

Assessment of Community-Based Approaches to Providing Ongoing Maternal and Child Health Care in Low Resource Countries during the COVID-19 Pandemic: A Scoping Review

Shafi U Bhuiyan^{1,2*}, Housne Begum^{2,3}, Sugandha Agarwal^{2,4}, Julia Atanasova², Indranee Adhikary², Priyanka Saxena², Shehla Khan² and Volf Gaby²

¹University of Toronto, Toronto, ON, Canada

²Ryerson University, Toronto, ON, Canada

³McMaster University, Hamilton, ON, Canada

⁴Ottawa Hospital Research Institute, Ottawa, ON, Canada

***Corresponding Author:** Shafi U Bhuiyan, University of Toronto and Ryerson University, Toronto, ON, Canada.

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Abstract

Introduction: As the pandemic continues, COVID-19-associated disruptions to healthcare services are likely to cause negative maternal and child health outcomes and disproportionately impact vulnerable populations in low-resource countries.

Objective: The present study undertakes a scoping review to assess how the COVID-19 pandemic affects the provision of maternal and child health care in low-resource countries. The overarching goals of the study were to examine the impact of the COVID-19 pandemic on community programs for maternal and child health, identify intended policies and recommendations for mitigating the impact, and understand gaps in knowledge to direct future actions.

Materials and Methods: Online databases were used to identify papers published from the onset of the pandemic on March 11, 2020, until December 20, 2020, from which we selected 16 publications describing the situation of maternal and child healthcare during the pandemic in low-resource countries, mainly from sub-Saharan and South Asian countries.

Results: There was a projected as well as calculated negative impact on maternal and child health programs in regards with access to care, routine childhood immunization, child nutrition, and antenatal and reproductive services in low and middle-income countries (LMICs). There were efforts to strengthen national-level policies to mitigate the effects of the pandemic on these programs and continue the benefits to the vulnerable population.

Conclusion: LMICs face a unique challenge in maintaining maternal and child health care services during the pandemic. The policies and recommendations from these countries should be based on local context with an intent not to de-prioritize non-COVID disease morbidity. Future efforts in the wake of any pandemic should be directed by background knowledge of the necessity to continue essential maternal and child services, improved integration of existing infrastructure, and the need for updated technology for faster data gathering.

Keywords: COVID-19; Child; Health Programs; Maternal; Low Resource Countries

Abbreviations

DALY: Disability Adjusted Life Years; MCH: Maternal and Child Health; LMIC: Low and Middle-Income Countries

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Introduction

The COVID-19 pandemic has substantially impacted the lives and health of people worldwide, with millions of confirmed cases and hundreds of thousands of deaths, the immediate medical effects of the pandemic are obvious and substantial. The pandemic will likely continue to negatively impact human health for years to come, especially among individuals experiencing pandemic-related stress during sensitive periods of their life course.

As the coronavirus pandemic extends to Low and Middle-Income Countries (LMICs), there are growing concerns about the risk of COVID-19 in vulnerable populations. Public health interventions and community engagement are some of the most important and effective ways to stop further amplification of the outbreak and ensure that individuals and groups take protective measures. However, LMICs face additional challenges of strained resources, disparity in resource allocations, and potential amplification of barriers to access health care due to strict lockdown measures, which put at risk not only the population but also the governmental efforts to mitigate the impact.

The diversion of resources to efforts for containing the additional burden of COVID-19 can potentially have an indirect impact on ongoing community programs. In LMICs, where a larger proportion of the population depends on publicly-funded social programs, interruption of these services can translate into an increased burden of diseases especially in vulnerable groups. Disrupted schooling, lack of access to school feeding schemes, reduced access to health facilities, interruptions in vaccinations, lack of antenatal and reproductive services and other maternal, newborn, and child health (MNCH) programs can have a long-lasting effect on the nation's health indicators which may require extreme measures to recover.

