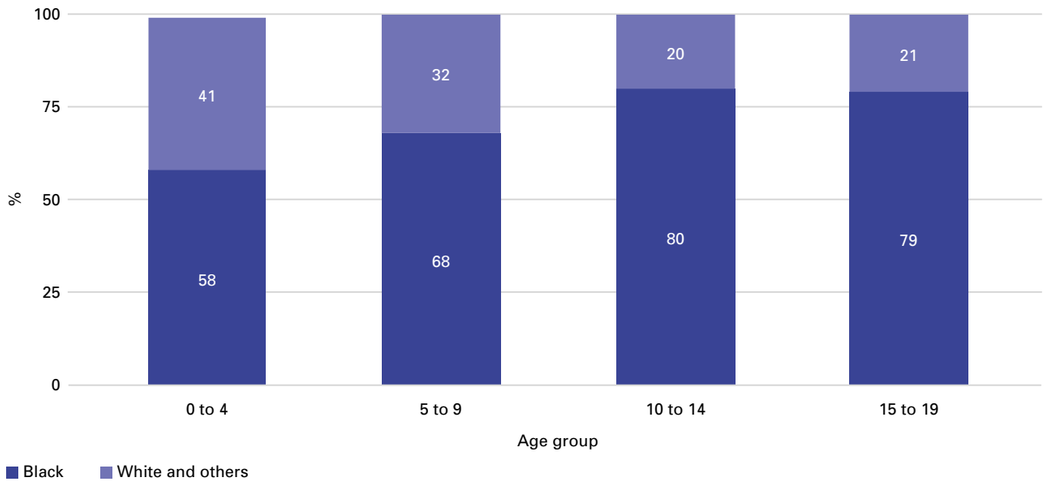
Of those killed, the overwhelming majority – more than 31,000 – were in the 15–19 age group. In total, 91 per cent of all those who died were male and 9 per cent female; about 75 per cent were black, 25 per cent white and 0.3 per cent "other".

In the 10–19 age group, 91 per cent of the victims were boys and 80 per cent were black. Some 83 per cent of deaths in this group occurred due to the use of firearms. This broadly fitted with common perceptions of violent crime in Brazil.

Between 2016 and 2020, there were nearly 1,100 violent deaths involving children up to 9 years of age. This was far higher than anticipated. Of these, 67 per cent of the victims were boys and 56 per cent were black – representing a different profile to the 10–19 age group. Young children (under 9) were at far higher risk than other age groups of dying at home (40 per cent).

One of the most shocking findings of all was that, while the annual number of violent deaths for children aged 5–19 dropped between 2016 and 2020, the number of violent deaths of children aged 0–4 increased by 27 per cent.

Figure 1: Percentage of intentional violent death victims by age group, by race/colour



Source: United Nations Children's Fund, *Panorama of lethal and sexual violence against children and adolescents in Brazil*, UNICEF, 2021, <https://www.unicef.org/brazil/media/17341/file/panorama-lethal-sexual-violence-against-children-adolescents-in-brazil.pdf>, accessed 19 August 2022.

Sexual violence

Of rape victims, 86 per cent were female and 14 per cent male. In all age groups, most victims are female. By far the highest proportion of victims were girls in the 10–14 age group.

Overall, the figures indicate that there were around 100 recorded rapes per day of children up to 14 years old. Children aged 9 or under accounted for just under 60,000 of the victims – a third of the total. For boys, cases of sexual violence are especially concentrated between the ages of 3 and 9.

In all age groups, over 50 per cent of rapes took place inside the victim's home.

> **"Most cases of sexual violence occur in the victim's home, and for those cases where there is information about the perpetrator, 86% of the perpetrators were known to the victims."**

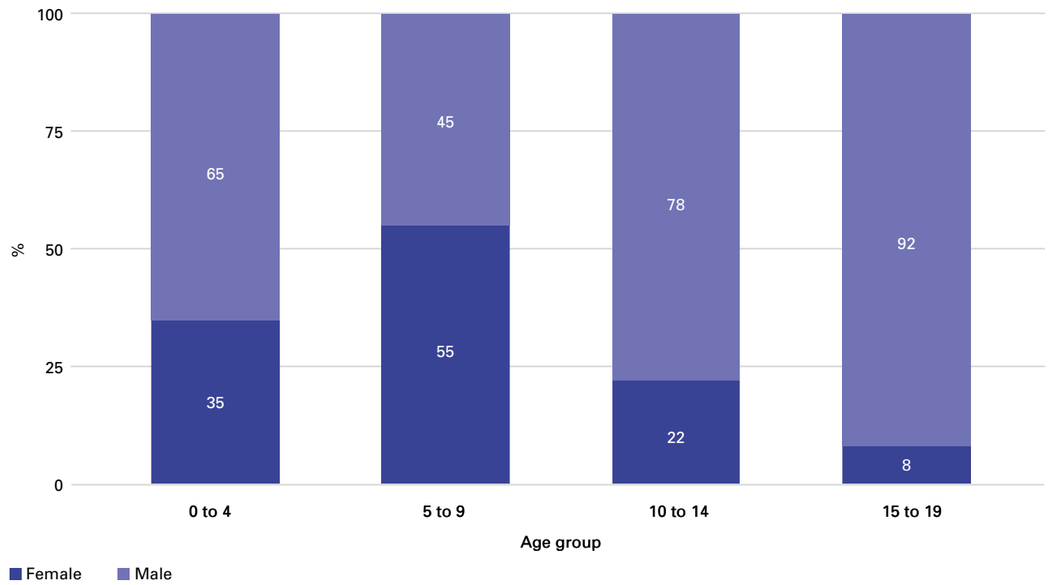
Only 16 per cent of the records included information about the relationship between the assailant and the victim; in 86 per cent of these, the offender was known to the victim.

Influence on policy and programming

The stark data received widespread media coverage from the moment they were published. The findings featured in more than 230 national media outlets. Aside from the headline numbers, the spotlight fell on the recent increases in deaths of infants and in the number of children who died during police incidents.

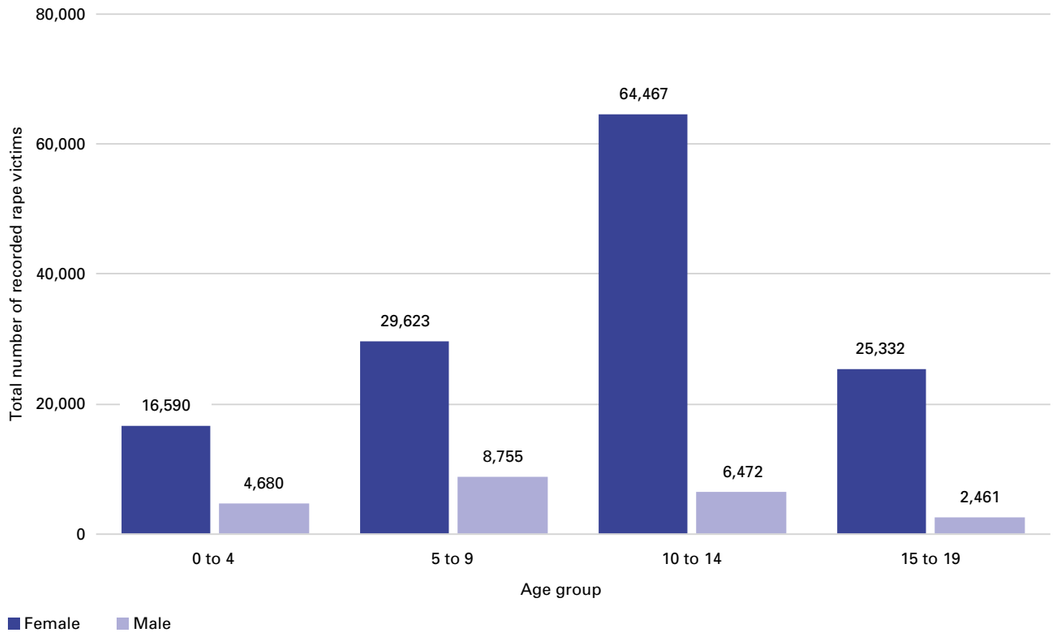
The research was presented at a hearing in the Brazilian Congress, and results have been discussed in more detail with numerous federal and state authorities, as well as police leaders. The Government acted quickly to put in place a national pact with state authorities to work together to reduce lethal violence against children. State committees are being established to focus on reducing violence against children; UNICEF has been invited to participate in several of these.

Figure 2: Percentage of intentional violent death victims by age group, by gender



Source: United Nations Children's Fund, *Panorama of lethal and sexual violence against children and adolescents in Brazil*, UNICEF, 2021, <https://www.unicef.org/brazil/media/17341/file/panorama-lethal-sexual-violence-against-children-adolescents-in-brazil.pdf>, accessed 19 August 2022.

Figure 3: Number of recorded rape victims by age and gender, 2017–2020



Source: United Nations Children's Fund, *Panorama of lethal and sexual violence against children and adolescents in Brazil*, UNICEF, 2021, <https://www.unicef.org/brazil/media/17341/file/panorama-lethal-sexual-violence-against-children-adolescents-in-brazil.pdf>, accessed 19 August 2022.

UNICEF is supporting city authorities to develop targeted interventions for specific risks, including through the City Agenda (#AgendaCidadeUNICEF), a UNICEF initiative to promote the rights and opportunities of the most vulnerable children and adolescents.[2]

UNICEF has also been invited to help authorities improve their recording of violent crimes and ensure that all relevant information is gathered whenever possible. The Ministry of Women, Family and Human Rights has been tasked with updating the data, using the same methodology, to help monitor progress.

Recommendations

The report included several key recommendations for Brazil but which could be applicable in many situations:

- Do not justify or trivialize violence – no matter how frequently it occurs.
- Train professionals who work with children and adolescents to know how to identify signs of violence and proper steps to respond.
- Work with the police to prevent violence and assure rights' protection.
- Guarantee children and adolescents' school attendance.
- Increase the knowledge of girls and boys about their rights and the risks of violence.
- Hold the perpetrators of violence accountable.
- Invest in monitoring and evidence generation.

On evidence generation, more specific recommendations include: to establish a robust system for public authorities to consistently record data on all aspects of violence against children; to collate data in real time, rather than on an annual basis; and to strengthen the capacity of all those who may be involved in data collection – including police officers, teachers and healthcare professionals.

> **"In 2020, there were 736 violent deaths resulting from police intervention in the 10–19 age group – amounting to 15% of all intentional violent deaths in this age group. This proportion increased over the five years studied."**

> **"This unprecedented work is an important contribution to understanding the phenomenon of violence against children and adolescents in Brazil; it is also a call to action."**

Looking ahead

From the outset, collating and analysing the data was intended as the first step. Having successfully ensured that the topic of violent crime against children is firmly on the national agenda, the next step is to use the insights to develop and prioritize targeted interventions in different states. A key focus is on preventative measures, including education and better identification of the most vulnerable. These actions will contribute to targets under Sustainable Development Goals 3 and 16, ensure healthy lives, and 5, achieve gender equality including by eliminating violence against women and girls.

Colleagues in other Latin American countries have expressed an interest in conducting similar research. However, initial indications are that few of the interested countries have the raw data needed – the police reports – to replicate the methodology. This may serve as a catalyst for improvements in crime recording beyond Brazil.

In Brazil, meanwhile, future work may also include analysis of other crimes affecting young people. The methodology was deliberately conservative and used only specific crimes – violent death and rape – where the victim was identified as a young person. However, it can readily be scaled up to cover other crimes, using the same core process, and to support ongoing monitoring.

Panorama of lethal and sexual violence against children and adolescents in Brazil

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Letícia, 15, speaks with a group of teenagers as part of her peer-to-peer education work. As Coordinator of the Adolescent Citizenship Nucleus (NUCA), she facilitates discussions on topics such as suicide, sexual violence and the importance of teenagers' participation in the municipality's decision-making processes. The group is part of the Selo UNICEF programme, an initiative that encourages municipalities to implement public policies focused on the Convention on the Rights of the Child.

Endnotes

1 European Institute for Gender Equality, Definition of 'femicide', <https://eige.europa.eu/thesaurus/terms/1128>, accessed 15 August 2022.

2 United Nations Children's Fund, #AgendaCidadeUNICEF, <www.unicef.org/brazil/agendacidadeunicef>, accessed 15 August 2022.

A nine-year-old girl in Gursum Woreda, Bombass Kebele, Somali Region, Ethiopia, 2015.

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SOCIAL AND BEHAVIOUR CHANGE AND CHILD PROTECTION TEAMS, PROGRAMME GROUP, HQ

ACT: An evidence-based macro framework to examine how communication approaches can change social norms around female genital mutilation

How can we measure and accelerate change in social norms around female genital mutilation?

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Editorial insights

This long-term project developed and validated a robust and adaptable framework for measuring change in social norms related to female genital mutilation (FGM) and assessing the contribution of social and behavioural change (SBC) interventions.
The framework is already becoming a vital tool in informing social and behaviour change initiatives and accelerating efforts to eliminate FGM.

INTRODUCTION

Since 2008, UNICEF and the United Nations Population Fund (UNFPA) have been collaborating on a Joint Programme on the Elimination of Female Genital Mutilation (the Joint Programme).[1] FGM is globally recognized as a form of violence against women and girls, which infringes their human rights, and is perpetuated by social norms and gender discrimination. Even though it is now illegal in many countries, every year an estimated 4 million girls worldwide are at risk of FGM.

One of the main objectives of the Joint Programme is to transform the social and gender norms that sustain FGM, as an integral step to eliminating the practice. However, there is a lack of evidence about exactly how social norms affect behaviour and about which interventions are most effective in changing norms. This is because there has been no standardized way of measuring the links between social norms and behaviour, nor of measuring change in norms – let alone understanding what caused that change.

To address this gap, in December 2016, the Joint Programme contracted Drexel University to develop a macro-level monitoring and evaluation framework to measure FGM-related social norms and behaviour change. Following extensive engagement with experts from the academic and international development communities, the framework has now been finalized and validated in two countries, Ethiopia and Guinea.

Built on a conceptual model of how social norms affect behaviour – and how social and behaviour change can influence them – the ACT Framework provides a comprehensive structure for measuring how norms change over time. It consists of six sections, each of which can be adapted to reflect local context. At the heart are 9 standard questions, the answers to which can be used to provide a numerical indicator of current norms and which can then allow ongoing measurement of change.

The ACT Framework is complemented by guidance and practical tools to support its implementation and adaptation. This package of materials has now been made available for countries to adapt and use. Nine countries across Africa – including the two where it was validated – have begun to use it.

Use of the framework will help build a far richer understanding of the social norms driving FGM in each context and of the social and behaviour change interventions that are most effective at transforming them.

While the framework has been developed to measure social norms change around FGM, it can be adapted to address other harmful practices that are driven by social norms, such as child marriage or violence against children.

