

BMJ Open Scoping review of maternal and newborn health interventions and programmes in Nigeria

Naima Nasir ^{1,2}, Adeniyi Kolade Aderoba ^{1,3}, Proochista Ariana ¹

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¹Nuffield Department of Medicine, Center for Tropical Medicine and Global Health, University of Oxford, Oxford, UK
²APIN Clinic, Infectious Diseases Unit, Jos University Teaching Hospital, Jos, Plateau State, Nigeria

³Department of Obstetrics and Gynaecology, Mother and Child Hospital, Akure, Ondo, Nigeria

Correspondence to

Naima Nasir;
naima.nasir@ndm.ox.ac.uk

ABSTRACT

Objective To systematically scope and map research regarding interventions, programmes or strategies to improve maternal and newborn health (MNH) in Nigeria.

Design Scoping review.

Data sources and eligibility criteria Systematic searches were conducted from 1 June to 22 July 2020 in PubMed, Embase, Scopus, together with a search of the grey literature. Publications presenting interventions and programmes to improve maternal or newborn health or both in Nigeria were included.

Data extraction and analysis The data extracted included source and year of publication, geographical setting, study design, target population(s), type of intervention/programme, reported outcomes and any reported facilitators or barriers. Data analysis involved descriptive numerical summaries and qualitative content analysis. We summarised the evidence using a framework combining WHO recommendations for MNH, the continuum of care and the social determinants of health frameworks to identify gaps where further research and action may be needed.

Results A total of 80 publications were included in this review. Most interventions (71%) were aligned with WHO recommendations, and half (n=40) targeted the pregnancy and childbirth stages of the continuum of care. Most of the programmes (n=74) examined the intermediate social determinants of maternal health related to health system factors within health facilities, with only a few interventions aimed at structural social determinants. An integrated approach to implementation and funding constraints were among factors reported as facilitators and barriers, respectively.

Conclusion Using an integrated framework, we found most MNH interventions in Nigeria were aligned with the WHO recommendations and focused on the intermediate social determinants of health within health facilities. We determined a paucity of research on interventions targeting the structural social determinants and community-based approaches, and limited attention to pre-pregnancy interventions. To accelerate progress towards the sustainable development goal MNH targets, greater focus on implementing interventions and measuring context-specific challenges beyond the health facility is required.

INTRODUCTION

Nigeria has the second highest estimated maternal deaths globally, and accounts

Strengths and limitations of this study

- A comprehensive search strategy was used including three (3) large databases (PubMed, Embase and Scopus) as well as grey literature.
- The review employed a unique framework to map the evidence and identify gaps in maternal and newborn health (MNH) research and action in Nigeria—using an integrated framework combining the WHO recommendations for MNH, the continuum of care model for maternal health and the social determinants of health.
- We recognise that there may be publication bias, as not all interventions/programmes for MNH in Nigeria may have been published and captured in the study.

for one of the highest neonatal mortality rates in Africa.^{1 2} The WHO estimates the maternal mortality ratio (MMR) to be over 800 maternal deaths per 100 000 live births with a neonatal mortality rate of 33 per 1000 live births^{1 3} in 2019. These figures contrast with corresponding figures from the UK and the USA which are around 10–18 deaths per 100 000 live births, respectively, with neonatal mortality rates below 4 deaths per 1000 live births.^{1 2} Maternal and newborn health (MNH) outcomes are intricately linked; maternal deaths significantly affect newborn survival and development.^{4–6} The sustainable development goal (SDG) 3 calls for all countries to reduce MMRs to less than 70 per 100 000 live births and neonatal mortality to less than 12 deaths per 1000 live births by 2030.^{1 7} However, if current trends continue, Nigeria will fall far short of these targets despite existing efforts and resource allocations.⁸ Of note, the global MNH community has recently intensified efforts on innovative indicators to measure progress in MNH towards achieving the SDG targets.^{9–11}

Most maternal deaths in Nigeria are reportedly due to preventable obstetric causes.⁶ Furthermore, complications of preterm birth, intrapartum events and infections account

for over 80% of newborn deaths and stillbirths.^{1 6 12} Underlying these conditions, socioeconomic, cultural, political and environmental factors contribute to the persistently high and inequitable burden of maternal and neonatal mortality in Nigeria.⁷ The highest rates of deaths and morbidity occur among the poor, rural communities, where many challenges to improve MNH remain.^{8 13} In addition, some religious and sociocultural norms adversely influence health-seeking behaviour and expose women to discriminatory practices which pose serious health risks.^{8 13} Addressing these underlying social conditions and inequities will both facilitate efforts to improve maternal and neonatal mortality and morbidity and may improve other dimensions of health and well-being.

