

Evidence and Gap Map Research Brief

UNICEF STRATEGIC PLAN 2018–2021 GOAL AREA 1: EVERY CHILD SURVIVES AND THRIVES

What this research brief is about

This research brief is one of a series of six briefs, which provide an overview of available evidence shown in the [Campbell-UNICEF Mega-Map](#) of the effectiveness of interventions to improve child well-being in low- and middle-income countries (LMICs). Five of the six briefs summarize evidence as mapped against the five Goal Areas of UNICEF's Strategic Plan 2018–2021, although it is anticipated that they will also be useful for others working in the child well-being space. The sixth brief maps the COVID-19-relevant studies.

This brief provides an overview of the available evidence related to child health and development.

The purpose of the research brief is to:

- Make potential users aware of the map and its contents
- Identify areas in which there is ample evidence to guide policy and practice, and so encourage policymakers and practitioners to use the map as a way to access rigorous studies of effectiveness
- Identify gaps in the evidence base, and so encourage research commissioners to commission studies to fill these evidence gaps.



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Box 1: What is the Campbell-UNICEF Child Well-being Mega-Map?

The Campbell-UNICEF Child Well-being Mega-Map maps evidence synthesis studies – evidence and gap maps and systematic reviews – here on in referenced simply as studies, which report studies of the effectiveness of interventions to improve child well-being. The evidence is structured by intervention categories, such as health and nutrition, and by outcome domains, such as morbidity.

Systematic reviews help establish which programmes are effective, for who, and in what circumstances. Evidence maps guide users to the evidence from systematic reviews and impact evaluations. The Mega-Map is an evidence and gap map (EGM) of 536 systematic reviews and 25 EGMs organized into six intervention categories and six outcome domains. This year’s update has seen an increase of 52 systematic reviews on 2020.

The map shows only evidence syntheses that summarize evidence from around the world. It does not show the individual studies. The map shows what evidence syntheses are available, not what the evidence says.

<https://www.campbellcollaboration.org/funding/global-funds/child-welfare-global-fund.html>

What interventions are included for child health, nutrition and development?

Early child development and child health and nutrition are central to the Sustainable Development Goals (SDGs), especially:

- SDG 2: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture
- SDG 3: Ensure healthy lives and promote well-being for all at all ages
- SDG 5: Achieve gender equality and empower all women and girls

In the UNICEF Strategic Plan 2018–2021, these goals are collected under strategic Goal Area 1: every child survives and thrives.

Interventions to support child health and development fall into three areas of the evidence and gap map:

- Early child development
- Health and nutrition
- Education

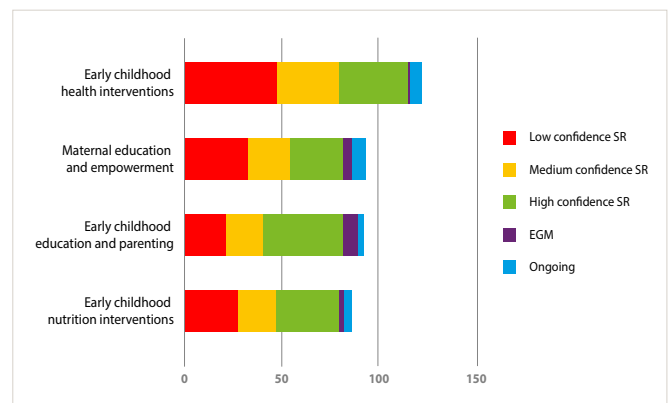
These are the most heavily populated areas of the map with 214, 400 and 105 reviews respectively.

EARLY CHILD DEVELOPMENT

Early child development has four subcategories:

- Early childhood health interventions (121 systematic reviews and 1 EGM)
- Early childhood nutrition interventions (83 systematic reviews and 3 EGMs)
- Early childhood education and parenting (84 systematic reviews and 8 EGMs)
- Women and maternal education and empowerment (88 systematic reviews and 5 EGMs)

Figure 1: Number of studies by intervention category



There is a tradition of producing systematic reviews in health, whereas they are comparatively new in other areas. This difference can be seen in Figure 1, which shows the number of studies by early child intervention subcategory classified by confidence level. Over half of the reviews in each category are of high and medium confidence, with low-confidence reviews forming less than 30 per cent. See the Endnote for an explanation of how we assessed study confidence.