Objectives of the Study

The objectives of this scoping review are to examine how the COVID-19 pandemic affects the provision of ongoing maternal and child health care in low-resource countries, and in particular the following:

- To understand the impact of the COVID-19 pandemic on maternal and child health programs.
- To reflect on recommended policy changes to mitigate the negative impact on existing maternal and child health programs.
- To collect available information and understand gaps in knowledge to direct future actions.

Materials and Methods

Eligibility criteria

To be included in the review, papers needed to focus on specific dimensions of the burden imposed by the COVID-19 pandemic on the provision of maternal and child-care in low-resource countries and the types of programs available in these regions concerning the targeted population. Peer-reviewed journal papers were included if they were: published between the period of March - December 2020, written in English, and involved human participants. Articles must describe how access to care and treatment by mothers and children, health outcomes, and prenatal care, are affected by the pandemic, as well as describe the overall impact of the health and wellbeing of the targeted population. Quantitative, qualitative, and mixed-method studies were included to consider different aspects of understanding the impact of the COVID-19 pandemic on community programs for maternal and child health. Papers were excluded if they did not fit the conceptual framework of the study or focused on maternal and child issues but did not consider the pandemic's impact.

Search strategy

This scoping review used established scoping review methodology for peer-reviewed and grey literature.

An extensive search was conducted through PubMed, Google Scholar, Medscape and Up-to-date using keywords, including COVID-19, Maternal and Child Health, and Community Programs. A grey literature search was performed, and cross-references were screened for relevant articles that did not appear in the database searchers. Papers and reports on topics that addressed our objectives were included.

Our initial search produced 2,196 articles in Pubmed, 1,200 titles on Google Scholar, and none on Medscape or Up-to-date. and collected titles were distributed between the authors to screen the title and abstracts for relevant articles. After initial screening of the titles, duplicate articles were removed. A total of 180 full texts were independently read by the authors to determine the inclusion of data extraction for the narrative review. Finally, a total of sixteen full texts were included for data collection. Data was collected on study characteristics such as study design, country of origin, participant characteristics, data collection methods, intervention or program description, outcome measurements, and recommendations offered.

Results and Discussion

Impact and implications of COVID-19 on maternal and child health programs

Children’s immunization, nutrition, safety, and access to health care

Outcomes related to child health care programs are summarised in table 1. The literature projects a serious impact on child health and mortality due to a decrease in access to health care or immunization programs are appalling. Based on the scenario by Robertson, *et al.* [1] an additional 253,500 to 1,157,000 child deaths are expected over six months, with the least severe coverage reduction (9.8% - 15%) to the most severe coverage reduction (39.3% - 51.9%). Another estimation model based in Indonesia calculated a reduction in routine childhood immunization from a baseline of 57.9% before the pandemic to 43% with a 20% coverage reduction [2]. Developing countries such as Pakistan, Brazil, and Nigeria, reported a noticeable decline in the demand for vaccines during the pandemic and a decline in the total number of daily vaccinations, with up to 8,438 children missing daily vaccinations [3-5]. Reductions in coverage resulted in an increased incidence of measles and delays in polio vaccination programs, posing a major threat to efforts in containing vaccine-preventable diseases in LMICs [3,4,6,7]. Measures such as school closures to maintain social distancing, led to a loss of access to nutritious meals for millions of young school children. A Thailand-based study of school children reported that a few weeks of missed meals can cause up to a 10% loss of body weight [8]. The negative impact stretches out to involve neonates, an extremely vulnerable group, with an expected 138,398 children dying due to a reduction in breastfeeding practices during the pandemic [9].