Why was the research done?

In 2008, the UNFPA–UNICEF Joint Programme on the Elimination of FGM was formed. It works with communities and governments in 17 countries where FGM is prevalent to understand, challenge and change the embedded beliefs, conventions and power structures around the practice. Its ultimate goal, in line with Sustainable Development Goal target 5.3, is to end FGM by 2030.

Despite the introduction of laws prohibiting FGM in many countries, the evidence demonstrates the continued prevalence of FGM. This is widely perceived to be driven by embedded social norms. The Joint Programme seeks to change those norms, using human rights-based and culturally sensitive approaches to implement social and behaviour change initiatives. However, until now, there has been no commonly used or validated methodology for monitoring whether norms are indeed changing.

This is not merely an issue for norms around FGM; it is a broader challenge, reflecting the complexity of firstly measuring how embedded social norms are and how they affect behaviour, and then understanding how they have changed and what has driven that change.

The Joint Programme therefore wanted to develop a standard and robust framework for measuring social norms change and understanding the factors that have contributed to that change. The specific aims of creating the framework were:

- to examine the attribution and contribution of social and behaviour change interventions to social norms change; and
- to provide countries with research tools to diagnose social norms, identify which practices are norm-driven and identify the outcome expectations associated with normative practices.

How was the research done?

The framework has been developed in an iterative way, with the input of more than 60 individuals identified as experts in either FGM, social norms or social and behaviour change. The process has been led by the Joint Programme and Drexel University.

Following an extensive desk review, examining previous research into social and behaviour change interventions designed to address FGM, a two-day consultative workshop was held.

After the workshop, the project team developed a conceptual model that demonstrated the links between social norms, behaviours and contextual factors. This then underpinned the creation of a draft measurement framework, plus a social norms index, a composite indicator based on the framework that is designed to track progress over time.

> **"Now that this model has been developed and validated, it is likely to provide a foundation to study the direct and indirect impacts of social norms programming on changing harmful practices, such as FGM."**

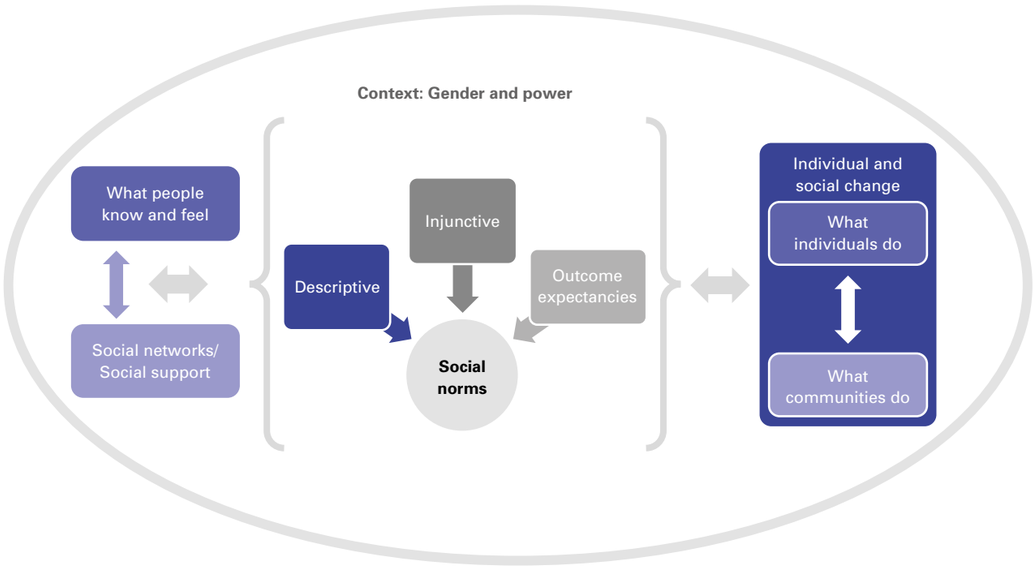
Following further consultation, the framework was validated in two countries: Ethiopia and Guinea. The validation process sought to assess the effectiveness of each component of the framework in two different contexts and languages, to ensure the development of an adaptable tool. Experts were identified in each country to help adapt the tools to the local context before target areas were selected. Following random sampling, more than 1,000 individuals were invited to participate in each country, via interviews or focus group discussions.

Findings were collated for a further expert review and for in-country and global validation, before the framework and supporting materials were finalized.

Limitations

Because the validation work was designed to inform the development of the framework, small samples were used, focusing on women who had either undergone FGM or knew a family member who had. This means the findings of both validations – though providing potentially useful insight – were not intended, and should not be assumed, to provide nationally representative data. Further, the validation did not engage with other stakeholders who may have a strong influence, or be strongly influenced by, the social norms around FGM – for example, community and religious leaders.

Figure 1: The conceptual model for the ACT Framework



Source: Sood, S. et al., ACT: An evidence-based macro framework to examine how communication approaches can change social norms around female genital mutilation, *Frontiers in Communication*, vol. 5, no. 29, 2 June 2020, <*ACT: An Evidence-Based Macro Framework to Examine How Communication Approaches Can Change Social Norms Around Female Genital Mutilation (readcube.com)*>, accessed 19 August 2022.

The ACT Framework

The ACT Framework is based on a conceptual model of the interrelation between social norms, knowledge and beliefs, and behaviour change, within the context of gender and power relations. At the heart of the model are the components of social norms:

- descriptive – that is, beliefs about what others do;
- injunctive – beliefs about what others approve of and expect; and
- outcome expectations – perceived rewards and sanctions for conforming/non-conforming to the norm.

ACT is an acronym based on the six elements of the framework and dimensions of social norms change:

(1) **A**ssess what people know, feel and do.
(2) **A**scertain normative factors.
(3) **C**onsider the context, especially gender and power.
(4) **C**ollect information on social networks and support.
(5) **T**rack individual and social change over time.
(6) **T**riangulate all data analysis.

Each element contains a set of indicators designed to measure the different dimensions within it. Programmers have the option of selecting as many, or as few, indicators as are relevant to their programme theory of change and implementation status.

Each indicator is accompanied by survey questions and instruments for measuring it, which include instructions and guidance on analysis and interpretation. The tools comprise both quantitative and qualitative approaches, to support the final T of the ACT acronym (triangulate all data analysis), which addresses wider analysis, enrichment of data, and feedback, including what worked well in the process.

> **"ACT also includes information that can be used by programme staff through the research phases to best implement the framework, and to interpret the data collected so that it may be used to guide future efforts."**

What are the key findings?

The validation has demonstrated that the framework is effective as a robust and consistent means of measuring social norms change and understanding what is driving that change. This is a major step forward for the Joint Programme, as it will enable standardized analysis of how norms around FGM are changing. That in turn will provide the basis for developing more focused social and behaviour change interventions to accelerate progress towards the elimination of FGM.

The validation also provided the research team with confidence that the framework can effectively track the influence of different types of norms – descriptive, injunctive – and related concepts such as outcome expectancies and social networks, and identify correlations between norms and behaviour.

For example, the validation exercise in Ethiopia found that women who had more progressive attitudes towards FGM – so didn't see the practice as religious or cultural duty, or associate particular sanctions with it – and who had more progressive attitudes towards power and gender more generally, were less likely to have undergone FGM.

> **"The model acknowledges how what people know and feel shapes, and is shaped, by who they talk to (i.e., interpersonal communication and social networks) and the social support received."**

By contrast, those who believed that FGM was part of their culture or prescribed as part of their religion were likely to report higher levels of perceived prevalence of FGM and to feel that their family, community and society in general expected them to support and practise FGM.

These kinds of insights into attitudes, norms, behaviours and contextual factors are precisely what the framework sought to generate, and can underpin the development of targeted social and behaviour change interventions.

The validation process also identified important opportunities to improve the framework and the supporting tools. For example, it was found that there were too many questions around some indicators, leading respondents to feel the survey was repetitive, without generating further insights. Some questions were not well understood, or led to a high proportion of "Don't know" responses or interviewees declining to respond; these have been reviewed and either removed or rephrased.

To build a picture of the wider context, such as gender and power structures, the framework includes some questions that are not directly about FGM but about other aspects of women's everyday lives and freedoms. The validation process led to the refinement of the questions that many respondents found difficult to answer. Introductory text was added which resulted in better understanding of those questions.

There were areas where it became clear that interviewers might need additional training. These differed between countries, emphasizing the need for training to be adapted to local knowledge and cultural sensitivities. There were also contextual differences within countries. For example, when respondents from an area where FGM has, on the whole, been abandoned, were asked to describe what living in a community where FGM had been abandoned was like, many of them were confused. Again, this underlined the importance of adapting the framework to different communities and regions, and suggestions for adaptation are now included in the framework.

Influence on policy and programming

A measure of progress for the framework is the extent of uptake in countries where FGM is prevalent. Already, seven further countries – Egypt, Eritrea, Kenya, Mali, Sierra Leone, Sudan and Uganda – are adapting and adopting it as part of their monitoring around harmful practices and integrating it into existing measurement modules.

Ethiopia has expanded the framework to include tracking of social norms change around child marriage too, and Guinea is doing the same.

Best friends who helped each other avoid circumcision. Ethiopia, 2020.

Each of these countries will be able to use their findings at a national or regional level, to identify the extent to which practices are norm-driven and monitor how social norms are changing. Countries will be able to unpack the various drivers of behaviour, enabling the design of tailored interventions. Further, the framework allows tracking of the contribution that different activities are making towards individual and social change, thus providing insights on what works and what needs to be improved.

The Joint Programme is providing support for the implementation of the framework and adaptation to country contexts and collating country data to provide a more informed overall picture of social norms change around FGM.

Looking ahead

The ACT Framework is invaluable to accelerating progress towards the global goal of ending FGM by 2030. If used consistently, it can provide a wealth of insight into what works best to change social norms around FGM while supporting the development of activities that are more likely to succeed because they are informed by behavioural data. The Joint Programme will play a pivotal role in sharing good practice and supporting the design and implementation of relevant social and behaviour change interventions.

Beyond contributing to the global effort to eliminate FGM, the creation of a theory-based and research-driven conceptual model that allows greater understanding of the pathways through which social and behaviour change interventions impact social norms has significant potential to be applied to harmful practices, such as child marriage and violence against children.

ACT: An evidence-based macro framework to examine how communication approaches can change social norms around female genital mutilation

The ACT Framework Package

Recommendations

- Countries where FGM remains prevalent should use the ACT Framework as soon as possible to build their knowledge around how social norms influence FGM in their context and provide a baseline for definining interventions and monitoring social norms change.
- Sufficient resources need to be made available to implement the framework robustly and measure change over time.
- Once data are gathered, they should be used to help design targeted interventions and to inform social and behaviour change programming.
- The tools should be tailored to local contexts and programmes.

Endnotes

1 UNFPA–UNICEF Joint Programme on the Elimination of Female Genital Mutilation, <www.unicef.org/protection/unfpa-unicef-joint-programme-eliminating-fgm>, accessed 16 August 2022.

GOAL AREA FOUR

Every child lives in a safe and clean environment

LACRO

What measures did different countries adopt to protect access to water, sanitation and hygiene services during the pandemic?

DIVISION OF DATA, ANALYTICS, PLANNING AND MONITORING HQ

How can we get better data about drinking water quality – and how can we use those data more effectively?

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A group of girls and boys benefit from the handwashing station delivered to a school for refugee and migrant children and adolescents. Boa Vista, Roraima, Brazil, 2021.

LACRO

COVID-19 water, sanitation, and hygiene response: Review of measures and initiatives adopted by governments, regulators, utilities, and other stakeholders in 84 countries

What measures did different countries adopt to protect access to water, sanitation and hygiene services during the pandemic?

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Editorial insights

By collating timely information about the measures taken in 84 countries to secure access to water, sanitation and hygiene (WASH) services during the COVID-19 pandemic, and sharing it with policymakers worldwide, this research programme guided a more effective emergency response. The insights can be used to improve the resilience of the WASH sector for future crises.

INTRODUCTION

From the outset of the COVID-19 pandemic, frequent handwashing with soap was identified as one of the most effective ways to prevent the spread of infection. But for many throughout the world, this simple step involved practical difficulties. With a quarter of the global population relying on water collected from off-premises sources,[1] a lockdown situation meant that water for handwashing was in limited supply.

Recognizing these challenges, governments worldwide swiftly implemented measures aimed at securing continued access to WASH services for all. But in the wholly unfamiliar circumstances of a global pandemic, these measures differed between countries. Decision-makers and WASH sector stakeholders needed to understand how their peers in other countries were addressing the crisis.

In response to this urgent need, in mid-March 2020 the WASH team at UNICEF Latin America and Caribbean Regional Office (LACRO), in partnership with Stockholm International Water Institute (SIWI), began a process of collating information about the measures being taken by 26 countries in the region. The measures were categorized using a standard framework, based on whether they were designed to support service users or service providers.

From March onwards, the information was collected and the results were published in a series of technical notes in three languages. The notes were disseminated and discussed by the sector network WASHLAC, led by UNICEF WASH LACRO via successive webinars and on a dedicated website.[2] The WASHLAC network is composed of a diverse range of stakeholders from the region. Since 2020, it has increased its membership from 50 to nearly 1,400 members.

The existence of a robust regional sector coordination platform offered an outstanding opportunity to connect the humanitarian–development nexus, and supported real-time information-sharing which provided policy and decision-makers with vital insight into additional measures they could consider taking.

The information collation exercise was then repeated in other regions, helping monitor how countries' responses changed as the pandemic evolved. In total, it was applied in 84 countries across the world.

Why was the research done?

World Health Organization guidance clearly showed that a crucial tool in the fight against COVID-19 was access to water. But with just 60 per cent of the world's population having at least a basic handwashing facility in their household,[3] and in a general lockdown situation, there was an urgent need for WASH sector stakeholders to find innovative ways to enable continued access to services.

While policymakers and public health officials acted fast, they were operating in an unprecedented situation with limited knowledge of what could work. They needed as much information as possible, as quickly as possible, about the measures they could take.

In response to this urgent need, UNICEF LACRO, in partnership with SIWI, began a process designed to share information between WASH sector stakeholders in different countries, rapidly and without restriction, to help countries optimize and coordinate their response to the pandemic.

How was the research done?

UNICEF LACRO and SIWI designed a process that gathered information about the COVID-19 response in different countries and then applied a standard analytical framework to categorize the actions taken.

It began with an extensive online search, covering academic publications, government policy documents and general media reporting, to find information about the WASH measures implemented in each country. Searches were conducted in multiple languages. Once information was gathered, it was validated where possible by engaging with relevant stakeholders to confirm the measures taken.

The measures were then categorized based on five targets of intervention.