Topics covered under early childhood health include: young child feeding practices (e.g., [Ahmed et al. \(2021\)](#), Interventions to improve infant and young child feeding practices in Ethiopia: A systematic review); improving access to health (e.g., [Bright et al. \(2017\)](#), A systematic review of strategies to increase access to health services among children in low and middle income countries); preventative treatments (e.g., [Bennett et al. \(2013\)](#), Massage for promoting mental and physical health in typically developing infants under the age of six months); and health systems (e.g., [Das et al. \(2016\)](#), Effect of pay for performance to improve quality of maternal and child care in low- and middle-income countries: a systematic review).

Early childhood nutrition includes interventions on: topics such as supplements (e.g., [Bhutta et al. \(2000\)](#), Therapeutic effects of oral zinc in acute and persistent diarrhea in children in developing countries: pooled analysis of randomized controlled trials) and complementary feeding (e.g., [Lassi et al. \(2013\)](#), Systematic Review of Complementary Feeding Strategies Amongst Children less than Two Years of Age); behavioural change interventions (e.g., [Bisits-Bullen \(2011\)](#), The positive deviance/hearth approach to reducing child malnutrition: systematic review); and general reviews of nutrition interventions (e.g., [Halim et al. \(2015\)](#), The economic consequences of selected maternal and early childhood nutrition interventions in low- and middle-income countries: a review of the literature, 2000–2013).

Box 2: Systematic reviews of breastfeeding

- A systematic review of costing studies for implementing and scaling-up breastfeeding interventions: what do we know and what are the gaps? ([Carroll et al., 2020](#))
- Impact of infant and young child feeding (IYCF) nutrition interventions on breastfeeding practices, growth and mortality in low- and middle-income countries: systematic review ([Lassi et al., 2020](#))
- Breastfeeding in the community—How can partners/fathers help? ([Ogbo et al., 2019](#))
- Breastfeeding peer counseling: from efficacy through scale-up ([Chapman et al., 2010](#))
- Interventions in Primary Care to Promote Breastfeeding: A Systematic Review ([Chung et al., 2008](#))
- Breastfeeding and maternal health outcomes: A systematic review and meta-analysis ([Chowdhury et al., 2015](#))
- Breastfeeding promotion interventions and breastfeeding practices: A systematic review ([Haroon et al., 2013](#))
- Systematic review of peer support for breastfeeding continuation: Metaregression analysis of the effect of setting, intensity, and timing ([Jolly et al., 2012](#))
- Antenatal breastfeeding education for increasing breastfeeding duration ([Lumbiganon et al., 2011](#))
- Support for healthy breastfeeding mothers with healthy term babies ([Renfrew et al., 2015](#))
- Peer support and exclusive breastfeeding duration in low and middle-income countries: a systematic review and meta-analysis ([Sudfeld et al., 2012](#))
- Interventions to improve breastfeeding outcomes ([Sinha et al., 2015](#))

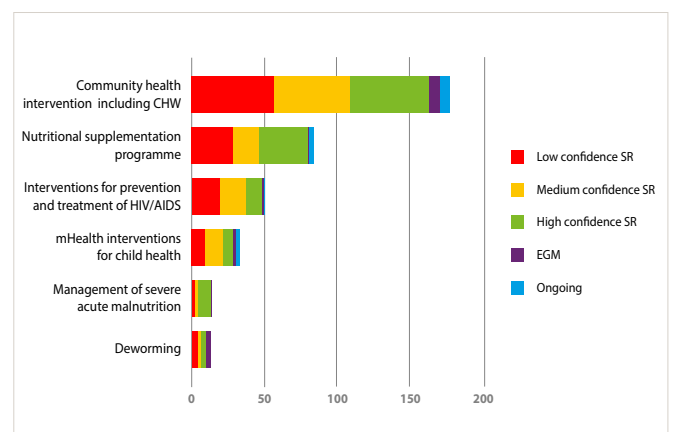
Early childhood education and parenting covers both parenting behaviour and early child education, such as preschool (e.g., [Leroy et al. \(2012\)](#), The impact of daycare programs on child health, nutrition and development in developing countries: A systematic review). Parenting behaviour includes child stimulation (e.g., [Baker-Henningham et al. \(2010\)](#), Early Childhood Stimulation Interventions in Developing Countries: A comprehensive literature review) and childcare such as breastfeeding. Since the benefits – and limitations – of breastfeeding are mostly well understood, reviews largely cover interventions to promote breastfeeding (see Box 2).