| Study | Indicator | Data source/Country | Measured outcome | Recommendation |
|------------------------------|-------------------------------|--|---|---|
| Robertson, <i>et al.</i> [1] | Immunization Nutrition | Scenario building and projected mortality using the Lives Saved Tool estimated maternal and under-5 child deaths in 118 low-income and middle-income countries, under three scenarios in which the coverage of essential maternal and child health interventions is reduced by 9.8-51.9% and the prevalence of wasting is increased by 10-50%. These countries account for 97.7% of global deaths in children younger than 5 years and 99.6% of global maternal deaths. | The least severe scenario (coverage reductions of 9.8-18.5% and wasting increase of 10%) over 6 months resulting in 253,500 additional child deaths. The most severe scenario (coverage reductions of 39.3-51.9% and wasting increase of 50%) over 6 months resulting in 1,157,000 additional child deaths. These deaths represent an increase in 9.8-44.7% in under-5 child deaths per month | A large increase in children deaths should guide policymakers to establish guidelines for service maintenance during pandemic and allocate adequate resources for MCH services. |

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| Suwantika, <i>et al.</i> [2] | Immunization | No actual data, interpretation based on scenario building models with estimated 5%, 10%, or 20% reduction in immunization coverage. Indonesia | Reduction in childhood immunization coverage from baseline of 58% to 53%, 50%, and 43% at 5%, 10%, and 20% coverage reduction, respectively | There is a need for mitigation programs to ascertain immunization programs remain fully accessible. |
| Chandir, <i>et al.</i> [3] | Immunization | Individual immunization records from real-time provincial electronic immunization registry Sindh province, Pakistan | 52.5% decline in the daily average total number of vaccinations 8,438 children per day missed immunization during lockdown. | There is a need for tailored interventions to promote immunization visits and safe service delivery. |
| Matos, <i>et al.</i> [4] | Immunization | No actual data, interpretation based on reflection and indirect observation of the immunisation program Brazil | Reduction in vaccine demand Increased incidence rate of measles | There is a need for improved national coordination A decrease in confidence in public health actions may negatively affect the country's historic immunization culture, prestige, and credibility of the national immunization program. |
| Ogundele, <i>et al.</i> [5] | Immunization | No actual data, reflection on the status Nigeria | A complex interplay of lockdown measures and the existing challenges of routine vaccination program will further weaken vaccination service provision resulting in even poorer uptake of routine vaccination services. | There is a need to prioritize routine childhood vaccination as an essential health service during this pandemic. |
| Din, <i>et al.</i> [6,7] | Immunization | Estimation from the national data resource Pakistan | 40 million children missed their polio vaccination | Polio vaccinations and campaigns to aid in protecting children's lives in outbreaks must be resumed. There is a need to track unvaccinated children to protect against outbreaks. |

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|---------------------------------|----------------|--|---|---|
| Abbas, <i>et al.</i> [11] | Immunization | Available public domain data, with high and low impact scenario-building Countries of the African continent | A higher benefit to risk ratio for death prevention in vaccinated children than unvaccinated children | Routine childhood vaccinations should be continued as a definite benefit from death prevention. |
| Mayurasakorn, <i>et al.</i> [8] | Nutrition | Students enrolled in schools Thailand | 270 million students missed meals during 43 days of school closure, leading to 1-2 kg, or 5-10%, of body weight loss | There is a need for policy to ensure food is supplied to students. |
| Busch-Hallen, <i>et al.</i> [9] | Breastfeeding | Estimation of additional deaths using Alive and Thrive cost of not breastfeeding tool 129 LMICs | Small (5%), moderate (10%), medium (25%), or severe (50%) relative reductions in the prevalence of breastfeeding resulting in 16,469; 32,139; 75,455; and up to 138,398 children over 1 year respectively | There is a need for continued governmental support to promote and protect breastfeeding in line with the Global Breastfeeding Collective's Call to Action |
| Siedner, <i>et al.</i> [10] | Access to care | Databases from eleven primary healthcare clinics Rural Kwa-Zulu Natal (KZN), South Africa | Reduction in child healthcare visits at the lockdown (-7.2 visits/clinic/day, 95% CI (-9.2, -5.3)) | There is a need for efforts to care for high-risk populations and to provide catch-up vaccination programs. |

Table 1: Impact and implication of COVID-19 on children routine immunization, nutrition programs, and access to care.