Under each category, UNICEF and SIWI identified recommended response measures. For instance, under target category 1, these included the launch of population-wide handwashing campaigns; steps to fight disinformation and fake news; and guidance to prioritize geographical hotspots. Across the five categories, 43 potential recommended response measures were identified and subsequently included in UNICEF's developing guidance for the WASH sector in response to COVID-19.[4]

> **"The list of recommended measures helps structure and map the COVID-19 responses from the WASH sector. It also provides decision-makers, practitioners, and operators with a good starting point to prepare policies, plans and strategies for implementing the WASH response."**

Limitations

The aim of the programme was to share information as quickly as possible in a rapidly evolving situation. This meant that there was often limited publicly available information about the response measures that had been announced in some countries and, crucially, about the extent and effectiveness of the measures implemented.

Figure 1: The analytical framework

Source: Giné-Garriga, R. et al., 'COVID-19 water, sanitation, and hygiene response: Review of measures and initiatives adopted by governments, regulators, utilities, and other stakeholders in 84 countries', *Science of the Total Environment*, vol. 795, 148789, 2021, <www.ncbi.nlm.nih.gov/pmc/articles/PMC8254381/pdf/main.pdf>, accessed 19 August 2022.

What are the key findings?

The research showed that, though the WASH response to COVID-19 varied between countries, there were numerous commonalities.

As Figure 2 shows, behavioural change and awareness-raising campaigns for handwashing and hygiene promotion measures were the most widely adopted across regions (target 1), with countries announcing an average of 65 per cent of the measures listed under this target. This was followed by infection prevention and control (target 2). Fewer countries implemented programmes under targets 3 (ensuring basic WASH needs), 4 (WASH service continuity) and 5 (support to WASH service providers).

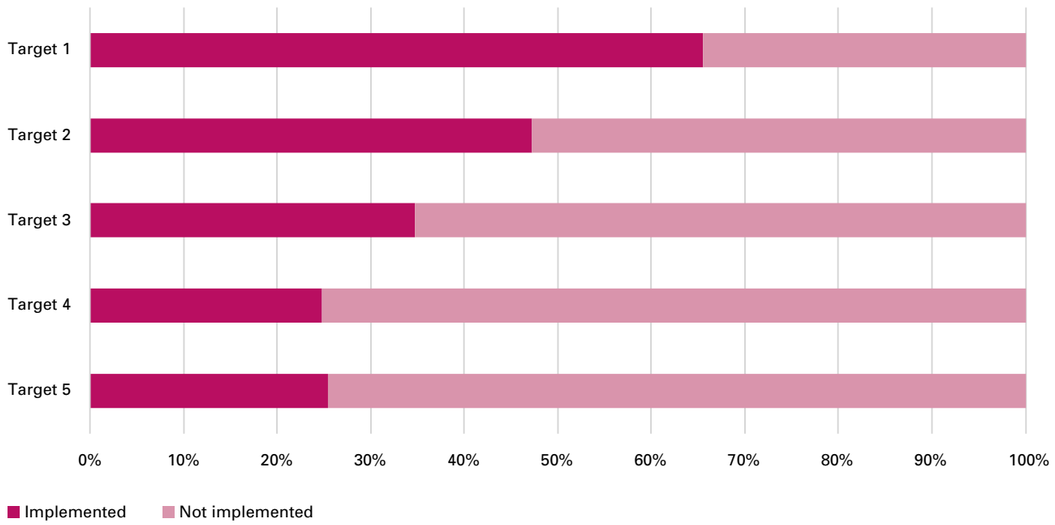
Under target 1, the most widespread measure was the promotion of handwashing with soap, with 94 per cent of countries actively promoting this practice; 74 per cent disseminated messaging and materials on COVID-19 prevention and risk reduction practices.

In terms of target 2, strengthening infection prevention and control, more than half of surveyed countries supported the promotion of handwashing with measures to supply soap and hand sanitizer and to improve handwashing infrastructure, such as by rehabilitation and construction of handwashing stations (58 per cent). These actions were typically implemented at the local level, with limited scale.

Under target 3, assuring water for all, 73 per cent of countries took proactive steps to guarantee access to water for all. For instance, 51 per cent issued policies prohibiting the disconnection of water supply to users. However, there was less focus on initiatives to reconnect previously disconnected users.

Under target 4, guaranteeing the continuity of services, various measures were introduced to ensure a sustained operation of piped water. These included support to secure supplies of products and materials needed to operate the systems (26 per cent of countries) and increasing water and sanitation infrastructure maintenance (36 per cent and 19 per cent, respectively). These measures mostly covered only the bigger service providers.

Figure 2: Average proportion of 84 countries that announced response measures in each target area



Source: Giné-Garriga, R. et al., 'COVID-19 water, sanitation, and hygiene response: Review of measures and initiatives adopted by governments, regulators, utilities, and other stakeholders in 84 countries', *Science of the Total Environment*, vol. 795, 148789, 2021, <www.ncbi.nlm.nih.gov/pmc/articles/PMC8254381/pdf/main.pdf>, accessed 19 August 2022.

Target 5, support to service operators, was the one where the fewest measures were introduced, despite the fact that many of the emergency measures employed by governments challenged the technical capabilities and financial viability of utilities. This may need to be addressed in the medium to long term, to secure sustainability of services.

The analysis identified some regional trends, with countries in Latin America and the Caribbean in general having a more active response than those in Africa and Asia Pacific, with some exceptions.

A striking finding was the lack of response observed in areas of sanitation, compared with water. Very few examples (10 per cent of countries) were found to support decentralized sanitation solutions.

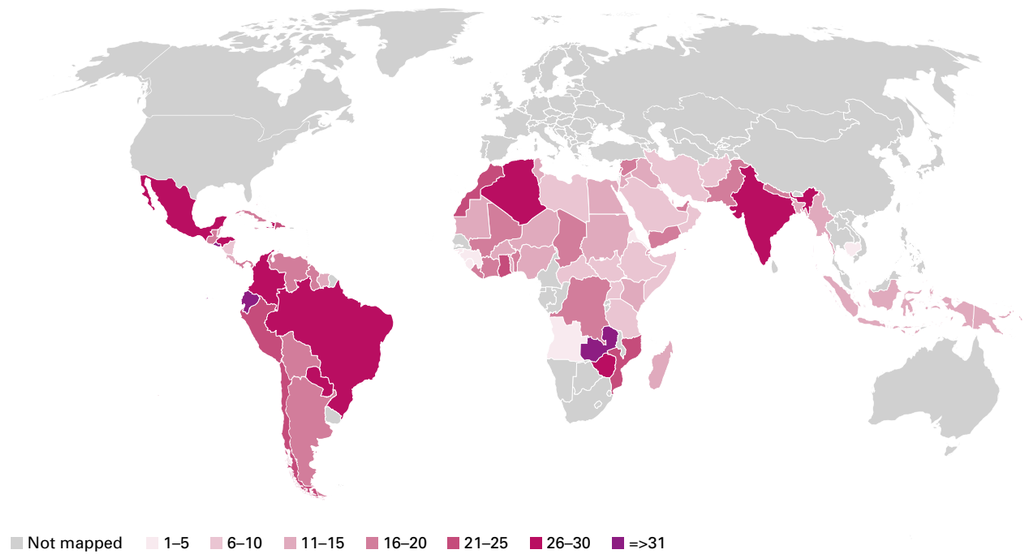
Finally, although there were some positive examples of considering the specific needs of women and girls in the response, measures were implemented in only 32 per cent of countries. These were typically local measures; only 13 per cent of countries implemented national-scale measures). The measures were often limited to distribution of dignity kits including menstrual hygiene products.

Influence on policy and programming

The fundamental aim of the research was to provide WASH sector stakeholders with information about how their peers in other countries were responding to the challenges of COVID-19 and to share best practice ideas for interventions. The WASHLAC regional sector network was fundamental in broadcasting and facilitating adoption of learning across the region through a series of webinars, newsletters and publication on the website.

As a result, 13 countries in the Latin America and Caribbean region have used the framework and findings to inform the development of national WASH sector COVID-19 response plans and strengthen sector coordination. The review contributed to enhancing prevention,

Figure 3: Total number of recommended response measures by country (out of 43)[5]



Source: Giné-Garriga, R. et al., 'COVID-19 water, sanitation, and hygiene response: Review of measures and initiatives adopted by governments, regulators, utilities, and other stakeholders in 84 countries', *Science of the Total Environment*, vol. 795, 148789, 2021, <www.ncbi.nlm.nih.gov/pmc/articles/PMC8254381/pdf/main.pdf>, accessed 19 August 2022.

Note: The designations employed in this publication and the presentation of the material do not imply on the part of UNICEF the expression of any opinion whatsoever concerning the legal status of any country or territory, or of its authorities or the delimitations of its frontiers.

mitigation and recovery for current and future pandemics. It also served as the basis for numerous other actions, as the following examples show:

- In Colombia, the document was used to inform ministerial decision-making and led to a longer-term analysis of the WASH sector's resilience.
- In Brazil, it inspired the Brazil COVID-19 policy review by UNICEF, SIWI and The World Bank.[6]
- In Peru, the technical note was shared with policymakers and regulators and considered as an input for legislative proposals for the provision of WASH services.
- In Ecuador, the Water Regulation and Control Agency used the proposed activity framework to design a national survey to identify the needs of 170 municipal service providers and 343 community ones.
- In Bolivia, the sector plan evolved into a hotspot mapping tool that enabled a more focused sector response to surges in infection rates.

> **"63% of countries took measures to ensure basic drinking water requirements for vulnerable and not connected households were met, through infrastructure expansion, emergency water systems or by water trucks – although half of these initiatives were implemented with limited scale."**

- In Paraguay, the plan led to specific actions such as the implementation of subsidies to small service providers and a more coordinated inter-institutional response.
- In Guyana, the document served as an advocacy instrument to stop the disconnection of water services by the national service provider.

The framework was adopted by several countries – and promoted by regional bodies – as a standard response plan for future emergencies impacting the sector. It can serve as a standardized checklist for emergency preparedness.

Recommendations

The recommendations from the research focus on how it can be used to enhance WASH provision globally and increase the sector's resilience for future emergencies.

- Standard templates for emergency response plans – like the one developed with this research – should be widely disseminated and adopted by countries in advance, as a fundamental part of their emergency preparedness.
- There should be simplification of regulatory procedures to enable non-formal providers to be better integrated into the response plan in an emergency situation.
- Greater focus should be given to addressing disparity in WASH provision between urban and rural communities and to improving WASH services for migrants, those in informal settlements and traditional peoples, including indigenous afro-descendant communities.
- Coordination between the WASH, health and education sectors should be strengthened, and between national and subnational levels, to enable a more integrated response to crises.
- Governments may wish to consider establishing emergency financial support mechanisms for water operators.

Looking ahead

The immediate need for WASH sector stakeholders to share information about the pandemic response has passed, but the value of sector collaboration has been firmly demonstrated. In Latin America and the Caribbean alone, the Regional WASH Sector Group now has over 1,400 members. It is designed to facilitate working together and sharing best practices. The combination of applied research – which gathered information in real time while suggesting recommended measures – and the positioning of the WASHLAC sector network as a forum for discussion and dissemination, created a positive feedback loop that strengthened the usefulness and relevance of the research. Such experiences are invaluable as the need for investment in the WASH sector remains – both to increase resilience to cope with future pandemics and to strive towards Sustainable Development Goal 6, therefore ensuring the availability and sustainable management of water and sanitation for all.

COVID-19 water, sanitation, and hygiene response

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Girl shows her soapy hands having utilized the handwashing station delivered at an elementary school in the city of Candeias, Bahia, Brazil, 2022. Behind her are some personalized RCCE materials created to teach and encourage children and adolescents how to do hygiene the right way.

Endnotes

1 United Nations Children's Fund and World Health Organization Joint Monitoring Programme, *Progress on Household Drinking Water, Sanitation and Hygiene 2000–2017: Special focus on inequalities*, UNICEF/WHO, 2019, <www.unicef.org/reports/progress-on-drinking-water-sanitation-and-hygiene-2019>, accessed 16 August 2022.

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3 United Nations Children's Fund and World Health Organization, Hygiene Baselines pre-COVID-19: Global Snapshot, UNICEF/WHO, 2020, <https://data.unicef.org/wp-content/uploads/2020/06/JMP-2020-COVID-global-hygiene-snapshot.pdf>, accessed 16 August 2022.

4 United Nations Children's Fund, *COVID-19 Emergency Preparedness and Response: WASH Strategic Programming Framework*, UNICEF, New York, 2020, <www.corecommitments.unicef.org/kp/2020-06-unicef-wash-programming-framework-covid-19-response-cccs-site>, accessed 16 August 2022; United Nations Children's Fund, *Financial Support Measures that Strengthen WASH Continuity and Affordability in the Time of COVID-19*, UNICEF, New York, 2020, <www.corecommitments.unicef.org/kp/2020-financial-support-measures-for-wash-and-covid%2C-unicef>, accessed 16 August 2022.

5 The designations employed and the presentation of the material in this paper do not imply the expression of any opinion whatsoever on the part of SIWI or UNICEF concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

6 Stockholm International Water Institute, The World Bank and United Nations Children's Fund, *Policy Brief: The key role of Water, Sanitation and Hygiene Promotion in the response to Covid-19 in Brazil*, SIWI/World Bank/UNICEF, August 2020, <https://drive.google.com/file/d/1XPn_XGi-N-F0UprRU1tMxzH6zXQ3rwxr/view>, accessed 16 August 2022.

Deepika drinks from her water bottle, filled with tap water using a connection provided by the Jal Jeevan Mission at an Anganwadi centre in Doliya village, near Jodhpur, India, 2022.

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DIVISION OF DATA, ANALYTICS, PLANNING AND MONITORING HQ

Monitoring drinking water quality in nationally representative household surveys in low- and middle-income countries: Cross-sectional analysis of 27 Multiple Indicator Cluster Surveys 2014–2020

How can we get better data about drinking water quality – and how can we use those data more effectively?

Authors:
Robert Bain; Richard Johnston; Shane Khan; Attila Hancioglu; Tom Slaymaker

Research Manager:
Tom Slaymaker, Division of Data, Analytics, Planning and Monitoring, UNICEF HQ

Editorial insights

By demonstrating the robustness of a field test for contamination, this study has transformed our ability to monitor access to safe drinking water. The baseline data, gathered from more than 60,000 households across 27 countries, can also lead to locally targeted interventions to reduce the risk of contamination and invest in improvements to water sources.

INTRODUCTION

Target 6.1 of the Sustainable Development Goals (SDGs) is: "By 2030, achieve universal and equitable access to safe and affordable drinking water for all." But in many countries, there has been no robust way to measure access to safe drinking water at the household level. That makes it hard to identify relevant interventions towards delivering the SDG target.