Beyond the clinical causes and social determinants that underpin maternal and newborn morbidity and mortality, evidence shows that coordinated strategies across the reproductive, maternal, newborn, child and adolescent health continuum of care improves the general well-being of young women and mothers and the development of newborns.^{4 6} Thus, the WHO recommends that the 'essential packages of interventions for low and middle-income settings' should be provided across the continuum of care to improve MNH.^{5 14-16} Such interventions include family planning, appropriate antenatal care, immediate thermal care for newborns and early initiation of exclusive breastfeeding among others. Furthermore, increasing evidence suggests that addressing maternal health inequities through action on the social determinants of health can significantly improve MNH outcomes.¹⁷

It is not entirely clear why, despite laudable efforts to improve the situation in Nigeria, the burden of maternal and newborn mortality and morbidity persists.⁸ Understanding the evidence and gaps for maternal and neonatal health interventions and programmes will help to identify areas to focus new MNH measurement tools and direct future resource allocations.

This study aims to systematically scope and map the published literature on interventions, programmes or strategies implemented to improve MNH in Nigeria. By integrating and applying existing key frameworks in MNH,¹⁷⁻²⁰ this study identifies evidence gaps that require further research and highlights areas where action is needed. The following objectives were formulated following an initial exploratory search:

- a. Outline the types of interventions for MNH in Nigeria and their characteristics.
- b. Describe the nature and range of evidence.
- c. Elaborate the study settings and target populations.
- d. Examine reported evidence of outcomes or effectiveness or impact.
- e. Identify reported facilitators and barriers of effective implementation of interventions.

METHODS

The review was conducted according to the methodological guidance for scoping reviews provided by the Joanna Briggs Institute manual for evidence synthesis.²¹ The main research question guiding the review was: what is the evidence available for MNH interventions in Nigeria? An intervention was defined as 'a single or a combination of program elements or strategies designed to produce behavioural changes or improve health status, outcomes, or both among individuals or an entire population'.²² We focused on research studies evaluating the effectiveness of interventions on outcomes related to MNH.

Search strategy

A preliminary database search was undertaken to identify keywords and index terms for articles related to the review topic and refine the search strategy. Thereafter, the definitive search of search of PubMed, Embase (via OVID) and Scopus (via OVID) was conducted by NN between June and July 2020 to identify relevant publications. The searches were updated in May 2021 by rerunning the searches and through email alerts. The search expressions in PubMed including keywords and MeSH terms used were: 'Maternal Health' OR 'Infant, Newborn' OR 'Infant Health' AND 'Nigeria' AND (intervention OR programme OR strategy). No filter was used to restrict results. Similar search terms were used for the other databases. A summary of the search strategy for each database is provided (online supplemental file 1). This was supplemented by a web-based search of the grey literature, and a Google scholar search using similar terms, including a directed search of relevant key organisations websites. Cited references were examined by browsing the reference lists of studies to identify additional eligible studies.

Eligibility criteria and selection of sources of evidence

Table 1 outlines the inclusion and exclusion criteria and the sources of evidence. The results from the searches were screened in an iterative process by two authors (NN and AKA). First, the sources were screened based on the information presented in the title and abstract. Next, full-text articles were assessed to determine their eligibility for inclusion using the criteria in table 1. Discrepancies regarding eligibility were resolved by consensus and discussion with a third author (PA).

Data charting and summary

The included literature was reviewed using a data extraction form developed through an iterative process to identify the data elements critical to answering the review question and objectives. The form was piloted with 10% of the included studies to ensure consistency and revised, as necessary.