Maternal education and empowerment includes several of the reviews in the above categories, but also some more focused on women, such as [Dawson et al. \(2013\)](#), Task shifting and sharing in maternal and reproductive health in low-income countries: A narrative synthesis of current evidence, and [Prost et al. \(2014\)](#), Women’s groups practising participatory learning and action to improve maternal and newborn health in low-resource settings: A systematic review and meta-analysis.

CHILD HEALTH AND NUTRITION

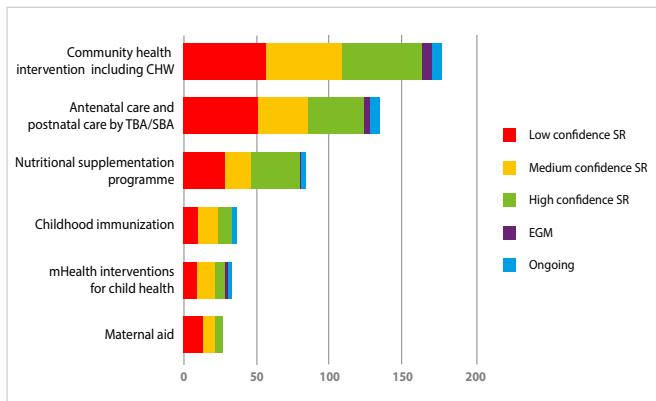
This is the most populated area of the map, with studies generally of medium to high confidence, although 33 per cent of child health reviews are classified as low confidence (see Figure 2).

Figure 2: Number of studies for health and nutrition interventions by systematic review (SR) confidence



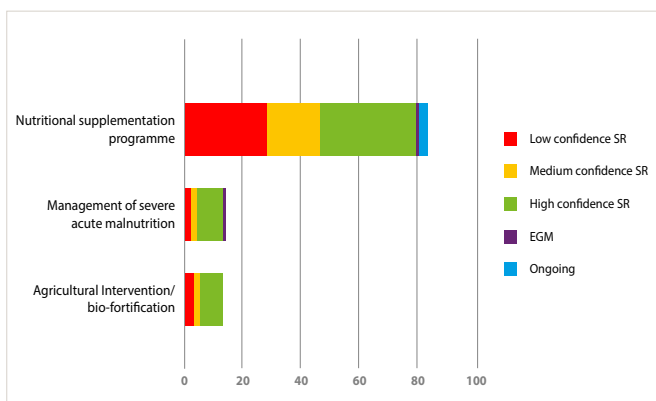
The areas with the most studies are community health (e.g. [Sarkar et al. \(2015\)](#), Community based reproductive health interventions for young married couples in resource-constrained settings: a systematic review) and antenatal care, which includes childbirth and postnatal care by a traditional or skilled birth attendant (e.g. [Tura et al. \(2013\)](#), The effect of health facility delivery on neonatal mortality: systematic review and meta-analysis) (see Figure 3).

Figure 3: Number of studies for community-based reproductive health interventions by systematic review (SR) confidence



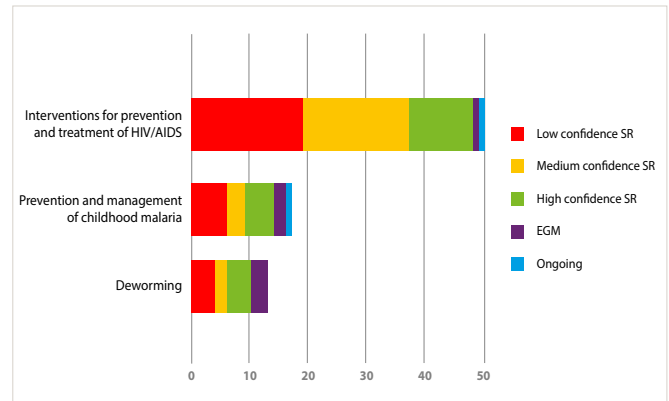
There are also a large number of studies on nutritional supplementation, which includes general reviews (e.g., [Kristjansson et al. \(2015\)](#), Food supplementation for improving the physical and psychosocial health of socio-economically disadvantaged children aged three months to five years: A systematic review) and studies focused on specific supplements (e.g., [Chaffee et al. \(2012\)](#), Effect of zinc supplementation on pregnancy and infant outcomes: A systematic review). A related area is the nutritional impact of agriculture, including biofortification (e.g., [Wazny et al. \(2011\)](#), Mass Food Fortification Programmes for Improving Nutritional Status in Low- and Middle-Income Countries: A Systematic Review, and [Ashong et al. \(2012\)](#), Fortification of rice with vitamins and minerals for addressing micronutrient malnutrition). However, the area with the least studies is also nutrition related – that is, the management of severe acute malnutrition (see Figure 4).