| Study | Indicator | Data source /Country | Measured outcome | Recommendation |
|------------------------------|--------------------|--|---|--|
| Robertson, <i>et al.</i> [1] | Maternal mortality | Scenario building and projected mortality using Lives Saved Tool to estimate the maternal and under-5 child deaths in 118 low-income and middle-income countries, under three scenarios in which the coverage of essential maternal and child health interventions is reduced by 9.8-51.9% and the prevalence of wasting is increased by 10-50%. These countries account for 97.7% of global deaths in children younger than 5 years and 99.6% of global maternal deaths. | Least severe scenario (coverage reductions of 9.8-18.5% and wasting increase of 10%) over 6 months resulting in 12,200 additional maternal deaths. Most severe scenario (coverage reductions of 39.3-51.9% and wasting increase of 50%) over 6 months resulting in 56,700 additional maternal deaths. These deaths represent a 8.3-38.6% increase in maternal deaths per month, across the 118 countries. | An increase in children deaths should guide policymakers to establish guidelines towards provision of MCH services and allocate adequate resources for the same. |
| Bell, <i>et al.</i> [12] | Maternal mortality | Estimated projection calculated by Disability Adjusted Life Years (DALY) lost. Uganda | 486 excess maternal deaths for six months Incurring 31,343 DALYs lost | Although public health responses to COVID-19 should be prioritized, prior morbidities should not be de-prioritized. |

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|---------------------------------|--|---|---|--|
| Ashish, KC., <i>et al.</i> [13] | Maternal health care service utilization | Retrospective observational institutional based. Empirical evidence from nine hospitals in Nepal. Pregnant women enrolled in other studies. Nepal | 52.4 % reduction in institutional delivery Increase in neonatal mortality from 13 to 40 per 1000 live births Reduction in breastfeeding by 3.5% Increased stillbirth from 14 per 1000 total to 21 per 1000 total births | No specific recommendations given. This study focused on understanding the indirect impact of COVID-19 on the disruption of health service delivery for facility-based maternal and neonatal health potentially derailing on-track efforts to achieve the Sustainable Development Goals by 2030, especially for maternal and neonatal survival in Nepal. |
| Temesgen, <i>et al.</i> [15] | Maternal health care service utilization | Community-based cross-sectional study West Shoa Zone, Central Ethiopia | Prevalence of maternal health service utilization during the pandemic - 64.8% Factors determining utilization include: maternal education status, travel distance to access care, the income level of the mother, lack of fear for COVID 19 infection, use of precautions, no requirement for husband's permission. | Empowering mothers and creating awareness of COVID-19 prevention is recommended to improve maternal health service utilization during the pandemic. |
| Riley, <i>et al.</i> [14] | Reproductive and sexual health morbidity | Scenario building and projected impact by Adding It Up methodology 132 LMICs | 15,401,000 additional unintended pregnancies with a 10% decline in use of short- and long-acting reversible contraceptives. 3,325,000 additional unsafe abortions with a 10% shift in abortions from safe to unsafe. 28,000 additional maternal deaths. 1,745,000 additional women experiencing major obstetric complications. 2,591,000 additional newborns experiencing major complications, with a 10% decline in service coverage of essential pregnancy- related and newborn care. | There is a need for policies to ensure ongoing care, strengthen supply chains, prevent resource diversion, and facilitate the delivery of services at every level. |
| Weinberger, <i>et al.</i> [16] | Contraception practices | Scenario building based on data from 2019 commodity gap analysis Kenya and Nigeria | Potential short-term change in contraceptive method use. | Demand supply chain, development of modeling the impact of COVID-19 on reproductive health options (MICRO) to allow countries to collect data and expand on results. |

Table 2: Impact and implication of COVID 19 on maternal health and access to care.

Potential factors impacting the reach of these programs, in addition to social distancing, include vaccine supply disturbance, blocked borders, or elevated shipment costs leading to the deferment of vaccination campaigns [6]. Immunization rates were noticeably higher in children born in hospitals as well as in mothers with higher education status. Slums, rural communities, and polio-endemic high-risk sub-districts noticed low access to child health care visits as well as immunization rates [3,10].