This study addresses the gap in water quality monitoring, through incorporating a water quality module into the UNICEF-supported Multiple Indicator Cluster Survey (MICS) programme.[1] MICS is a large-scale household survey programme, which has been implemented by national governments in about 80 countries in the last 10 years. It has been carried out with support and technical assistance from UNICEF.

By working with the MICS programme to develop and implement a new MICS module that involves testing drinking water in the field, the World Health Organization (WHO) and UNICEF's Joint Monitoring Programme (JMP) for Water Supply, Sanitation and Hygiene has been able to gather and analyse data about drinking water quality accurately and consistently at household level.

The module assesses the availability and microbiological quality of drinking water and examines risk factors for *Escherichia coli (E. coli)* contamination. It has now been used in more than 40 low- and middle-income countries.

As well as proving the validity of the method on a very large scale, the study gathered data about drinking water quality in each of these countries. These data are now published online at <https://washdata.org> and <mics.unicef.org>.

The research demonstrated that *E. coli* is frequently present in water at the point of collection – whether a pipe, a borehole, a well or a spring – and that, in several countries, this is at very high levels. However, it found that the risk of *E. coli* contamination was higher still at the point of use, indicating that much domestic water storage or handling is unsanitary.

The integration of water testing within household surveys allowed analysis of the factors associated with higher risks. These varied extensively by country, but the overall risk of contamination was higher in rural areas.

The study has sparked a wide range of discussions at national and international level about potential steps to address risks. Some governments have used the findings to inform decisions about improvements to water and sanitation infrastructure. Others have enhanced public information about water handling.

Above all, because these surveys have generated robust data on water quality for the first time, they have provided a baseline for the SDG target – and a replicable method of monitoring progress towards it.

Why was the research done?

The JMP is responsible for assessing progress towards SDG target 6.1. This is measured in terms of access to a safely managed drinking water service – that is, water from an improved source that is available when needed, accessible on premises, and free from faecal and chemical contamination.

Drawing on evidence from various sources, including a 2014 systematic review of contamination in low- and middle-income countries,[2] the JMP commissioned a study which estimated that around 2 billion people drink water that is contaminated with faecal bacteria.[3]

However, the JMP's SDG baseline report in 2017 found that just 96 countries (out of 232) had sufficient data to report on access to safely managed drinking water services to the standard required for the SDG.[4]

Most of the available data about water quality come from regulators and are often inconsistent between regions and countries. They typically focus on the water supplied via piped networks in urban areas and often exclude non-piped supplies and rural areas.

With a clear need for a more robust and consistent means of measuring the availability and accessibility of safely managed drinking water, the JMP supported the development of a new approach involving large-scale field testing of water quality.

This research focused on assessing the viability of incorporating testing within existing multi-topic household surveys. It also sought to create nationally representative baseline data on access to safely managed drinking water, as an essential foundation for targeted interventions towards achieving the SDG target.

How was the research done?

The new module to assess water quality and safely managed drinking water was piloted in the MICS survey conducted in Bangladesh in 2012–13. It was then further developed between 2013 and 2017 and made available as a standard module from 2017 onwards.

The MICS programme uses a multi-stage stratified sampling approach, typically interviewing 20–25 households out of 100–150 in each cluster. Clusters are selected at random; for the water quality module, a random sample of 3–5 households in each cluster was selected. During the interview with these households, the interviewer asks for a "glass of drinking water". A sample from this is taken as representative of water at the point of use. The interviewer then asks to be shown the source of the drinking water – for example, piped water, a borehole or a spring – and takes a sample from that location too, as the point of collection. This allows comparison between the two and to gather information about water storage.

> **"This approach enables the collection of data at comparatively low cost that can be linked with information on household characteristics."**

The water (100 millilitres from each sample) is analysed for the presence of *E. coli*, which is accepted as a reliable indicator of faecal contamination. Within half an hour of taking the sample, water is filtered through a portable membrane filtration apparatus, and the filter placed onto growth media plates to incubate.

The next day, the number of *E. coli* colonies on the plate are counted, by eye. If 1–10 colonies are found, that is recorded as moderate risk; 11–100 is described as high risk; and more than 100 as very high risk.

Various control mechanisms are in place, including the requirement for teams to conduct regular tests using mineral or distilled water, which should result in a blank test.

Figure 1: A MICS field team member with the testing kit

Source: WHO/UNICEF Joint Monitoring Programme

MICS field teams received specialist training to conduct the testing, and there were also some questions related to the water, its source and reliability, and how it was stored and treated by members of the household. These enabled the analysts to compare the risk of contamination for different water sources and population groups.

Limitations

As with any household survey, the findings, including about water quality and contamination, reflect the situation on that day only. While periodic household surveys can generate valuable data on drinking water quality, they are not a substitute for routine monitoring and surveillance.

The analysis focused only on the presence of *E. coli*, not any other harmful substances that may be in drinking water, such as elevated levels of arsenic or fluoride.

What are the key findings?

The single most important finding was that the core approach – of conducting large-scale field testing as part of a household survey – was viable. It proved that robust, replicable and low-cost data is available, and provided detailed information about access to safe drinking water at household level.

> **"In five countries, more than 20% of population uses piped water that was found to be contaminated."**

This study examined the data obtained from each country that integrated water quality testing in MICS between 2014 and 2020. In total, more than 60,000 households were surveyed.

From the earliest set of results, the levels of *E. coli* contamination found were higher than expected in most countries. In nine of the 27 countries, more than a third of the population was reliant on very high-risk drinking water sources. In five of those nine, over half of the population was also exposed to a very high risk of *E. coli* contamination at the point of use – as Figure 3 shows.

Overall, piped water was found to be most likely to be free from contamination at the point of collection, followed by water from boreholes, then packaged water. However, the quality of piped water varied enormously.

In all countries bar three, households in the poorest quintile were significantly more likely than those in the richest quintile to rely on water sources where *E. coli* was present at the point of collection. A notable exception was Bangladesh, where those in the poorest quintile, relying mostly on boreholes, were less likely than the richest to use a contaminated source. However, the position reversed at the point of use, indicating that those in the poorest quintile were not storing water safely.

Self-reported water treatment methods such as boiling water or adding chlorine at home were generally found to reduce the risk of contamination at the point of use, but there were numerous occasions where water was found to be contaminated despite households reporting using treatment methods.

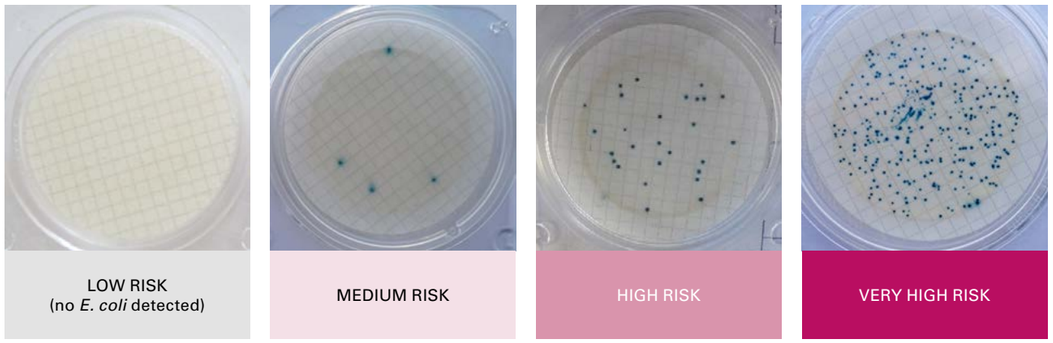
Influence on policy and programming

By providing robust baseline data on drinking water quality for the very first time, the MICS programme has enabled countries to explore the data and make use of them in numerous ways.

In Nigeria, the fact that piped water was found to be frequently contaminated led to discussion at the highest levels of government. Action is now being taken to address some of the factors that can lead to contamination of piped water, such as inconsistent supply.

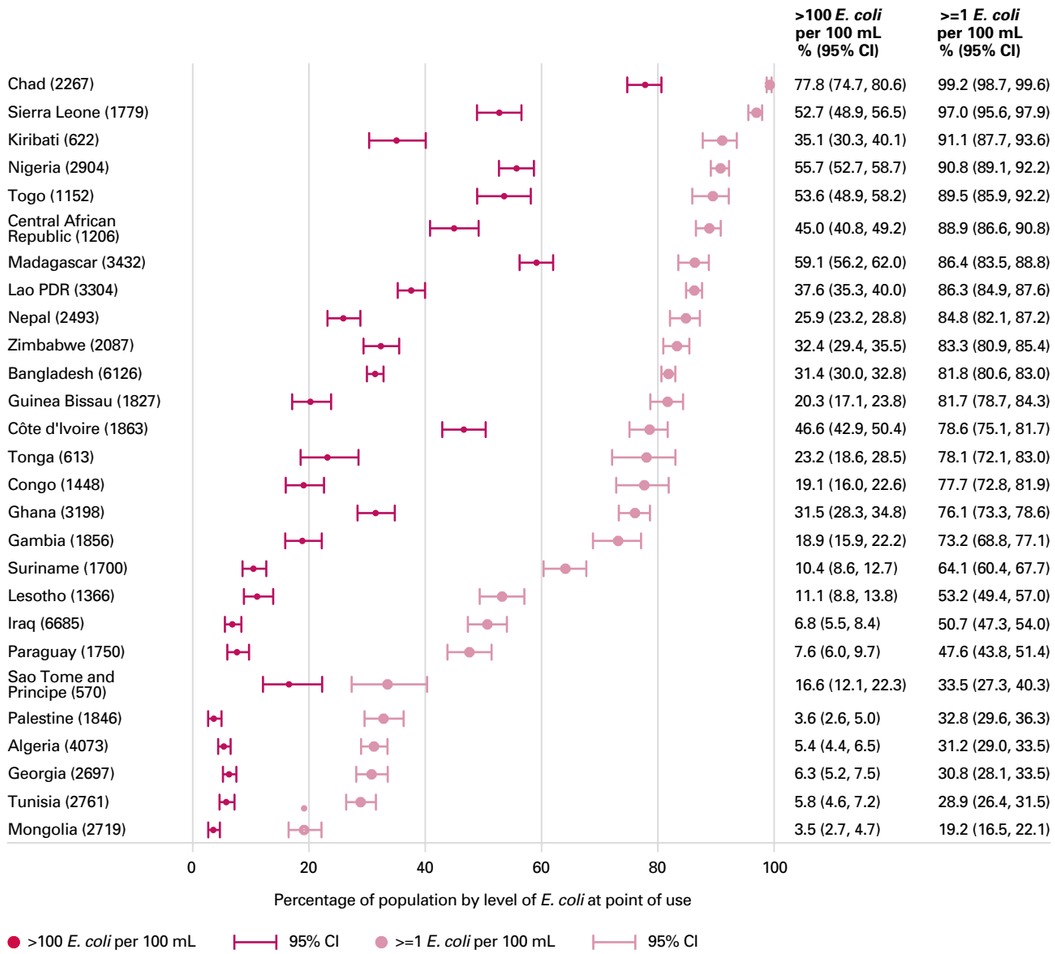
Figure 2: Risk levels

Examples for each of the four WHO risk levels, interpreted by the number of *E. coli* colonies on a plate



Source: WHO/UNICEF Joint Monitoring Programme

Figure 3: Percentage of population by level of *E. coli* at point of use



Source: Bain, R. et al., 'Monitoring drinking water quality in nationally representative household surveys in low- and middle-income countries: Cross-sectional analysis of 27 Multiple Indicator Cluster Surveys 2014–2020', *Environmental Health Perspectives*, vol. 129, no. 9, <https://ehp.niehs.nih.gov/doi/full/10.1289/EHP8459>, accessed 24 August 2022.

Given the finding that risk of contamination was often higher at the point of use, several countries have produced information on how to store and handle water more safely at home.

Despite the potential embarrassment of discovering high levels of contamination, governments have been extremely keen to include the water quality module in their household surveys. The baseline figures allow them to set interim targets for improvement and also inform strategies. The approach has been incorporated into numerous other national and sub-national household surveys, with support from the JMP team, including in Afghanistan, Ecuador, Ethiopia, Ghana, Indonesia, Lebanon, and the Philippines. Nepal, meanwhile, has adapted it for inclusion in its ongoing monitoring programme.

> **"Overall, risk was higher in rural areas than urban areas, and livestock ownership was associated with higher risk."**

Looking ahead

With clear proof that this approach to water quality testing is viable, it can now be adopted in future surveys. This is vital to monitoring progress towards the achievement of the SDG target and addresses critical data gaps in many countries.

Equally importantly, the scale at which water testing has been conducted has meant that the JMP, in close collaboration with UNICEF's Supply Division, has been able to drive down costs to around $2.50 per test. An ongoing innovation project aims to further reduce the costs per test, while also accelerating the speed at which results can be processed.

Faster results would potentially enable field teams to communicate findings directly to households. This is a sensitive topic which would require further consideration, but it may be possible to alert households if the tests showed a marked increase in contamination at point of use compared with point of collection and provide some advice on water handling practices.

The difference between contamination levels at the two points is one area identified for further research, as is the relationship between household- and community-level risk factors.

Many of these themes may feature in the United Nations Water Conference 2023,[5] the objectives of which include helping to strengthen local, national and international action for water supply, sanitation and hygiene.

Monitoring drinking water quality in nationally representative household surveys in low- and middle-income countries

Recommendations

- Strategies to improve water quality should focus on service levels rather than simply extending infrastructure.
- Authorities are encouraged to devise local targets for improvement that are aspirational but realistic.
- By combining data about water quality gathered from household surveys with data from regulators/utilities, countries can have a more comprehensive picture of their progress towards achieving the SDG target.
- Countries should be supported to adapt the SDG target to the national context and to develop plans to progressively improve drinking water quality and to identify and target populations at greatest risk.

Souza (19) draws water from a source developed by UNICEF in the Mutonji district of Mbuji-Mayi, Kasai Oriental province, the Democratic Republic of the Congo, 2021. In this poor district the inhabitants used to draw water directly from the nearby river, or from undeveloped springs.

Endnotes

1 <https://mics.unicef.org>

2 Bain, R., et al., 'Fecal contamination of drinking water in low- and middle-income countries: A systematic review and meta-analysis', *PLOS Medicine*, 6 May 2014, <https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1001644>, accessed 19 August 2022.

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5 <https://www.unwater.org/news/un-2023-water-conference-special-accreditation-non-governmental-organizations-and-other>

GOAL AREA FIVE

Every child has an equitable chance in life

BURUNDI

How can we demonstrate the value of investing in early childhood development?

One of the poorest countries in the world, Burundi has scarce means to protect its population. Children pay a very high price. Many drop out of school to work to support the family, or because their parents cannot afford the cost, or because the school has been destroyed by natural disasters. Kibande, Kirundo province, northeastern Burundi, 2021.

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BURUNDI

Cost–benefit analysis of investments in early childhood in Burundi

How can we demonstrate the value of investing in early childhood development?