Figure 4: Number of studies for nutrition programmes by systematic review (SR) confidence



There are also smaller bodies of evidence related to specific health issues such as malaria and deworming, although there is a larger body of reviews for HIV/AIDS (see Figure 5).

Figure 5: Number of studies for specific health issues by systematic review (SR) confidence



The area with a comparatively low number of studies is mental health but is showing an increasing trend over the years. Given that half of all mental illnesses begin by the age of 14, this comparative neglect is striking. It does, however, reflect two general imbalances in prioritization: (1) physical health over mental health; and (2) developed versus developing countries – 90 per cent of trials on mental health are conducted in developed countries. Evidence maps guide users to the evidence, and this brief mainly deals with providing an overview of the availability of evidence. However, it is also useful to give some idea of what the studies included in the map have to say.

Box 3 provides examples of the findings from reviews that assess the impact of approaches to increasing vaccination coverage (from the childhood immunization intervention subcategory). The evidence shows that communication and education approaches are generally effective, especially if targeted at areas of low coverage. Providing incentives, such as conditional cash transfers (CCTs), often has more limited effects, especially if there are supply constraints. Moreover, pay for performance (P4P) for health workers has been reported as having short-run effects, with one review reporting negative effects.

Box 3: Selected studies in the map – expanding vaccination coverage

Almost one-third of deaths among children under five are preventable by vaccine. Yet, in 2015, nearly 20 million children around the world missed out on basic vaccines. The poorest, most vulnerable children are the least likely to be vaccinated.

Two common approaches used to increase vaccination coverage are communication and education programmes, and incentives.

Several studies find that education and communication campaigns have been effective in increasing vaccination coverage:

- A review of 14 studies from Georgia, Ghana, Honduras, India (two studies), Mali, Mexico, Nicaragua, Nepal, Pakistan (four studies) and Zimbabwe found that giving information and discussing vaccination with parents and other community members at village meetings or at home, as well as during visits to health clinics, combined with a specially designed participant reminder, increases vaccination coverage ([Oyo-lta, 2016](#)). The same review also found support for supply-side interventions, such as integration of vaccination services with other health services and using vaccination outreach teams to offer vaccination to villages.
- Another review of 10 studies found that professional interventions for health education, through structured discussions and home visits by female health workers or nurses to educate mothers, increase vaccination coverage for DTP (diphtheria, tetanus and pertussis) and measles, but not rates of full vaccination and polio vaccination, since polio coverage was already generally high ([Mureed, 2015](#)).
- A review of 34 studies of 26 interventions to increase vaccination coverage reported education campaigns to be the most effective intervention type ([Batt et al., 2004](#)).
- A review of seven studies found a significant impact from education and knowledge translation, with a risk ratio of 1.4 ([Johri et al., 2015](#)).
- A review of two studies in India and Pakistan concluded that community communication campaigns can increase knowledge on vaccines and child vaccination rates, especially in areas with low vaccination rates ([Saeterdal, 2014](#)). In Pakistan, community campaigns improved vaccine knowledge: 71 per cent of people had adequate vaccination knowledge at two-year follow-up, compared with 59 per cent in control.
- There is one review that includes seven studies, three of which are from developing countries, and gives a different result: face-to-face interventions to educate parents have limited effectiveness, and one included study shows these to be very cost-ineffective ([Kaufman et al., 2013](#)).

In contrast, reviews of incentives, such as CCTs, report more mixed findings. Two reviews ([Oyo-lta, 2016](#); [Oxman and Fretheim, 2009](#)) reported small or no effect of financial incentives on immunization coverage. Another review of CCTs, including four studies from Latin America ([Lagarde et al., 2007](#)), finds conflicting evidence, but mostly small or no effect. Some studies observe that demand-side interventions, such as CCTs, will have limited effects if there are supply constraints. A well-known primary study conducted in India, which reports positive effects from non-financial incentives (lentils and metal plates) was carried out in the context of an existing immunization outreach programme ([Bannerjee et al., 2010](#)).