Maternal antenatal services, reproductive and contraception, and access to health care

The ongoing pandemic created anxiety towards maternal care, not only due to lockdown measures but also due to the fear of inadvertent exposure to the coronavirus while accessing care and the risk of vertical transmission from the mother to the fetus. The outcomes related to maternal health service utilization and its impacts are detailed in table 2. The projections for 118 LMICs by Robertson, *et al.* conferred an 8.3% - 38.6% increase in maternal deaths per month, across these countries [1]. In countries like Uganda, with a lower projection of COVID-19 burden per head based on population age structure, lockdown measures were presumed to cause an excess of 486 maternal deaths for six months [12].

There was a noted decline in institutional-based deliveries and maternal health service utilization that negatively impacted maternal health indicators. A Nepal-based study showed a 52.4% reduction in institutional delivery as well as a significant increase in neonatal mortality from 13 to 40 per 1000 live births [13]. A community-based prevalence study from Ethiopia by Temesgen, *et al.* demonstrated a prevalence of 64.7% for health care services utilisation during the pandemic. Some identified barriers for potential reduction included fear of getting COVID-19 while traveling to the service (36.5%), fear of COVID-19 transmission from health care providers (32.3%) and lack of sanitizer or water in a health facility (32%). Service utilization was higher in women with higher levels of education and incomes, requiring travel less than 24 km to access care, using precautions to prevent infection, and not requiring the husband's permission.

Barriers to access also noticeably changed the contraceptive and reproductive choices available to women to engage in safe sexual practices. With a 10% decline in reversible contraceptives or shift in abortions from safe to unsafe, Riley, *et al.* projected 48,558,000 additional women with an unmet need for modern contraceptives, leading to 15,401,000 additional unintended pregnancies, and 3,325,000 additional unsafe abortions, with an additional 1000 maternal deaths in 132 LMICs [14].

There is a strong need to realize that the impact of the COVID-19 public health response on non-COVID-19 diseases could outweigh the direct impact of an extensive COVID-19 outbreak itself. In countries with lower COVID-19 related morbidity compared to other countries, policymakers should ensure that recommendations are tailored to local contexts and essential non-COVID morbidities are not de-prioritized [12]. Sociodemographic factors unique to LMICs, especially pertaining to women, demonstrate the need for women's empowerment and awareness to improve access to care more so in times of crisis [15].

Policies and recommendations to mitigate the effects of COVID 19 on maternal and child health

As a highly communicable disease, COVID-19 continues to ravage the world's health and economy. Children and adults with underlying comorbidities, such as diabetes, hypertension, undernutrition, and overweight/obesity, are strikingly vulnerable to serious illness and death from COVID-19. Yet, COVID-19 response measures, such as self-isolation, social distancing, and lockdowns of communities, can lead to poor management of key risk factors, including limited access to preventive care in primary care settings. The choices that governments make in responding to the pandemic will have consequences for maternal and child health. Additionally, insecure economic conditions, restricted travel and access to health care services, delayed vaccination schedules, and shuttering of educational facilities further compound poor health conditions for young children, especially in low- and middle-income countries.

While public health experts advocate for social distancing, there is also a need for ensuring access to routine care. A recent modelling study of estimates of the impact of COVID-19 suggests that reduced coverage of four childbirth interventions (parenteral administration

of uterotonics, antibiotics, and anticonvulsants, and clean birth environments, which reduce mortality due to postpartum haemorrhage, maternal sepsis, and eclampsia) would account for approximately 60% of additional maternal deaths [1]. If countries are successful in minimising disruptions to their health systems and maintaining utilisation of maternal and child services, the number of additional deaths will be at the smaller end of the estimates.

As has been shown in several countries, access to health care for even the most remote and hard-to-reach populations can happen with an effective community health extension system. Ethiopia’s health extension workers (HEWs) and Nepal’s female community health volunteers (FCHVs) showcase successful models of mobilizing community health workers (CHWs) to deliver vaccines, nutritional supplements, health and nutrition education, and even reproductive, maternal, and newborn care. The current recommendations are to remunerate such CHWs rather than rely on volunteers.