The extracted data included authors, year of publication, geographical setting, study design, target population(s), type and description of intervention, duration of implementation, reported outcomes and any facilitators or barriers.

Criteria	Inclusion	Exclusion
Type of studies	Any existing literature including journal articles, systematic reviews, grey literature and evaluation reports.	Conference proceedings, study protocols, editorials, cost effectiveness studies, modelling studies or commentaries on MNH interventions.
Setting	Nigeria; international/multicountry studies including Nigeria.	Studies with topics not reporting on MNH interventions in Nigeria.
Time period	No time limits set.	
Language	Studies in English.	Studies not in English.
Focus of study	Studies focused on maternal and newborn health (MNH) interventions/programmes.	Studies without an intervention/programme for MNH or outcomes not focused on MNH. Studies where intervention/programme focused only on child health and did not include newborns.

The first author (NN) charted the data, and the second author (AKA) reviewed the data. Any disagreements between the reviewers were resolved by a consensus involving the third author (PA) whenever necessary.

In line with the scoping review methodology, a formal assessment of the methodological quality of the included studies was not undertaken, as the intention was to provide a broad overview of the existing literature related to the review question.²¹ Data extracted across the included sources of evidence were summarised using figures, tables and summaries.

To map and summarise the evidence, we used an integrated model developed from the WHO recommended interventions for MNH,^{4 18 20} the continuum of care approach for maternal health¹⁹ and the social determinants of health framework^{17 23} (figure 1). The model combines WHO's consensus recommendations of both clinical and non-clinical interventions for MNH as outlined in the guidelines issued in 2011 and 2017 and presents these interventions across the continuum of care for maternal, newborn and child health. We assessed whether interventions described in the included studies were in line with any of the WHO recommended interventions outlined in the model. The model also adapts the social determinants of health framework to highlight interventions aimed at addressing structural factors (such as those related to the distribution of wealth and power) and intermediary factors (such as the ability of women to access health services) which influence maternal health.