Authors:
Genesis Analytics

Research Managers:
Albert Ewodo Ekani, UNICEF Burundi

Editorial insights

The results from this rigorous cost–benefit analysis of increasing investment in early childhood development (ECD) provide evidence of the value and high return on investment in this sector. Funded by the UN SDG Fund and implemented by Burundi's Ministry of Finance, Budget and Economic Planning, this analysis led to the development of a national multisectoral ECD strategy and prioritizing of ECD investment in Burundi.

INTRODUCTION

It is well established that early childhood is the most important window in which a foundation for future development is laid. But with competing priorities for government expenditure, ECD can often miss out. A previous UNICEF study[1] found that the funding gap for ECD health and education services across Eastern and Southern Africa was a staggering 90 per cent. This points to an urgent need to start thinking about ECD expenditure as an investment in the future, rather than purely a cost.

Under the leadership of the Government of Burundi, UNICEF and Genesis Analytics conducted a cost–benefit analysis of different levels and rates of investment in ECD to underpin the development of a national multisectoral ECD strategy.

Building on a baseline of current expenditure, researchers devised two packages of ECD interventions: one focused on providing vital health, nutrition, and water, sanitation and hygiene (WASH) in the first 1,000 days of life; the other a more holistic set of interventions. They then calculated the costs of implementing each package to reach a target level of coverage over different time periods and the impact in terms of factors such as reduced child mortality, healthier development and completing education.

All of the impacts were translated into monetary terms to enable a direct financial comparison of the costs and benefits. This demonstrated that both packages would be highly cost-effective, whether implemented rapidly (with interventions scaling up to the target level by 2030) or over a longer term (reaching the target by 2050). In the slowest scale-up scenario, with a total cost of 1.5 billion BIF, 377,423 child deaths and over 13.3 million cases of child stunting could be averted. Translating this into monetary terms, for every US$1 invested in Package 1 in this scenario, the return on investment would US$54. For the more comprehensive Package 2, it would be US$18. The cost–benefit ratio would be higher if the targets were achieved in a shorter timescale.

The research also involved a fiscal space analysis to consider how the different packages could be financed under different economic outlooks – which identified the need for support from international donors to achieve the goals.

The findings were endorsed by a steering committee co-chaired by the Ministry of Finance, Budget and Economic Planning. A national multisectoral ECD strategy has been developed under the leadership of the Ministry of Public Health and the Fight against AIDS. Several donors have committed to focus a greater share of their budget on ECD.

Why was the research done?

The Early Childhood Development Index (ECDI) found that the proportion of children in Burundi with suspected developmental delays was over 50 per cent.[2] With 40 per cent of the population under the age of 8, investing in this age group is critical to capitalize on the potential demographic dividend, and reverse trends of stagnant economic growth, endemic poverty and poor socioeconomic outcomes.

In recognition of the value of investing in ECD, in 2021, the Government of Burundi began to develop its first national multisectoral ECD strategy, defining focal areas in healthcare, education and child protection.

This research was designed to guide resource mobilization and accompany the ECD strategy. It seeks to generate robust evidence, previously unavailable for Burundi, on the potential return on investment in ECD. This was calculated as a cost–benefit ratio, for different packages of ECD expenditure.

By analysing the impact in economic terms, the study helps reframe expenditure on ECD, expressed as an investment, rather than a cost. More specifically, it could also help comparison of cost–benefit ratios of different interventions, thereby better informing government policy and planning.

How was the research done?

The research began by defining two packages of potential interventions based on UNICEF's multisectoral ECD framework,[3] which were then aligned with the Government's ECD strategy. The first focused on interventions to support health, nutrition and WASH in the first 1,000 days of life. The second also included pre-primary education, social protection and child protection initiatives.

Researchers then modelled the scaling up of interventions in each package from their current coverage levels (as per existing national data) to reach specified target levels of coverage by different times:

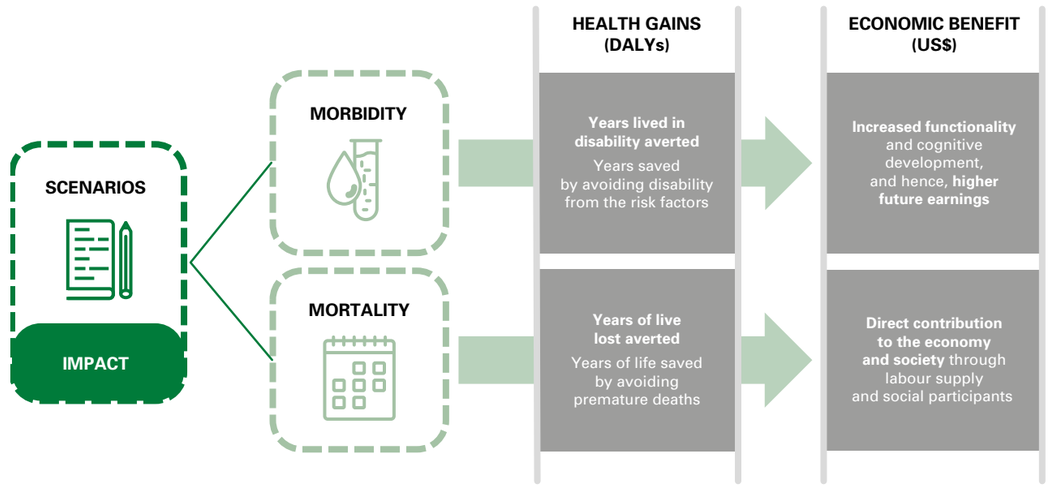
- a fast scale-up to reach target levels by 2030;
- a medium scale-up (by 2040); and
- a slow scale-up (by 2050).

> **"Children aged 0–8 years represent almost 40% of the population. Stimulating girls' and boys' development in their early years through adequate investments in early childhood can be the development catalyst Burundi needs to achieve its vision of becoming an emerging regional power by 2027 and beyond."**

Researchers then examined the costs of extending coverage to this level and the expected benefits, measured in terms such as reduction in child mortality, the number of disability-adjusted life years (DALYs) averted,[4] and the number of children completing education. This cost-effectiveness analysis was then followed by a cost–benefit analysis, where the outcomes were translated into a monetary value based on the expected productivity return of the intervention. Figure 1 illustrates this process.

This modelling used respected tools, including Avenir Health's OneHealth Tool and UNESCO's SimuED programme. Where no existing tools were available, the team developed their own, using Excel-based models.

Figure 1: How health gains were calculated as economic benefits



Source: United Nations Children's Fund, *Cost–benefit analysis of investments in early childhood in Burundi*, UNICEF, 2021, <https://www.unicef.org/burundi/reports/costbenefit-analysis-investments-early-childhood-burundi>, accessed 24 August 2022.

In addition, a fiscal space analysis was conducted to examine how the scaling up could be funded under different economic circumstances. This analysis helped to identify the viability of using public expenditure to fund each package in each scenario and where there may be a shortfall.

Limitations

The main limitation related to the quality and depth of baseline data regarding current coverage levels of interventions. Where national data were not available, international sources were used.

The three scale-up scenarios were based on targets in Burundi's National Development Plan 2018–27. Following the COVID-19 pandemic, some of the fixed targets were known to be unachievable. However, researchers elected to retain the trajectories from the plan as they provided a consistent framework.

What are the key findings?

The key overarching finding was that, under all scenarios, scaling up either package is highly cost-effective, delivering considerably more benefits than it would cost to implement.

While researchers anticipated a positive return on investment in ECD – in line with the findings of previous research around the world – the figures provided an even stronger case than expected for Burundi.

In the fast scale-up scenario, where target coverage is reached by 2030, the calculated return on investment for every US$1 spent on Package 1 would be US$9 by 2030. By 2050, this would increase to US$68.

Under the slower scale-up scenario, the return by 2050 on Package 1 would be US$54 for each US$1 spent. For Package 2, it would be US$18.

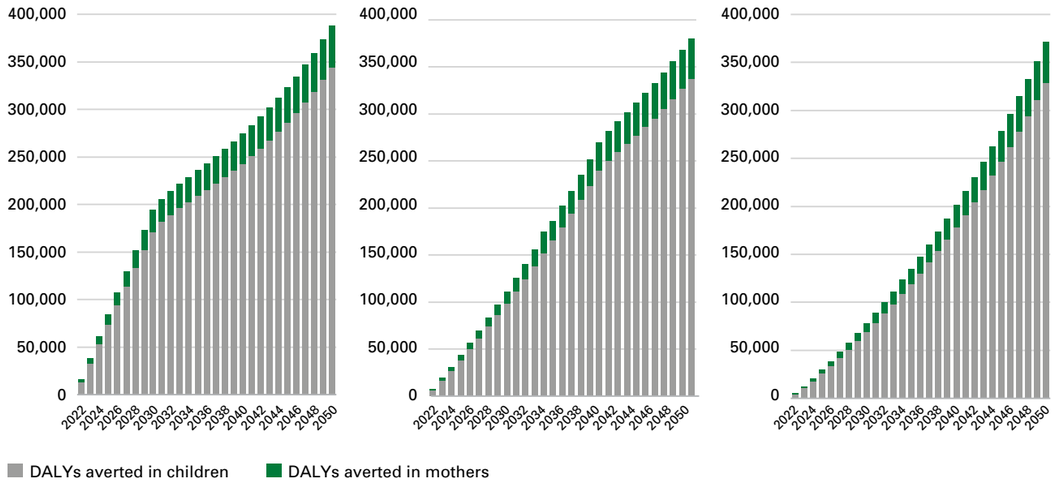
Research highlights

For each US$1 invested in early childhood in Burundi, the returns by 2050 would be at least US$18 – and potentially much more.

The benefits

The benefits of investment were impressive in themselves. For Package 1, scaling up health, nutrition and WASH interventions, the impact on child mortality and stunting (impaired growth and development) rates was calculated.

Figure 2: Incremental number of disability-adjusted life years averted from child and maternal causes each year, in each scenario



Source: United Nations Children's Fund, *Cost–benefit analysis of investments in early childhood in Burundi*, UNICEF, 2021, <https://www.unicef.org/burundi/reports/costbenefit-analysis-investments-early-childhood-burundi>, accessed 24 August 2022.

In the slowest scale-up scenario, a total of 377,423 child deaths and over 13.3 million cases of stunting could be averted by 2050. In the fastest scale-up scenario, where more children benefit from these interventions at an earlier stage, a total of 690,494 child deaths and 21.4 million cases of stunting could be averted by 2050.

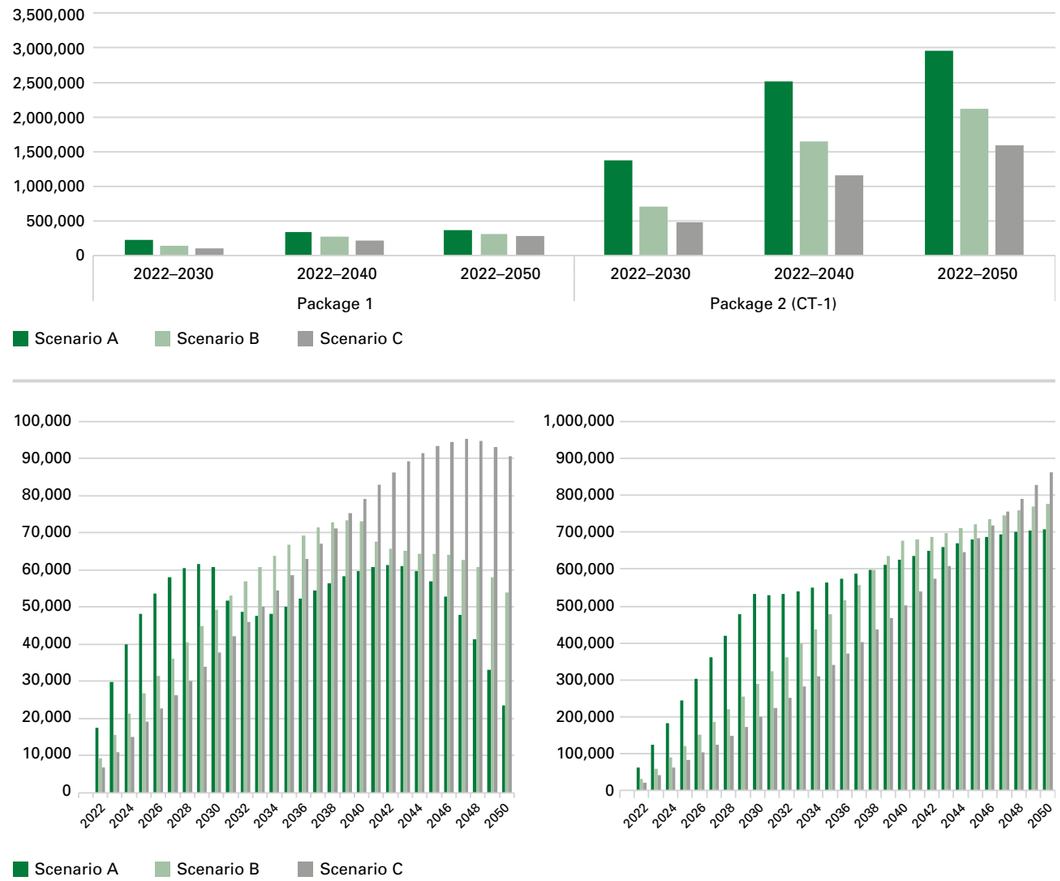
As Figure 2 shows, these benefits will begin to be felt almost immediately: by 2025, this would accumulate to 20,346 additional child deaths and 249,287 additional stunting cases averted. Each year of stunting averted was calculated as a DALY.

Research highlights

The study identified which specific interventions had the most impact in each area. For reducing child mortality, the biggest impact came through increasing availability of oral antibiotics for pneumonia.

The same benefits would come through Package 2 but there would also be positive impacts in other areas of child development – such as improvements in educational outcomes. By scaling up access to preschool education to the target level by 2030, nearly 380,000 extra children are estimated to graduate high school by 2050.

Figure 3: Total incremental costs for each package (present value), by scenario and package, discounted at 12% rate (first graph), and real annual incremental costs (Package 1: second graph; Package 2 with scale-up of Merankabandi cash transfer (CT-1): third graph)



Source: United Nations Children's Fund, *Cost–benefit analysis of investments in early childhood in Burundi*, UNICEF, 2021, <https://www.unicef.org/burundi/reports/costbenefit-analysis-investments-early-childhood-burundi>, accessed 24 August 2022.

The costs

The analysis also provided detailed estimates of the real costs of implementing both packages under each scenario.

For example, scaling up Package 1 in a fast scale-up scenario is projected to cost around US$750 million, with average annual costs of US$26 million. Under the slow scale-up scenario, annual costs in the first decade would be around US$12 million but would increase in later years as the number of children covered increased.