During the COVID-19 pandemic, reductions in breastfeeding prevalence will plausibly occur due to limitations in the provision and use of health services and disruptions to the enabling environment. Although some determinants of breastfeeding could be positively affected by the pandemic, we hypothesise that there are negative social, economic, corporate, and health-system forces affecting the mother’s decision to breastfeed that should be considered [9]. On the other hand, data analyzed from the Africa Health Research Institute Health and Demographic Surveillance System, which included prospective data capture of clinic visits at eleven primary healthcare clinics in northern KwaZulu-Natal found no change in total clinic visits/clinic/day from prior to and during the lockdown (-6.9 visits/clinic/day, 95%CI -17.4, 3.7) or trends in clinic visitation over time during the lockdown period (-0.2, 95%CI -3.4, 3.1) [10]. Further analyses are required to determine if these trends are maintained, and particularly monitor access to childcare and immunizations as a result of the trends reported here.

In the wake of closed formal education systems, countries could mobilize informal interventions, including CHWs and women’s and community support groups, to deliver health and general education. These systems are already in place in many LMICs and could be revitalized and repurposed for continuing education. Several stunting-reduction exemplar countries have shown the potential utility and impact of these mechanisms on stunting reduction. Having learned from their experience with Ebola, Senegal’s CHW program has proven to be an effective mechanism for communicating health best practices to the community. Nepal’s FCHV and Ethiopia’s HEW programs have also had successful health and nutrition counseling components [19].

Safeguarding the health and wellbeing of women and children is a key policy response and must be based on the best evidence of what works, so that gains in survival of women’s and children’s health are not reversed. Governments, donors, and development partners will together need to strategize and reprioritize investments for the COVID-19 era using data-driven decision making. Effective execution of strategies will require money, political will, and commitment, and international unity; these will be pivotal drivers, securing not only COVID-19-specific gains but also overall protection of global health.

| Study | Indicator | Data source / Country | Implemented strategy/ recommendation |
|------------------------------|---|--|--|
| Robertson, <i>et al.</i> [1] | Access to routine maternal and childcare services | Scenario building and projected mortality using Lives Saved Tool to estimate the maternal and under-5 child deaths in 118 low-income and middle-income countries, under three scenarios in which the coverage of essential maternal and child health interventions is reduced by 9.8-51.9% and the prevalence of wasting is increased by 10-50%. These countries account for 97.7% of global deaths in children younger than 5 years and 99.6% of global maternal deaths. | Policymakers should prioritise the following interventions: <ul style="list-style-type: none"> Maintaining coverage of four childbirth interventions (parenteral administration of uterotonics, antibiotics, and anticonvulsants, and clean birth environments) would save 60% of additional maternal deaths. Maintaining coverage of antibiotics for neonatal sepsis and pneumonia and oral rehydration solution for diarrhoea would save 41% of additional child deaths. <p>Disruption of these interventions—childbirth and child curative services—cannot be mitigated through post outbreak activities or easily averted through vertical health programmes outside of the public health system.</p> <p>The vulnerability of these interventions to disruption, and their substantial consequences for mortality, highlight the need to ensure provision of these services throughout the pandemic and support citizens in using these services as safely as possible.</p> |