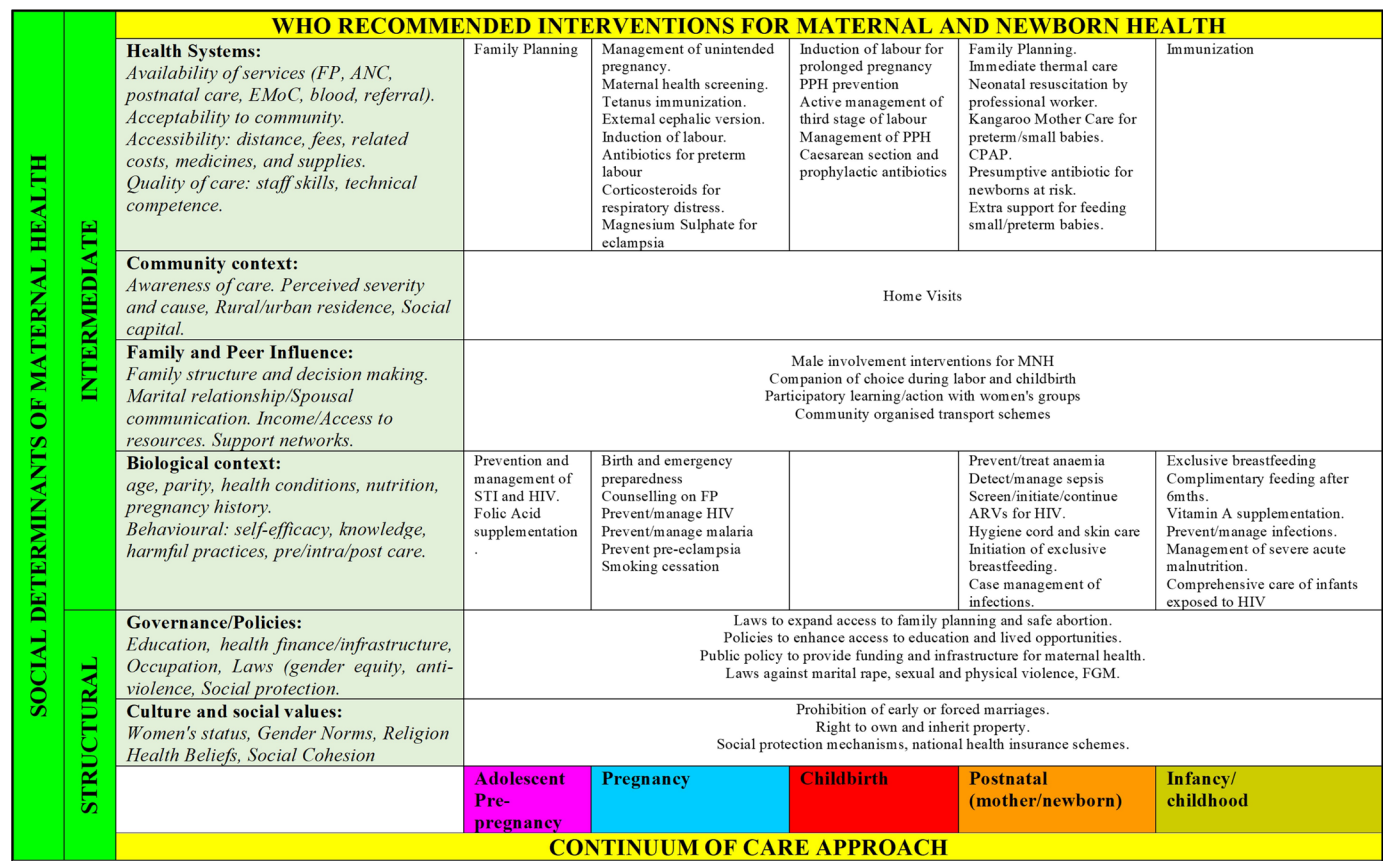


Figure 1 Integrated framework of the WHO recommendations, continuum of care approach and social determinants of maternal health.

Patient and public involvement

Patients and public were not involved in the design, conduct or reporting of this study.

Ethics approval statement

Due to the nature of the study (scoping review), the study did not involve human participants.

RESULTS

Overview of the literature search

The systematic literature search resulted in 827 publications after removing duplicates. A total of 79 full texts were assessed, of which 52 were included in the review. An additional 28 articles were retrieved from citations, and the full texts were assessed and included in the review. A total of 80 publications were included in the final

review.^{24–103} A Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews flow diagram in [figure 2](#) summarises the search results and screening processes for this study.

Characteristics of included literature

The characteristics of the included sources of evidence are summarised in [table 2](#), and the details of each publication are presented in online supplemental table S2. [Figure 3](#) shows the results of mapping the studies to the integrated framework developed in this study. The results are summarised below.

Intervention and programmes along the continuum of care for maternal and newborn health

Half (n=40) of the interventions targeted pregnancy, childbirth or both. Only four interventions targeted the