There are also conflicting findings regarding pay for performance. An earlier review ([Batt et al., 2004](#)) found positive effects. Another study concluded that financial incentives for healthcare professionals are effective in the short run for simple and distinct, well-defined behavioural goals ([Oxman and Fretheim, 2009](#)).

Moreover, there are suggestions that pay for performance improves record-keeping rather than actual coverage. However, this intervention can create distortions and there is less evidence that such incentives sustain long-term changes. One review reports negative effects of pay for performance schemes on vaccination coverage, although in one case this was because other services such as institutional delivery had higher incentives so resources were diverted to those services ([Dettrick et al., 2013](#)).

EDUCATION

There are two school-based interventions that fall under this Goal Area of every child survives and thrives:

- **School feeding** – for which there are 14 systematic reviews and 4 EGMs. Studies include: [Kristjansson et al. \(2007\)](#), School feeding for improving the physical and psychosocial health of disadvantaged students; and [Lawson \(2012\)](#), Impact of School Feeding Programs on Educational, Nutritional, and Agricultural Development Goals: A Systematic Review of Literature.
- **School-based health programmes** – for which there are 45 systematic reviews and 9 EGMs. Studies include: [Mason-Jones et al. \(2012\)](#), A systematic review of the role of school-based healthcare in adolescent sexual, reproductive, and mental health; and Tyrer and Fazel (2014), School and community-based interventions for refugee and asylum seeking children: A systematic review.



PANDEMICS AND EPIDEMICS

We identified 35 studies with an explicit focus on response measures to pandemics and epidemics (such as COVID-19, SARS, MERS, H1N1, HIV/AIDS) or financial crises and natural disasters (such as major earthquakes, the global financial crisis, severe recession and the Indian Ocean tsunami), that fall under the Goal Area of every child survives and thrives, including:

- The uptake of integrated perinatal prevention of mother-to-child HIV transmission programs in low- and middle-income countries: a systematic review ([Car et al., 2013](#))
- Programmatic guidance for interventions to improve early childhood development in high HIV burden countries: a narrative review ([Tomlinson et al., 2020](#))
- Promoting adolescent girls' health and well-being in low-resource settings in the era of COVID-19 ([Blake and Temin, 2020](#))

What outcomes are reported?

The evidence and gap map also shows studies according to the outcomes they report. These outcomes fall under two outcome domains – health impact and healthy development, with the latter relating to behaviour.

Table 1 shows the number of studies for each outcome subdomain, classified by the relevant SDG. There are over 200 studies related to the main outcomes of mortality, morbidity, disability and childhood illness, and nutrition. There are a substantial number of studies (20 or more) for nearly all outcomes, and typically 30 to 40 per cent of studies are rated high confidence.

There are fewer studies relating to risk factors, notably on childhood injuries, alcohol and substance abuse, handwashing, clean environment, diet and physical activity.

Table 1: Number of studies by outcome domain, classified by SDG

Goal Area 1: Every child survives and thrives	Sustainable Development Goal		
	2: Zero Hunger	3: Good Health and Well-being	5: Gender Equality
Health impact	Nutrition (157)	Mortality (210) Morbidity (239) Disability and childhood illness (138) Immunization coverage (43) Mental health and psychosocial improvement (157)	
Healthy development	Diet and physical activity (19)	Antenatal and postnatal care including breastfeeding (125) Cognitive development (69) Utilization of health services like immunization, childcare (82) Parent-reported behaviour change (24)	Gender roles/decision making (56)
Risk factors		Maternal smoking (15) Contraceptive use (20) Alcohol/substance abuse (12) Childhood injuries (6) Handwashing (16) Clean environment (12)	

Where is the evidence from?

Systematic reviews are often global in scope. We included in the map all reviews for which studies from developing countries were eligible for inclusion, whether or not there were actually any studies from developing countries included. The screening process did not include a check as to whether the review actually included studies from developing countries.

However, where the issue is a global one, it is likely that evidence comes from both developed and developing countries. For example, a review of school-based physical activity programmes for promoting physical activity and fitness in children and adolescents aged 6 to 18 ([Dobbins et al., 2013](#)) includes studies from China and South America as well as Australia, North America and Europe.