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| <p>Busch-Hallen, <i>et al.</i>[9]</p> | <p>Breastfeeding</p> | <p>Estimation of additional deaths using the Alive and Thrive cost of not breastfeeding tool; hypothetical effect of small (5%), moderate (10%), medium (25%), or severe (50%) relative reductions in the prevalence of breastfeeding due to COVID-19 disruptions would result in 16,469 (small reduction), 32,139 (moderate reduction), 75,455 (medium reduction), and up to 138,398 (severe reduction) child deaths across 129 LMICs.</p> | <p>The estimated indirect impacts of COVID-19 pandemic on postnatal care and facility and community-based lactation support and counselling can have long-lasting effect. Therefore, governments must consider the substantial morbidity and mortality repercussions from pandemic-related disruptions to breastfeeding.</p> |
| <p>Siedner, <i>et al.</i> [10]longitudinal cohort study Setting Data were analyzed from the Africa Health Research Institute Health and Demographic Surveillance System, which includes prospective data capture of clinic visits at eleven primary healthcare clinics in northern KwaZulu-Natal Participants A total of 36,291 individuals made 55,545 clinic visits during the observation period. Exposure of Interest We conducted an interrupted time series analysis with regression discontinuity methods to estimate changes in outpatient clinic visitation from 60 days before through 35 days after the lockdown period. Outcome Measures Daily clinic visitation at ambulatory clinics. In stratified analyses we assessed visitation for the following sub-categories: child health, perinatal care and family planning, HIV services, non-communicable diseases, and by age and sex strata. Results We found no change in total clinic visits/clinic/day from prior to and during the lockdown (6.9 visits/clinic/day, 95%CI -17.4, 3.7)</p> | <p>Access to care</p> | <p>Prospective data capture of clinic visits at eleven primary healthcare clinics. Study assessed visitation for the following sub-categories: child health, perinatal care and family planning, HIV services, non-communicable diseases,</p> <p>Rural Kwa-Zulu Natal (KZN), South Africa.</p> | <p>Maintaining healthcare access during the pandemic requires a careful balance of primary healthcare provision and protection of vulnerable populations from COVID-19 infection. South Africa has taken steps to increase social support to counteract the economic disruptions from the pandemic and control measures. Mitigating longer-term consequences will likely require governments and development partners to increase access to employment and other social support services during the epidemic.</p> |
| <p>Bell, <i>et al.</i> [12]including Uganda, are now widely reported. Although the impact of COVID-19 on African populations has been relatively light, it is feared that redirecting focus and prioritization of health systems to fight COVID-19 may have an impact on access to non-COVID-19 diseases. We applied age-based COVID-19 mortality data from China to the population structures of Uganda and non-African countries with previously established outbreaks, comparing theoretical mortality and disability-adjusted life years (DALYs]</p> | <p>Health services disruption during COVID-19 outbreak</p> | <p>Estimated projection calculated by DALY lost. Study applied age-based COVID-19 mortality data from China to the population structures of Uganda and non-African countries with previously established outbreaks, comparing theoretical mortality and disability-adjusted life years (DALYs) lost.</p> <p>Uganda</p> | <p>Study suggests that, based on DALYs lost, the impact of the COVID-19 public health response on non-COVID-19 diseases could outweigh the direct impact of an extensive COVID-19 outbreak. Although public health responses to COVID-19 should be prioritized, prior morbidities should not be de-prioritized. COVID-19 is predicted to cause considerably less direct impact than elsewhere, and the response in Uganda, and by extension elsewhere where population age structure is similar, should be strongly tailored to local context.</p> |

Table 3: Strengthening existing health care delivery infrastructure.

Knowledge gaps and future directions

Data (short term and long term) collection to make future policies

The current pandemic has proved that there will be an acute and potentially long-lasting negative impact on the determinants of maternal and child health if essential service interruption continues to occur in the wake of the pandemic. The predictive models and scenario building projections have conferred on the additional morbidity and mortality that LMICs will witness during the COVID-19, however, there is limited availability of real-time data [1,12,14]. Health Management Information System (HMIS) developed by the Global Financing Facility (GFF) for Women, Children, and Adolescents in collaboration with the World Bank's Development Research Group (DECRG) is a timely effort to collect data from multiple countries, but is not without limitations, including incompleteness, variability and confounding [17]. This lack of data creates a definitive gap not only in the concurrent knowledge to be able to create short-term policies but also for ongoing data collection system to reflect on long-term goals. Countries and funding organizations should consider investing in the creation of national registries and digital tools for a more robust real-time data collection from all involved health sectors. Initiatives like Modeling the Impact of COVID-19 on Reproductive Health Options (MICRO), an Excel-based tool used in Kenya and Nigeria, integrated data from the Reproductive Health Supplies Visualizer [24] on public sector shipments in recent years to contrast potential changes to recent trends in contraception use [16,18]. The availability of tools like these creates an opportunity for countries to explore their customized mitigation scenarios to ensure efficient service provision.