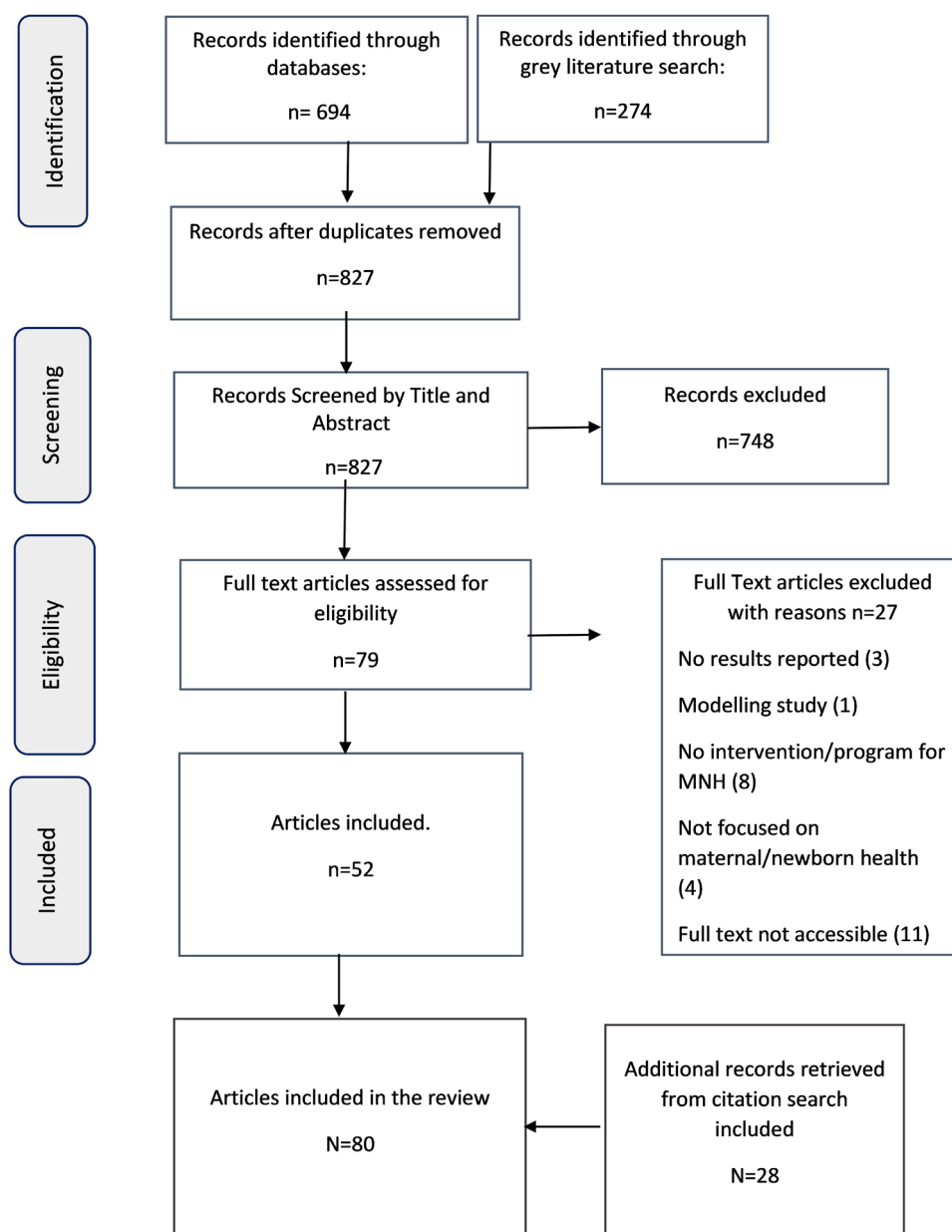


Figure 2 Flow chart of the selection process of sources of evidence.

Table 2 General characteristics of included sources of evidence

Characteristics	Number of studies (%), n=80	References
Study design		
Systematic review	1 (1.25)	49
RCT	8 (10)	26 38 80 82 84 95 96 103
Quasi-experimental	16 (20)	36 50 54 63–65 72 74–76 81 89 97 101 102
Cohort/longitudinal	6 (7.5)	37 51 53 57 61 69
Postintervention/programme evaluation	13 (16.25)	25 28 32–34 43 52 60 83 88 91 94 98
Prepost/before after studies	15 (18.75)	24 39 40 55 56 59 62 66 67 71 73 79 87 92 93
Process/outcome/impact evaluation	21 (26.25)	27 30 31 35 41 42 44–46 48 58 68 70 77 78 85 86 90 99 100
Type of study		
Qualitative	7 (8.75)	25 28 48 85 91 92 94
Quantitative	71 (88.75)	24 26 27 29–31 34–46 49–78 80–82 84 86–90 93 95–103
Mixed methods	2 (2.5)	79 83
Control or comparison group/unit		
Yes	24(30)	26 29–31 36–40 61 76 80–82 84 85 87 89 95–97 101–103
No	56(70)	24 25 27 28 32–35 41–60 62–75 77–79 83 86 88 90–94 98–100
Setting		
Rural	38 (47.5)	26 27 31 33 38 39 42–46 50 53 55 57 60 61 63 71 73 74 76–78 81 85 87 89 90 92 93 96 97 99–103
Urban	27 (33.75)	25 32 34–37 40 51 52 56 58 62 65–68 79 80 82 84 86 88 91 94 95 98
Rural and urban	15 (18.75)	24 28–30 41 47–49 54 59 64 69 70 75 83
Site of intervention		
Community	31 (38.75)	26 28–31 33 38 39 42 45 50 51 53 55 57 63 65 71 73–75 81 85 87 90 92 95 99–101
Health facility	37 (46.25)	25 27 32 34–37 40 41 43 44 46 52 54 56 58–62 64 66–68 70 72 78–80 82–84 86 88 92 94 96 103
Community and health facility	12(15)	24 47–49 69 77 89 91 93 97 98 102
Geographical region		
North West	22 (27.5)	24 25 28 30 31 33 36 38 47 48 64 65 70 71 78 85 91–93 97 103
North Central	5 (6.25)	37 56 84 89 94
North East	3 (3.75)	27 50 58
South West	8 (10)	26 39 40 66 74 80 95 96
South East	4 (5)	32 57 60 68
South South	9 (11.25)	55 61 63 73 82 83 98 99 101
Multiple: Northern regions	8 (10)	29 42 45 46 54 76 79 102
Multiple: North and South regions	9 (11.25)	35 43 44 51 53 62 77 86 90
Country-wide: all geographic regions	10 (12.5)	34 41 49 52 59 67 69 75 81 87
Multi-country: Nigeria included	2 (2.5)	88 100
Lead author/institution base		
Nigeria	48 (60)	25 27 30–32 34 37 39 40 42–47 49 50 53 54 57–60 62–64 66–68 70 71 73–75 78 81 83 85 91–99
International	32(40)	24 26 28 29 33 35 38 41 48 51 52 55 69 72 76 77 79 80 82 84 86–90 100 102 103