Costs for Package 2 were at least four times as much in all scenarios.

For both packages, faster scale-up incurs greater costs but delivers a better cost–benefit ratio. Scaling up Package 1 is more affordable than Package 2, under all scenarios. However, even with reprioritization of the Government's budget, it would struggle to afford increasing investment in ECD to the required levels without external funding.

Influence on policy and programming

The research was endorsed by the Minister for Finance, Budget and Economic Planning, reflecting confidence in the robustness of the methodology and the findings. It was presented to the Government's multisectoral committee in charge of piloting the SDG Fund. The cost–benefit analysis and fiscal space analysis are proving integral to the discussions and decisions being made.

The cost-benefit analysis represents a key tool for the implementation of the multisectoral ECD strategy which was finalized by the Ministry of Health. In addition, for all new schools, it is already a requirement to ensure some form of pre-primary education. These efforts are a step in the right direction and towards more investments in ECD. A breakfast dialogue was held with donors to present the results; some have committed to refocusing their budget allocation to Burundi to place greater emphasis on ECD.

Recommendations

The research resulted in a range of recommendations. Five core related recommendations were:

- Scaling up multisectoral ECD interventions must be a top priority for the Government of Burundi.
- A comprehensive financing strategy for scaling up the interventions in these ECD packages must be developed.
- The ECD financing strategy must capitalize on all available funding sources, optimizing donor funding in the short term, with the aim of transitioning towards domestic funding sources in the long term.
- Implementation of these packages should be sequenced, to increase feasibility.
- Planning for expanded ECD service delivery must go beyond financing and include capacity building, setting out governance and institutional structures, as well as a robust monitoring and evaluation mechanism.

Looking ahead

ECD is one of the key cross-sectoral priorities and UNICEF Burundi will continue to work with partners and accompany the Government as it further expands its ECD programming. Discussions are ongoing on the coordination mechanisms required to take ECD to the next level in Burundi.

UNICEF has begun to disseminate the results of this study to partners and stakeholders at different levels, to mobilize resource and engage in advocacy and multisectoral ECD programming in Burundi. For example, the UNICEF team has invited partners to contribute to a single, joint budget for ECD to be held and allocated by the Government. This will provide greater transparency around the funding available and help identify potential duplication and gaps.

The approach used in this study also provides a model that could be replicable beyond Burundi. Given the documented shortfall in funding for ECD in many countries, the ability to demonstrate in such powerful financial terms the substantial returns on investment that ECD programmes can offer may be invaluable for securing increased expenditure on the health, well-being and education of young children.

Cost–benefit analysis of investment in early childhood in Burundi

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A 19-month-old child who recovered from severe acute malnutrition thanks to ready-to-use therapeutic food, is followed by a nurse from the Community Medical Center of Buyenzi.

Endnotes

1 Camaione, D., and Muchabaiwa, B., 'Quantifying Heckman: Are governments in Eastern and Southern Africa maximizing returns on investments in early childhood development', UNICEF ESARO Social Policy and Early Childhood Development Working Paper, UNICEF ESARO, Nairobi, February 2021, <www.unicef.org/esa/documents/quantifying-heckman>, accessed 19 August 2022.

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CROSS-CUTTING RESEARCH

JORDAN

What are the aspirations of young people in Jordan and what barriers do they face to achieving them?

EVALUATION OFFICE HQ, SOCIAL AND BEHAVIOUR CHANGE TEAM HQ, ROSA, ESARO

How can evolving community behaviours in relation to COVID-19 be tracked for real-time decision-making?

A student electrician repairs an electrical installation. He was forced to drop out of school at an early age to work to support his family. Thanks to Luminus Technical University College, he is now making up for his lost schooling. Amman, Jordan, 2022.

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JORDAN

Youth Transitions to Adulthood in Jordan: High Aspirations, Challenging Realities

What are the aspirations of young people in Jordan and what barriers do they face to achieving them?

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Editorial insights

This study provides a detailed picture of the challenges facing young people in Jordan as they transition from education to employment. It demonstrates the widening gap between aspiration and opportunity, and highlights the additional barriers faced by young women and Syrian refugees in the country.

INTRODUCTION

Youth unemployment in Jordan is 47 per cent – almost double the overall national unemployment rate. With nearly a third of the country's population aged between 16 and 30, including thousands of young Syrian refugees, there is an urgent need to provide young people with more options, both for their future and for Jordan's.

This research examined the experiences and expectations of almost 5,000 young people aged 16–30 years in the country, including more than 1,750 Syrian refugees, to build a detailed picture of the challenges they face. The aim was to use the insights gained to design policies and programmes that can support their transition to adulthood.

The research found that it typically takes young people about five years, after leaving education, to secure a job – and that many of these roles, particularly for Syrians, are in informal employment. This in turn means that many young people are unable to become financially independent.

Though young women are often more qualified than young men, they are even less likely to find work. This reflects embedded gender norms – meaning men are prioritized for available jobs – and additional restrictions are placed on women's time due to household and childcare commitments. Girls also face further constraints on mobility, related to work outside the house or after sunset.

One potential route to create more opportunities for young people is through entrepreneurship – something that Jordanian authorities have sought to encourage. Findings indicated that, although almost half of those surveyed were interested in starting a business, there were significant practical challenges in doing so.

UNICEF is now working with several ministries to shape policy and programme responses to the findings. These include improving vocational training and increasing the focus on digital skills, with the aim of creating opportunities for young people to work on a freelance basis.

Why was the research done?

Jordan's challenging economic situation over the last two decades has disproportionately affected young people and women. At the end of 2021, women's labour force participation rate was 14 per cent, one of the lowest in the world, while youth unemployment reached nearly 50 per cent.[1]

This is a particular concern, given that almost a third of the country's population are in the 16–30 age group.

This research sought to explore the aspirations and experiences of Jordanians and Syrians aged between 16 and 30. Specific objectives were:

- to understand youth transitions to adulthood, including progression through the education system, the transition from school to work, readiness for the labour market and skills acquisition, achieving economic independence and its link to family formation, and opportunities to obtain stable employment and decent work;
- to investigate the opportunities and risks associated with youth entrepreneurship, migration aspirations, civic engagement, youth gender norms and the use of media; and
- to generate evidence-based implications for policies and programmes relating to education, training, employment, entrepreneurship, family formation, and the civic and social engagement of young people.

How was the research done?

The research consisted of a nationally representative youth survey and qualitative focus group discussions.

For the survey, 2,854 households were selected via a random, stratified, multi-stage cluster sampling process. These included households in refugee camps. All people aged 16–30 in each selected household were invited to participate. In total, 4,538 questionnaires were completed; 2,781 with Jordanians and 1,757 with Syrians.

Focus group discussions were held with Jordanians and Syrian refugees aged 16–30 years. The groups were separated by gender and nationality (Jordanian or Syrian). Two were held with Jordanian young people with disabilities.

The approach of engaging with a representative sample of young people from the whole country, including those with disabilities, marked this research out from many previous studies in Jordan, which have focused primarily on the experiences of young refugees.

Limitations

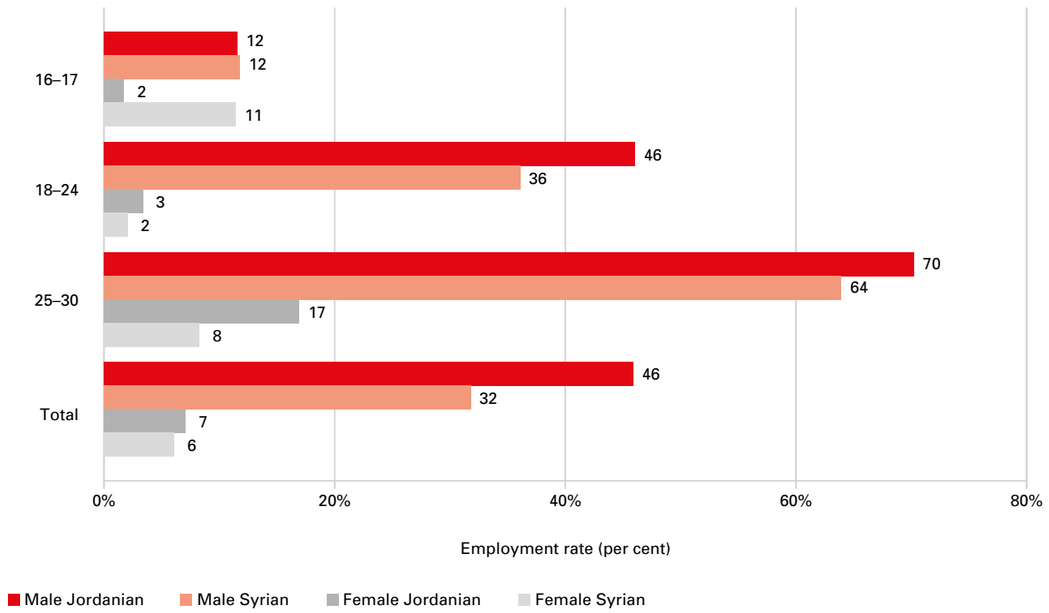
The main limitations of the research related to COVID-19 and its impact on data collection methods. For young people living outside refugee camps, questionnaires were completed in person between August and October 2020. Conversely, due to COVID-19 safety concerns, data collection in refugee camps took place over the phone in February and March 2021.

What are the key findings?

The research provided substantive evidence of the widespread difficulty young people have in transitioning from education to work. Five years after leaving school, less than three quarters of young men had obtained a job lasting longer than six months. Among men aged 25–30 years, 24 per cent of Jordanians and 35 per cent of Syrians were still not in education, employment or training (NEET).

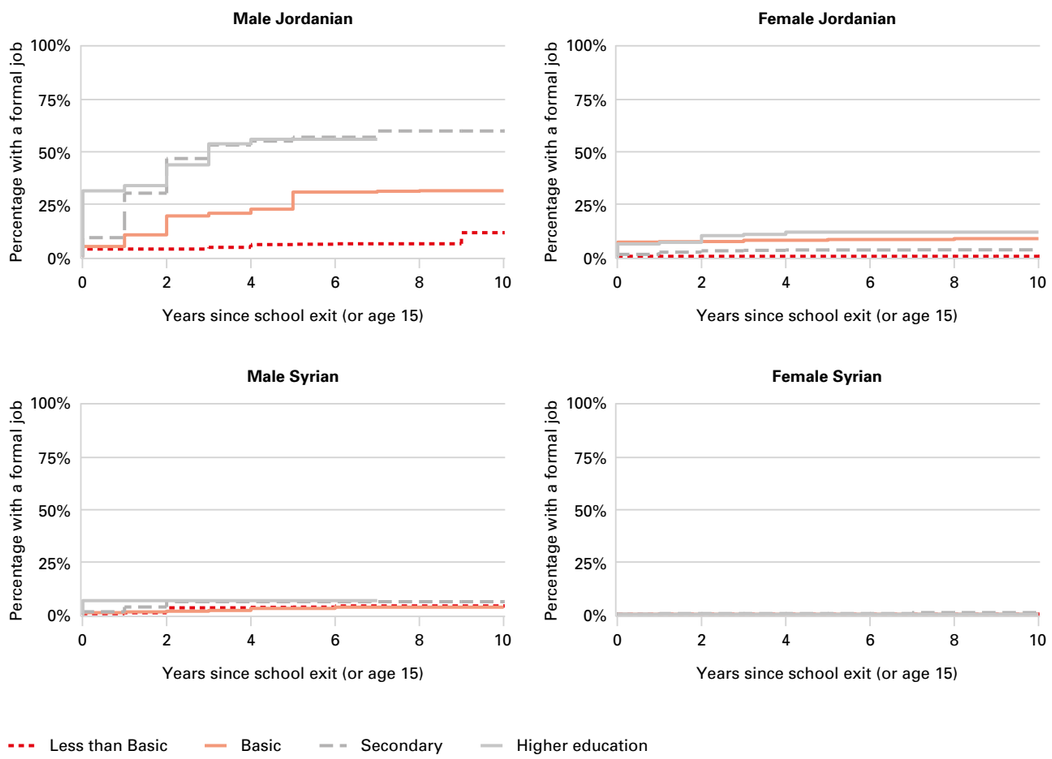
For women, the pattern is slightly different. Five years after leaving school, 35 per cent of young Jordanian women who attended higher education had obtained a job lasting longer than six months. However, among those with any other level of education, less than 15 per cent of women had obtained a job.

Figure 1: Employment (percentage of the population) and unemployment rate (percentage of the labour force), by gender and age group



Source: Authors' calculations based on Survey of Young People in Jordan (SYPJ)

Figure 2: Percentage of young people who obtained a formal job, by years since school exit (or the age of 15), education, gender and nationality



Note: Kaplan–Meier failure estimator. A formal job is defined as one with social insurance coverage.
Source: Authors' calculations based on SYPJ.

Although young women want to work, unemployment rates among women aged 18–24 years are around 90 per cent for both Jordanians and Syrians.

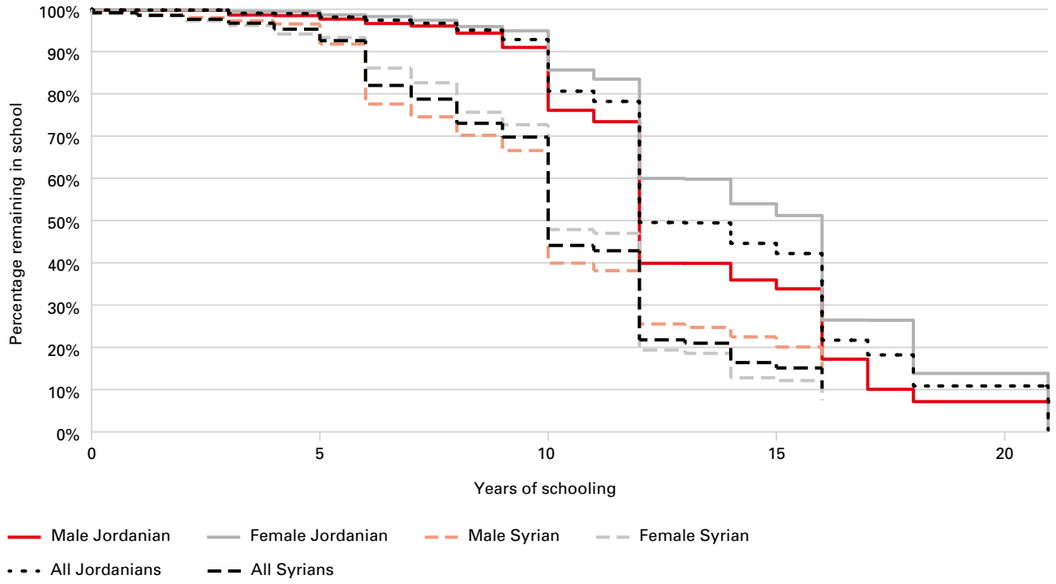
The work that is available to young people is mostly informal. Only Jordanian men with secondary or higher education have a substantial chance of securing a formal job, covered by social insurance. While this in part reflects Jordan's economic situation and lack of jobs overall, there are additional challenges for Syrians due to legal restrictions on the industries they can work in.