However, there are some reviews that focus on developing countries, either overall or on specific regions. An example of a review restricted to developing countries is [Verstraeten et al. \(2012\)](#), Effectiveness of preventive school-based obesity interventions in low- and middle-income countries: A systematic review. For a specific region, an example

is [Ni Bhuinneain and McCarthy \(2015\)](#), A systematic review of essential obstetric and newborn care capacity building in rural sub-Saharan Africa.

Where are the evidence gaps?

There are many high-confidence reviews in the Goal Area of every child survives and thrives, compared with the other five Goal Areas in UNICEF’s Strategic Plan. The traditional areas of child health and nutrition are well covered with evidence synthesis.

However, there are some gaps. One gap relates to mental health interventions and mental health outcomes. There are studies for early child interventions, which mostly measure effects on psychosocial development rather than mental health problems. There are limited studies reporting the impact of most health interventions on mental health outcomes.

There is less information, although there is some, on behaviour outcomes – that is, parent-reported behaviour change and diet and physical activity.

On the intervention side, there are few synthesis studies on environmental health, although WASH (water, sanitation and hygiene) is an exception, as are, to a lesser extent, interventions to reduce smoking. Child injuries are an important area for which there are few reviews. Moreover, there are no evidence synthesis studies on prevention of indoor air pollution or exposure to toxins. There is also a lack of studies on safe places to play and traffic calming.

Implications of findings

There are many evidence synthesis studies related to interventions and outcomes for the Goal Area of every child survives and thrives. This implies that there is a substantial evidence base for governments and international agencies to draw on for programme and policy design. The map is a starting point guiding people to the evidence: further analysis and knowledge brokering is required for the evidence to be usable.

There are several ways in which this rich evidence base can be used. Agencies can work to systematically ensure that their programmes are evidence based. Over time, programmes that have been shown to be less effective can be modified or replaced with more effective programmes.

International agencies such as UNICEF can also play a lead role in using the evidence identified in the map to build a global evidence portal for child well-being, and so support the use of evidence-based programmes by governments and development agencies around the world.

Some gaps have been identified in areas such as mental health and child injuries, which will be of increasing policy importance over the next decade. UNICEF can play an important role in informing the development of evidence-based policies by supporting reviews and impact evaluations in these areas.

How can the map be used by UNICEF?

The map will help UNICEF staff to identify evidence-based programmes and practice to help achieve the agency's strategic goals.

In many areas in which UNICEF works, the map shows that there are many systematic reviews and EGMs of relevance for programmes to enable children to survive and thrive. This evidence should be used to inform programme design, and indeed to assess whether current programme designs are consistent with the evidence.

For specific areas of interest to UNICEF and partners, additional reviews, or even primary studies, may be necessary.

Moreover, there are some areas for which the evidence base is comparatively thin, so strengthening the evidence base should be the strategic priority, working in collaboration with others where necessary.

Endnote: Assessing the confidence of systematic reviews

For systematic reviews, we score each study using the 16-item checklist called AMSTAR 2 (Assessing the Methodological Quality of Systematic Reviews). The 16 items cover: (1) PICOS in inclusion criteria; (2) ex ante protocol; (3) rationale for included study designs; (4) comprehensive literature search; (5) duplicate screening; (6) duplicate data extraction; (7) list of excluded studies with justification; (8) adequate description of included studies; (9) adequate risk of bias assessment; (10) report sources of funding; (11) appropriate use of meta-analysis; (12) risk of bias assessment for meta-analysis; (13) allowance for risk of bias in discussing findings; (14) analysis of heterogeneity; (15) analysis of publication bias; and (16) report conflicts of interest.

Items 2, 4, 7, 9, 11, 13 and 15 are termed 'critical'. Study confidence is rated high if there is no more than one non-critical weakness, and medium if there are no critical weaknesses but more than one non-critical weakness. Studies with one or more critical weakness are rated low confidence.

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About this Innocenti research brief

This research brief was prepared by Howard White and Ashrita Saran with assistance from Yashika Kanojia, Campbell Collaboration. The production of the brief benefited from technical inputs provided by Kerry Albright, Laurence Chandy, Priscilla Idele and Alessandra Ipince, UNICEF.

Funding to support its production was provided by UNICEF Office of Research – Innocenti. Comments may be sent to info@campbellcollaboration.org or research@unicef.org

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