RCT, randomised controlled trial.

prepregnancy stage and involved family planning or contraception services.^{46 50–52} Nine interventions focused on the postpartum period for mothers, newborns or both,

and involved postpartum family planning,^{44 79} promoting early breastfeeding,^{38 39} neonatal resuscitation,³⁴ keeping the baby warm,⁶⁹ immunisation^{73 95} and a combination

		WHO RECOMMENDED INTERVENTIONS FOR MATERNAL AND NEWBORN HEALTH							
SOCIAL DETERMINANTS OF MATERNAL HEALTH	INTERMEDIATE	Health Systems: <i>Availability of services (FP, ANC, postnatal care, EMoC, blood, referral). Acceptability to community. Accessibility: distance, fees, related costs, medicines, and supplies. Quality of care: staff skills, technical competence.</i>	42,46–49,55	20,28,32,37,4 9,50,52,56,60 .63,64,78,80, 83,86,96,97	24,31,58,61,6 2,68,81,83,86	24,30,31,39,75,78	69,75,91	21,23,77,82,84, 87,90,98,25,43– 45,54,66,72,73	
		Community context: <i>Awareness of care. Perceived severity and cause. Rural/urban residence. Social capital.</i>						67	
		Family and Peer Influence: <i>Family structure and decision making. Marital relationship/Spousal communication. Income/Access to resources. Support networks.</i>		81	81				95
		Biological context: <i>age, parity, health conditions, nutrition, pregnancy history. Behavioural: self-efficacy, knowledge, harmful practices, pre/intra/post care.</i>	22,70	26,36,51,53,7 6,80,89,92,99		29,34,35,53,65	33		
		Governance/Policies: <i>Education, health finance/infrastructure, Occupation, Laws (gender equity, anti-violence, Social protection).</i>	71,74,79,85,94						
STRUCTURAL		Culture and social values: <i>Women's status, Gender Norms, Religion Health Beliefs, Social Cohesion</i>	41,88,93						
			Adolescent Pre-pregnancy	Pregnancy	Childbirth	Postnatal (mother/newborn)	Infancy/childhood	Across the Continuum	
		CONTINUUM OF CARE APPROACH							

Figure 3 Mapping of interventions to the WHO recommendations, continuum of care approach and social determinants of health.

of essential newborn interventions.⁴³ Just over one-third (34%, n=27) of the programmes spanned all stages of the continuum of care.