> **"The preferred jobs are those in the public sector … a job that is secure and fixed, unlike the private sector which may at any time lay off an employee."**
>
> Young Jordanian man, aged between 21 and 30 years

These employment figures stand in contrast to Jordan's educational progress over the past 30 years. Jordan has the highest average number of school years in the Middle East and North Africa region and 60 per cent of young Jordanian women, and 40 per cent of men, go on to higher education.

However, 30 per cent of young Syrians in Jordan drop out of school before completing the compulsory basic stage. This is due both to the economic situation and lower educational attainment in Syria before they came to Jordan.

Figure 3: Percentage of young people remaining in schooling, by year of completed schooling, gender and nationality



Source: Authors' calculations based on SYPJ.

Only 44 per cent of Syrians continue on to the secondary stage and 22 per cent continue on to higher education.

A substantial proportion of respondents had received some sort of training outside formal education, such as vocational training. In general, this was seen as valuable for personal development, but did not lead directly to a job.

Young women were found to be on average more qualified than young men, but less likely to find employment. Underlying gender norms appeared to influence this trend.

For instance, there was widespread agreement among young people that when jobs are scarce, men should have the priority. In addition, women reported a highly unequal distribution of unpaid work and care responsibilities in the household.

Significant concerns were raised about the harassment of women and girls in the workplace and, more generally, when walking alone or on public transport. These were particularly highlighted in focus groups with Syrians.

Young women's mobility was likely to be limited both by the perception and by the reality of harassment. 18 per cent of young Jordanian women and 45 per cent of young Syrian women reported that they were not allowed to go out alone or with friends due to safety concerns.

> **"A woman in a gender-mixed job would be exposed to different issues at work … I think it would cause her harm. If a young woman works at a store, for example, her brother would always need to accompany her, but he has work to go to, he cannot stay by her side all day. There might be other young men who would bother her…"**
>
> Young Syrian man, aged between 20 and 27 years, FGD 2

A focus of recent policy in Jordan has been to encourage entrepreneurship or self-employment. However, despite 48 per cent of young people saying they wanted to start their own business, only 10 per cent had effectively tried. For many, a lack of resources or financing prevented them from starting a business. Among those who have tried, 42 per cent started a business that failed; only 5 per cent started a business that continued.

Influence on policy and programming

The findings were presented to the Jordanian Government and widely disseminated through policy briefs focusing on gender, entrepreneurship and supporting youth aspirations. UNICEF is now working closely with the Ministry of Labour, Ministry of Youth and Ministry of Digital Economy and Entrepreneurship as they devise their policy responses.

A social behaviour campaign has been planned to transform public perceptions of vocational training. UNICEF is providing support to the Ministry of Labour to upgrade the curricula, equipment and infrastructure of government vocational training centres, to improve their quality and increase their attractiveness.

UNICEF is also partnering with the International Labour Organization (ILO) to provide career counselling to young people across the country, through the Ministry of Youth centres.

There has been an increased focus on digital skills training, with a view to giving more young people the skills to work on a freelance basis in the digital sector. This is backed by the development of a digital platform to match vulnerable young people with microwork tasks such as data collection, data entry and data analysis. These sorts of opportunities may be particularly valuable for young women who are seeking work on a flexible basis, to fit around childcare responsibilities. Digital work also removes the issue of mobility restrictions – both for young women and for refugees living in camps.

At the same time, UNICEF is looking at ways to raise awareness among young people of the requirements of the labour market, in terms of professions available and potential career paths – even in sectors not directly linked to young people's studies.

Recommendations

- Stimulate labour demand, particularly in the private sector, which is a critical step to ensure that young people are not permanently disadvantaged in their labour market trajectories in the aftermath of COVID-19.
- Provide more generous cash transfers linked to school enrolment to help students remain in school.
- Offer apprenticeships and internships in addition to existing vocational training to help young people transition to the labour market.
- Address gender norms that limit young women's mobility and opportunities – a critical area for future programming and policies.
- Open up more sectors to refugees to increase their chances of finding decent work.
- Update data on the opportunities available and the perceptions of young people in order to measure progress and become the focus of future initiatives.

Looking ahead

The wide-ranging findings mean that there is considerable scope for policy initiatives based on the research. UNICEF is collaborating with the ILO, United Nations Development Programme (UNDP) and United Nations Population Fund (UNFPA) to extend the regional Generation Unlimited programme to stimulate youth employment into Jordan. The findings of the initial landscape analysis, including consultation with young people in all regions, have been presented at a multisector workshop. UNICEF is now collaborating with the concerned UN agencies to agree on future plans for the programme in Jordan.

Future plans include conducting a survey of businesses that have previously benefited from UNICEF programmes to understand their current status and growth prospects, as well as challenges faced and sustainability plans, to guide the development of a support framework.

Youth Transitions to Adulthood in Jordan

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Sewing workshop at the Women's Capacity Building and Productive Center in Mafraq, 2022. Established by Dar Abu Abdallah in partnership with UNICEF, the center aims to create economic opportunities for youth and women and promote social cohesion.

Endnotes

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Youth volunteers take to the streets to mobilize against Covid-19, Ethiopia, 2021.

UNICEF Ethiopia/2020/Nahom Tesfaye

EVALUATION OFFICE, HQ;
SOCIAL AND BEHAVIOUR CHANGE TEAM, PROGRAMME GROUP, HQ; ROSA; ESARO

Time-series community-sourced data for rapid assessment of social behavioural changes, coping strategies and evolving needs during COVID-19

How can evolving community behaviours in relation to COVID-19 be tracked for real-time decision-making?

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Editorial insights

By conducting the Community Rapid Assessment (CRA) in 12 countries, this research was able to provide UNICEF programmes and governments with real-time data about protective practices, access to services, trust and coping strategies during the COVID-19 pandemic. This information was used promptly to inform country-level programming and risk communication initiatives.

INTRODUCTION

Global efforts to control COVID-19 transmission have relied on compliance with key protective behaviours, such as physical distancing, handwashing and, latterly, vaccine uptake. Understanding these behaviours and attitudes towards them – including how they differ among population groups and how and why they change over time – is crucial in designing an effective response.

However, with lockdowns preventing face-to-face surveys, policymakers had little insight into individual or community behaviours. To address this evidence gap, UNICEF's Evaluation Office developed the CRA, a new methodology designed to collect high-quality, real-time data via mobile phone to inform national risk communication and community engagement (RCCE) plans and to be more broadly applied to UNICEF sectors: water, sanitation and hygiene (WASH), child protection, education, and immunization programmes.

Conceptualized and led by the UNICEF Evaluation Office, in close collaboration with the Social and Behaviour Change Team, the CRA was deployed at scale, at speed and at low cost to provide a much-needed picture of individual and community behaviours in response to the pandemic. It was used in 12 countries across two regions, Eastern and Southern Africa and South Asia, with assessments repeated over multiple rounds to examine behavioural change over time. The approach has been further scaled in additional countries, including India and Zambia, and similar initiatives are being adapted in other regions across the globe.

Though findings differed between countries and, in some cases, between communities and demographic groups within a country, there were some common trends. In the first round of the survey, high levels of compliance with protective behaviours were reported but these declined over time. One key reason for declining compliance was that the initial fear of the virus itself was increasingly replaced by concerns about the economic impact of not being able to work.

The governments of the 12 initial CRA countries used the country-specific insights to shape their response programmes and risk-communication strategies, informing decision-making around school reopening, lifting lockdowns and targeting campaigns to key demographics for vaccine uptake.

Meanwhile, the successful deployment of the CRA across multiple countries demonstrated its viability as a method for capturing community-sourced data rapidly and repeatedly, to measure behavioural change over time.

Why was the research done?

From the very start of the pandemic, national efforts to combat the spread of COVID-19 relied on behaviours at the community and individual levels such as frequent handwashing, physical distancing and the use of masks. RCCE strategies were used to reinforce these behaviours.

The CRA initiative was designed to provide countries with a nationally weighted real-time evidence base to inform RCCE and broader sector programme strategies during the pandemic. The assessment consisted of short mobile phone surveys regarding protective behaviours related to COVID-19, trust and coping strategies during the pandemic.

Through a time-series approach (i.e., regular gathering of the same/similar data over time), the CRA aimed to provide rapid and consistent data on citizen perceptions and behaviours and what was driving those during the COVID-19 pandemic. The system also offered a view of ongoing changes in community dynamics and protective behaviours, trust and coping strategies over time. Additionally, it allowed comparisons with data points from previous months. Real-time analyses between rounds by country provided robust data and insights to adapt health campaigns and community interventions and to target hard-to-reach groups.

Deploying the CRA approach to multiple countries offered UNICEF's Evaluation Office and the supporting regional and country offices the opportunity to learn about the generation and use of rapidly produced citizen and community-sourced, time-series data for monitoring and evaluation.

How was the research done?

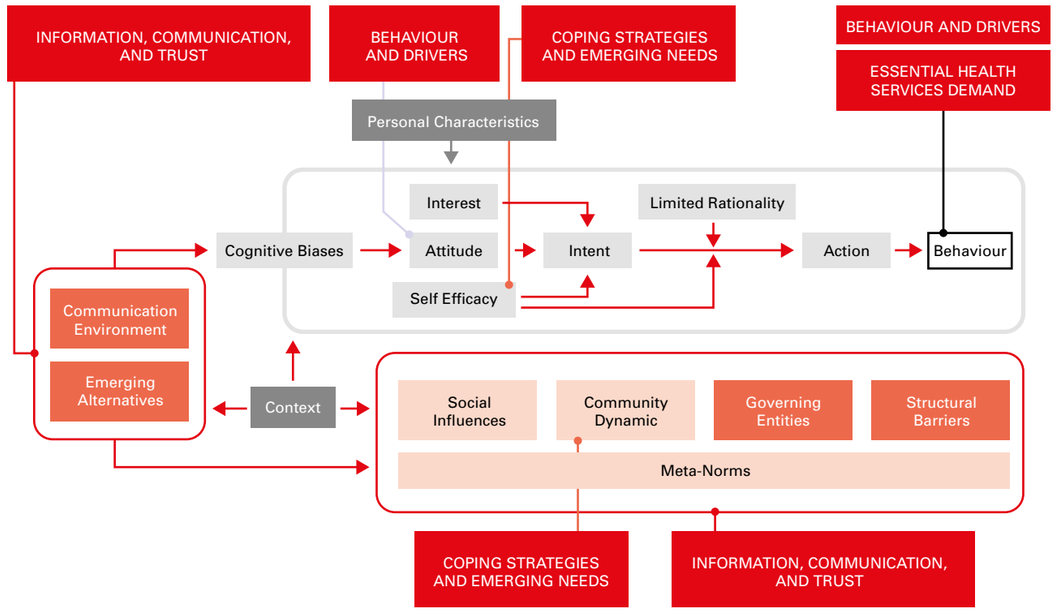
The CRA was conducted through mobile phone questionnaires using interactive voice response in 12 countries: four in South Asia (Afghanistan, India, Nepal and Pakistan) and eight in Eastern and Southern Africa (Angola, Ethiopia, Kenya, Madagascar, Rwanda, South Africa, South Sudan and Uganda).

The framework employed a random sampling model of 1,000 respondents per round, selected through random digit dialling. A standardized set of 20–25 questions was used in each country and each round of the CRA. This was important to provide consistency and enable comparison of how behaviours and attitudes evolved over time. However, additional questions were included in later rounds, in particular around attitudes towards a COVID-19 vaccine.

As it was imperative to understand not only what people's attitudes and behaviours were, but also the factors that influenced them, the questions were devised based on UNICEF's behavioural drivers model.

Building on this model, questions were asked about the prevalence of protective behaviours and barriers to adopting them; perceptions about risk; trust in institutions, community groups and information channels; coping strategies and emerging needs in relation to COVID-19; access to services; and willingness to be vaccinated. In addition, demographic information such as age, gender and level of education was gathered, to explore possible relationships between these variables and behaviours.

Figure 1: Rapid assessment components within the UNICEF behavioural drivers model



Source: United Nations Children's Fund, Time-series community-sourced data for rapid assessment of social behavioural changes, coping strategies and evolving needs during COVID-19, UNICEF, 2020, <https://www.unicef.org/rosa/media/16941/file/Final%20report%20-%20COVID-19%20Behavioural%20Drivers%20and%20Patterns:%20%20A%20longitudinal%20assessment%20from%20the%20South%20Asia%20region%2-0(November%202021).pdf> <https://www.unicef.org/evaluation/media/2436/file/CRA%20on%20COVID-19%20End-line%20Final%20Report:%208%20ESAR%20countries.pdf>, accessed 29 August 2022.

In total, around 40,000 people were surveyed across the 12 countries, with data collected at different and pivotal moments (i.e., school closures, vaccine readiness, etc.). The aim was to achieve a nationally representative sample in each country with a varied set of standard methods. In some countries, the CRA was conducted as a standalone survey, while in others it was incorporated into existing national or regional surveys.

Analysis was conducted in house by UNICEF's Office of Evaluation. The analyses of the CRA's core indicators were peer-reviewed and visualized by the Harvard Humanitarian Initiative and UNICEF. In addition, Statistics Without Borders worked on several secondary analyses to test the influence of behavioural drivers behind specific indicators in selected Eastern and Southern African countries.

All publicly available data were published online on a site built and maintained by the Harvard Humanitarian Initiative.[1]

Limitations

The requirement for rapid evidence to help an emergency response meant that data did not undergo as rigorous a quality assurance process as large in-person surveys would normally expect.

An analytical weight model was used to reduce the implicit bias in a mobile phone sample by adjusting the samples to national distributions of sociodemographic factors, such as gender, age, urban–rural composition and education level, and mobile phone ownership in each of the study countries.

There was some attrition between the different rounds of the survey – particularly in countries that conducted more rounds. The final number of respondents for each country also varied from slightly less than 1,000 to significantly larger samples in countries that targeted regional representative samples.

> **"Lessons learned from the response to the Ebola outbreak in West Africa in 2014–2015 suggest that to be effective, RCCE strategies should be evidence-based, making use of robust data on the knowledge, attitudes and practices (KAP) of specific communities, as well as how these practices are evolving over time."**
>
> ROSA report and ESARO report

What are the key findings?

For the participating countries, the most important findings were those that provided valuable insights to inform RCCE strategies at each stage, by identifying local barriers to the practice of protective behaviours, understanding access to essential services, providing information to strengthen messaging, and generating feedback on the effectiveness of existing outreach and campaigns.