In a global move towards competent health care systems, adequate resources must be placed to create reliable, consistent, easily accessible, and collaborative data sharing tools amongst countries. This will allow us to plan effective short-term mitigation strategies, timely interventions, and learn from other countries' experiences to have the least impact on maternal and child health determinants. Collective information and analysis across multiple countries can help identify common challenges and will be valuable tools for policymakers to create customized long-term policies in any further such event.

Long term capacity building and sustainability

The way to mitigate the effects of any future crisis like COVID-19 on essential maternal and child care lies in the realization that there is a strong interplay between multiple interdependent factors if any long-term and sustainable positive outcomes are to be achieved. There has to be a strong political will to consult and involve all stakeholders in decision making; active involvement of non-health sectors to address the social issues of food insecurity, gender disparities, girls' education, improving living conditions; and continual efforts by indirect and direct health sectors to promote overall access to health services and improve the standard of care [19].

Countries should work towards dedicated investments in MCH services to strengthen existing health systems while working towards expanding infrastructure to ensure that there is easy and safe access with minimal interruption and escalation in the cost of MCH care at times of crisis. Countries like Ethiopia, Nepal, and India have shown success in access to essential health services and improving health determinants by reaching out to remote areas through training and integrating community health care workers (CHW) [20-22]. There is growing evidence for the cost-effectiveness of CHWs in small-scale and vertical programs [23], which further strengthens the vital role they can play during pressured health systems. The resulting benefits would be larger in LMICs where large numbers of CHW already exist. In places where community health extension programs currently do not exist, countries may want to consider piloting or adopting such a program, rather than depending on volunteerism to supplement primary health care, as a short- or long-term solution [24].

Restructuring the health care system and rapidly adopting novel technology, such as telephone triage, virtual consultations, online meetings, and home monitoring for care delivery, largely in the developed world [25-27] should be extensively studied for sustainable application to the LMICs contexts. In low-income countries and regions with limited infrastructure, telemedicine applications are primarily used to link health-care providers with specialists, referral hospitals, and tertiary care centers. Even though low-cost telemedicine

applications have proven to be feasible, clinically useful, sustainable, and scalable in such settings and underserved communities, these applications are not being adopted on a significant scale [28].

In countries like India, with high numbers of high-risk pregnant women in remote areas, apps like the “HRP” developed by the Government of Himachal Pradesh in collaboration with USAID Vriddhi track high-risk pregnancy and their outcomes. This app widened the reach to approach patients for easy counseling and avoiding the trouble to visit the facility [29].

Maternal and child health services must be considered as essential services and every step must be taken to maintain the continuance of delivery. Learnings from the current COVID-19 pandemic have reiterated that dedicated efforts, committed funding, accountability, monitoring, and evaluation of interventions in periods of both crisis and normalcy are crucial to ensure that hard-earned benefits in vulnerable populations are not reversed during any future crisis.

Conclusion/Key Points

- There is a global concern for the negative impact on ongoing maternal and child health programs concerning immunization, nutrition, safety, antenatal and reproductive services, and access to health care due to restrictions posed during the pandemic, and even more so in LMICs.
- LMICs have unique challenges to effectively continue community programs in terms of an already stressed healthcare system and the diversion of resources to prioritize COVID-19 related morbidity, which can potentially negate the health gains achieved so far.
- Policies and recommendations should be made in the local context to strike a balance to prioritize COVID-19 related morbidity while not de-prioritizing essential maternal and child health-related morbidity.
- Future efforts in the wake of any pandemic should be directed with the background knowledge of the necessity to continue essential maternal and child services, improved integration of existing infrastructure, and the need for updated technology for faster data gathering and connectivity.

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