Alignment with WHO recommendations for improving maternal and newborn health

Most of the publications reviewed (71%, n=57) reported interventions aligned with the recommendations outlined in figure 2 based on the WHO 2011 and 2017 guidelines for MNH. The remaining studies (29%, n=23) aimed to improve quality or standard of MNH services mainly through capacity building of health providers, improving access through community health insurance schemes, providing free MNH services, emergency loans, conditional cash transfers and outreach services. These were not specifically listed as priority interventions in 2011 and 2017 guidelines, although may be stated elsewhere in other WHO guidance.

Mapping interventions to the social determinants of health framework for maternal health

Nearly all interventions (93%, n=74) focused on the intermediate social determinants of health. These include health system factors such as demand, access, quality

and utilisation of MNH services (n=38), improving maternal health knowledge and behaviour (n=18) and improving the health status of mothers and newborns by addressing obstetric and/or newborn complications and diseases (n=18). Only six studies had interventions targeted at structural social determinants of health, including public policies, gender dynamics or sociocultural norms.^{45 75 78 92 97 99}

Types of studies, year of publication and lead author/institution

Of the literature included, 71 publications were journal articles and nine were programme evaluation reports. The publication year ranged from 1982 to 2020, with most sources (n=64) published between 2010 and 2018 (figure 4). The publications included in this review employed many study types/designs. One-quarter of the reviewed studies involved a process, outcome or impact evaluation (n=21), followed by quasi-experimental designs (n=16), preintervention or postintervention designs (n=15) and postintervention analysis (n=13). Nearly one-third (30%, n=24) of the reviewed studies reported having a comparison group, including eight (8) randomised control trials. Only six (6) sources used

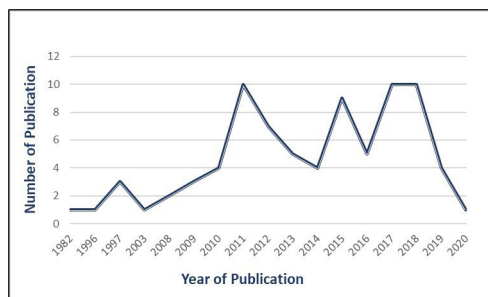


Figure 4 Number of publications per year.

qualitative methods, and the remaining 74 were quantitative, two of which used a mixed-methods design.^{79 83} Over half (60%, n=48) of the reviewed articles had the lead author or institution based in Nigeria. Study duration varied as follows: less than a year (n=10), 1 year–5 years (n=53) and greater than 5 years (n=13).

Geographical region, setting and site of intervention

Based on Nigeria's six geopolitical regions, over half (51%, n=41) of the studies reported interventions in a single region, and 21 studies reported interventions across two or more regions. About a third (n=28) of the studies were conducted in the northern regions and 21 studies in the southern regions. Thirteen studies (16%) involved settings in both the northern and southern regions. Six studies reported national coverage, including one study involving all 36 states of Nigeria and the Federal Capital Territory.⁷⁵ Two studies reported multicountry sites, including Nigeria.^{88 100}

There were fewer community-based interventions or programmes (39%, n=31) compared with those in health facilities (46%, n=37). The health facilities included ranged from primary care clinics to referral hospitals. A small portion (15%, n=12) of the studies reported both community and health facility programme sites. More studies (47.5%, n=38) were conducted in a rural setting compared with an urban environment (34%, n=27), with approximately 19% (n=15) involving both rural and urban settings.

Target populations

Most interventions in the literature reviewed (79%, n=63) were targeted mainly at pregnant women, mothers and women of childbearing age, described as 15–49 years of age, with one specifically focused on young adolescent females.⁴² Eleven interventions focused on healthcare providers, including community health workers and midwives.^{25 34 35 58 60 87 88 91 97 100} Four interventions involved community members, including the male members of the community, husbands or both.^{45 89 92 99} Two interventions specifically targeted policymakers.^{48 75}

Reported outcomes, effectiveness, or impact

The interventions outlined in the reviewed literature sought to address a wide range of outcomes. Nearly half (45%, n=33) had outcomes related to improving the demand, access, coverage, quality and

utilisation of essential MNH services, interventions or both. Other outcomes include reducing maternal or newborn deaths or both,^{24 26 27 32 34 49 60 62 64 67–69 72 78 102} improving knowledge of preventive practices and self-management,^{30 38 39 50 51 55 65 71 73 74 93 95} improving community participation in MNH including male members of the community,^{28 45 92 99} capacity building of the health workforce^{44 77 79 86 88} and the prevention and management of pregnancy or newborn-related diseases and complications, or both.^{31 35 37 40 41 57 61 66 96 103}