Findings varied between countries. As an example of the differences, the charts below show responses to questions about barriers to following protective behaviours. In Nepal, respondents said that the main barrier they faced was a lack of infrastructure for handwashing, whereas in Pakistan the main barrier was that practising such behaviours put their job or relationship at risk. In Afghanistan, the two were broadly equal.

The findings, which also reflected the level of infections and restrictions in place at the time the survey was undertaken, were used to inform different policy responses in each country.

In later rounds, questions were asked about vaccine willingness – and substantial differences were found between countries. In Rwanda, Uganda and Kenya, younger respondents exhibited stronger support for being vaccinated. In South Africa, the opposite trend was observed, with willingness to be vaccinated increasing with age.

This appeared to reflect changing trends in individual risk perception about the virus, which also declined over time.

Another area of consistency between countries was the gap between how frequently respondents reported themselves practising protective behaviours and how frequently they saw others in the community practising them.

In Kenya, 88.9 per cent of respondents self-reported handwashing all or most of the time, but only 45.5 per cent perceived that "nearly everyone" or "a lot of people" were doing so. In Madagascar, 87 per cent said that they washed their hands frequently, but only 31 per cent thought others in their community did. This could suggest that self-reported rates of adoption do not accurately reflect practice on the ground.

For those responsible for engaging communities and communicating information about the virus, some of the most important findings related to people's trust in different sources of information. In South Asia, television and radio were the most trusted sources, followed by social media. In Eastern and Southern Africa, electronic media was the most trusted. In both regions, trust in information from government officials was relatively low.

In terms of vaccine hesitancy, approximately 81.1 per cent of all respondents in Eastern and Southern Africa appeared to be willing to take a COVID-19 vaccine if available to them – with broadly similar levels of willingness across different demographic groups.

For most countries, the CRA data points were supported by observational studies, which supplied insights about the ongoing dynamic and which help to contextualize the data locally, as well as through partnerships with youth organizations, faith leaders, women's organizations and other trusted community organizations identified through the survey.

One key data point observed was that, for countries with ongoing civil conflicts or humanitarian crises, COVID-19 acted as a compounding risk factor but was not necessarily the main area of daily concern.

Influence on policy and programming

This project successfully demonstrated that a real-time, cost-effective and rigorous research approach can be implemented quickly and effectively, to provide high-quality evidence that underpins programme decisions during an emergency. In the rapidly evolving situation of the pandemic, valuable information was gathered, analysed and shared at speed across UNICEF and with partners, governments and stakeholders.

The CRA countries and regions were able to apply evidence as it became available to inform their overall RCCE strategies and crucial decisions around issues such as the reopening of schools. More broadly, the findings from the CRA were shared with the UNICEF response team and United Nations clusters on WASH, nutrition, child protection, immunization and education. National steering committees and health ministries also made use of the data for policy discussions focused on how to change behaviours and address systemic issues that influence people's behaviours and norms.

The real-time insights generated through the CRA approach were triangulated with findings collected through other studies, including social listening reports, to shape targeted communication campaigns around social norms change and sector-driven responses around COVID-19.

For example, in the health sector, the CRA findings served as part of a wider body of evidence to demonstrate how demand for health and immunization was impacted by the secondary effects of the pandemic (e.g., income drops hampering women's ability to access public transport), and how health system inefficiencies reduced vaccine uptake as well as access to essential health services such as immunization and antenatal care.

Insights were then translated into policy responses. For example, in Rwanda, CRA insights were used to promote vaccine uptake during Rwanda's Ministry of Health "SINDOHOKA" ("I will never give up") national communication campaign.

In education, regional analysis of CRA data helped assess the level of exposure and adherence to remote learning opportunities across Eastern and Southern Africa. In Angola, data showing a 70 per cent willingness to send children back to school in March 2021 were critical in making the case for school reopening.

In Madagascar, the CRA data helped to adapt the messaging of RCCE programmes to each locality, to promote sustained adherence to COVID-19 "new standards of living" and to strengthen participatory, community-based interventions. They also helped to increase community engagement with traditional leaders and to promote key protective behaviours through community participation and mobilization.

The publication of the data via an online dashboard also meant that they were available to other parties – such as the media, academic researchers and the international development community.

Lessons learned from implementing the Community Rapid Assessment

With the projects proving the viability of the CRA model, the lessons below reflect researchers' observations about how the approach can be optimized and scaled to provide real-time evidence across UNICEF programmes and to be used by governments within national surveys.

- Rapid analysis and dissemination of the data proved key to the successful use of data findings.
- Disaggregation of findings by factors such as age, gender and location is vital to enable the development of targeted initiatives for behavioural change.
- While a core set of standardized questions allows comparison between countries, having the flexibility to include country-specific questions based on local priorities is likely to increase stakeholder buy-in.
- Optimal times for repeating the CRA are following substantial external changes or after the introduction of new policy measures, as data can then be compared with the baseline to assess the impact of change.
- Rapid, efficient and evidence-based responses built ownership of and trust in COVID-19 responses, through community-based processes.
- The real-time assessment approach provided strong collaboration and partnership between diverse levels of the COVID-19 response to adapt, use and strengthen rapid evaluative methods for practical lessons and insights.
- As the pandemic evolves into the new normal, adaptative evaluative approaches and efforts like the CRA could supply vital insights for the global fight against COVID-19 and the ongoing global vaccination drive, as well as being a useful tool for future public health emergencies.
- The prototyping and scaling up of robust evaluative approaches for programming are possible and useful to strengthen UNICEF capacity while also providing key insights to the value of behavioural data and social and behavioural evidence-based approaches.

Looking ahead

The CRA, and the data gathered through it, has already proved its worth in the short term, with its real-time approach providing insights to improve country responses. But there are also opportunities to use the data in the longer term. Future studies can use the data to assess the impact of specific campaigns around COVID-19 on attitudes and behaviours to inform future social and behavioural change programmes.

Beyond the findings themselves, one of the main objectives of the CRA was to enable UNICEF to learn about the generation and use of rapidly produced, community-sourced, time-series data for programming, monitoring and evaluation. The process has proven both effective and cost-effective and offers a model for the future. A key success factor was the pragmatic and focused collaboration across multiple UNICEF offices and different levels of UNICEF's COVID-19 response.

Although the system was piloted based on needs, it supplied many lessons for future rapid evaluative efforts and demonstrated the relevance of behavioural data and social and behavioural change programming for events like COVID-19. The Office of Evaluation has produced a step-by-step guide to the methodology used, which can serve as the basis for future CRA deployments, social and behavioural change programming, and other UNICEF community engagement-based approaches. It is also being used in this way in the Middle East and in Latin America and the Caribbean.

Most importantly, disseminating the CRA helped to reinforce the overall mission of UNICEF's work – that is, keeping the community at the centre of its programming. By systematically involving communities, the CRA approach will strengthen the case for integrating quality social and behavioural data into global frameworks for programming and policymaking.

Time Series Social Data for Assessing Behavioral Change During COVID-19

COVID-19 Behavioural Drivers and Patterns: A longitudinal assessment from the South Asia region

Community Rapid Assessment on COVID-19 End line Report: Behavioural Findings and Insights from 8 Eastern and Southern African Countries

"I am getting my shot!" exclaims a 16-year-old at Sri Sowdeswari Vidyalaya Model Metric Higher Secondary School, Vadavalli, Coimbatore, Tamil Nadu, India, 2022.

Endnotes

1 Global COVID-19 Community Rapid Assessment, <https://covid-19data.org>, accessed 19 August 2022.

REVIEW PANELS

PARTNERS AND FUNDERS

Review Panels

External Review Panel

Jan Vandemoortele (Chair)

Jan Vandemoortele is an independent researcher, writer and lecturer, retired from the United Nations having served for 30 years with various parts of it. A Belgian citizen, holding a PhD in development economics, he first worked for the International Labour Organization in Côte d'Ivoire, Kenya and Ethiopia. He then served with the United Nations Development Programme (UNDP) in Malawi and New York. He became chief economist of the United Nations Children's Fund (UNICEF), and later director of UNDP's Poverty Group, both in New York.

Jan's last position was United Nations Resident and Humanitarian Coordinator to Pakistan. He was the co-architect of the Millennium Development Goals, a topic on which he has published widely. As an independent researcher and lecturer, he is a critical friend of the Sustainable Development Goals, focusing particularly on inequality. He regularly speaks at universities around the world, at international conferences, at non-governmental organization and donor workshops, at high schools and for cultural associations. He is Associate Research Fellow at the United Nations University (UNU-CRIS), an advisory board member for various development institutes and global initiatives, and a referee for a number of peer-reviewed journals.

Yehualashet Mekonen

Yehualashet Mekonen is the Director of the African Child Observatory Programme at African Child Policy Forum (ACPF), a pan-African centre for policy research and advocacy on children. He has worked for more than 27 years in policy research, programme management, and development of research tools and methodologies. He developed the Child-Friendliness Index of African Governments, a quantitative framework for measuring governments' performance in realizing the rights and well-being of children. This composite index is being used as an advocacy tool to promote state accountability and greater commitment to children in Africa and beyond.

Yehualashet is also the lead author of the African Report on Child Wellbeing series, a flagship biennial publication by ACPF that monitors the extent to which African governments are living up to their obligations to international and regional child rights treaties. He has authored and co-authored numerous papers, articles and reports focusing on issues related to children. Before joining ACPF, Yehualashet was the Team Leader of Researchers at the Central Statistical Agency of Ethiopia. As an independent consultant, he has also served several non-governmental organizations, United Nations agencies and private firms in undertaking surveys and data analysis on a range of social, economic and governance-related issues.

Renu Singh

Renu Singh is the Executive Director of the Young Lives India Research to Policy Centre and is the Country Director of the Young Lives longitudinal research study at the University of Oxford, which is a 19-year study on childhood poverty. A trained Montessorian special educator with a doctoral degree on inclusion of children with disabilities, her interests include early childhood development, gender, equity and inclusion. She has more than 26 years of teaching experience in general and special education, teacher education, early childhood development, policy analysis, and research both in India and abroad.

Renu's previous posts include Director of the School of Rehabilitation Sciences at the University of Delhi and Director of Save the Children India. She has been a governing body member of the Central Board of Secondary Education for two terms, a member of the working group for formulating the National Policy on Early Childhood Care and Education, a member of various joint review missions, Ministry of Human Resource Development, as well as a member of expert committees in government institutions such as the Rehabilitation Council of India.

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CHINA

A Multi-country Study of Early Infant Feeding Decisions: China report

UNICEF China Office; World Health Organization; Capital Institute of Paediatrics; M&C Saatchi World Services

OFFICE OF GLOBAL INNOVATION HQ AND LACRO IN COLLABORATION WITH [COUNTRY OFFICES OF] PERU AND BRAZIL

Climate-based ensemble machine learning model to forecast dengue epidemics

Climate, Environment, Energy and Disaster Resilience Section, Panama, Republic of Panama; European Space Agency (ESA) Φ-lab; University of Sannio (Italy); Italian Space Agency; Sapienza University of Rome (Italy); Warsaw University of Technology (Poland); UNICEF Brazil; UNICEF Division of Data, Analytics, Planning and Monitoring (UNICEF DAPM); UNICEF Regional Office for Latin America and the Caribbean; UNICEF HQ New York – Office of Innovation; UNICEF Peru; Fluminense Federal University (Brazil); Wellcome Trust Foundation (UK); Barcelona Supercomputing Center (Spain)

LEBANON

Adolescent Girls Access to Primary Health Care Services in Lebanon: Barriers and Facilitating Factors

American University of Beirut; Ministry of Public Health; UNICEF Lebanon

MOROCCO

Teaching in COVID times in Morocco [published in French]

National Evaluation Authority (INE), Higher Council for Education, Training and Scientific Research of Morocco; UNICEF Morocco

PHILIPPINES

Philippines Early Childhood Education: Kindergarten to Grade 4 Longitudinal Research

Philippines Department of Education (DepEd); Australian Government Department of Foreign Affairs and Trade (DFAT) in the Philippines; Australian Council for Educational Research (ACER) with Southeast Asian Ministers of Education Organization-Regional Center for Educational Innovation and Technology (SEAMEO-Innotech); Assessment, Curriculum and Technology Research Centre at University of the Philippines Diliman (ACTRC); UNICEF Philippines

BRAZIL

Panorama of lethal and sexual violence against children and adolescents in Brazil

Brazilian Forum on Public Security; UNICEF Brazil

SOCIAL AND BEHAVIOUR CHANGE AND CHILD PROTECTION TEAMS, PROGRAMME GROUP, HQ

ACT: An evidence-based macro framework to examine how communication approaches can change social norms around female genital mutilation

United Nations Population Fund (UNFPA) and UNICEF HQ; UNFPA and UNICEF Eastern and Southern Africa Regional Office; UNFPA and UNICEF Western and Central Africa Regional Office; UNFPA and UNICEF offices of Ethiopia and Guinea; Frontieri, Addis Ababa; Sofonia University, Conakry; the Governments of Austria, France, Iceland, Italy, Luxembourg, Norway, AECID (Spain), Sweden, the United Kingdom and the United States of America; the European Union

LATIN AMERICA AND CARIBBEAN REGIONAL OFFICE

COVID-19 water, sanitation, and hygiene response: Review of measures and initiatives adopted by governments, regulators, utilities, and other stakeholders in 84 countries

Stockholm International Water Institute (SIWI); UNICEF LACRO

DIVISION OF DATA, ANALYTICS, PLANNING AND MONITORING HQ

Monitoring drinking water quality in nationally representative household surveys in low- and middle-income countries: Cross-sectional analysis of 27 Multiple Indicator Cluster Surveys 2014-2020

Netherlands Directorate-General for International Cooperation; UK Foreign, Commonwealth and Development Office; U.S. Agency for International Development; World Health Organization and UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene; UNICEF Multiple Indicator Cluster Surveys

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BURUNDI

Cost–benefit analysis of investments in early childhood in Burundi

Government of Burundi; Sustainable Development Goals (SDG) Fund; United Nations Capital Development Fund (UNCDF); United Nations Development Programme (UNDP); UNICEF Burundi

JORDAN

Youth Transitions to Adulthood in Jordan: High Aspirations, Challenging Realities

American University of Beirut; Mindset; Government of Canada; St. Catherine University; Government of the United States of America; University of Minnesota

UNICEF EVALUATION OFFICE, HQ; SOCIAL AND BEHAVIOUR CHANGE TEAM, PROGRAMME GROUP, HQ; ROSA; ESARO

Time-series community-sourced data for rapid assessment of social behavioral changes, coping strategies and evolving needs during COVID-19

Harvard Humanitarian Initiative; Statistics Without Borders; UNICEF Eastern and Southern Africa Regional Office; UNICEF Evaluation Office; UNICEF Regional Office for South Asia; UNICEF Social and Behaviour Change Team, Programme Group, HQ

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