Reported barriers and facilitators

Not all included studies reported facilitators and/or barriers of implementing the interventions. Forty-six studies (n=46) reported factors that facilitate or positively influence the intervention or programme. The most common facilitators reported were community engagement and participation (50%, n=23).^{24 25 27 28 31 39 41 42 45 51 53 54 63 65 77 85 91 92 98 100–102} Others included an integrated approach to implementation of interventions,^{31 48 85 89 98} communication of adequate (and culturally appropriate) knowledge about the programme or intervention^{54 65 69 103} and demand creation activities.^{52 53}

Forty-two studies (n=42) reported barriers, with funding limitations posing the main challenge to implementation reported in 11 studies.^{25 27 33 53 78 80 82 86 91 92 94} Nine studies reported negative attitudes and perceptions regarding the intervention, the health system, or both as a barrier.^{36 39 48 53 64 71 79 82 83}

DISCUSSION

It is promising to see increasing research on maternal and neonatal health programmes in Nigeria. Following a systematic search of literature on existing interventions and programmes in Nigeria, this study used a novel framework to identify gaps for research and action on MNH interventions and programmes in Nigeria. We developed an integrated model combining the WHO recommendations for MNH with the continuum of care and the social determinants of health frameworks. This approach can provide researchers and policy makers a rigorous method to examine and assess gaps in MNH interventions and service delivery and identify country-specific priorities to focus attention.

Our findings show that the interventions in a large majority of studies in this review (71%) aligned with the WHO recommendations for MNH. Most interventions targeted the pregnancy and childbirth stages of the continuum of care. This is likely related to evidence showing that the critical causes of maternal and newborn deaths occur during these periods.^{7 104} Only a few studies focused on the prepregnancy stage and the provision of family planning services. This area requires further attention, as studies have shown that providing reproductive health services, mainly contraceptive services, can

help with further reductions in maternal and newborn mortality.^{7 17 104}

Accordingly, most studies examined the intermediate social determinants of health, such as access to and availability of relevant health services within health facilities, with only a few investigating programmes aimed at the more structural social determinants of health, such as gender, cultural and religious norms and public policies. Although these proximal social determinants remain essential, growing evidence emphasises the significant role of distal determinants influencing maternal health and its outcomes.^{17 104} Furthermore, increasing evidence suggests actions to improve these distal social determinants can improve MNH outcomes.¹⁷ This highlights the need for further research on how social interventions affect maternal and neonatal health outcomes in Nigeria to inform programme development and implementation.

Of the 80 publications reviewed, over 80% reported achieving the interventions' intended outcomes. Many of the programmes investigated interventions related to WHO recommendations, with a focus on women and their engagement with health facilities. Our review also highlights the focus of existing programmes on measuring coverage of evidence-based MNH interventions in health facilities, with limited attention to community-based interventions. Importantly, the research synthesised does not clearly show whether these interventions were chosen to align with country-level priorities. Consequently, to accelerate progress towards the SDG goals of ending preventable maternal and newborn deaths, a broader lens to identify and measure critical and context-specific factors beyond the health facility is required. Country level researchers may be better posed to understand and highlight country-level priorities for MNH research. Of note, international collaborators led over a third of the research in this review. Going forward, we implore global health institutions to actively improve local research capacity and funding as articulated by the African Academy of Science.^{105 106}

Factors that facilitated achieving intended outcomes involved engagement with the communities and integration of multiple interventions. This result supports the call for the application of integrated packages of effective health interventions across the continuum of care, re-emphasised by the strategic plans to achieve SDG 3.^{19 104} In addition, these findings highlight the role of participatory mechanisms to engage families (including men) and communities in improving MNH.¹⁷ Two key barriers to interventions achieving their intended health outcomes were funding limitations and negative attitudes and perceptions. This may be related to the need for public engagement to address participants' critical concerns and the need for more integrated interventions.

The search strategy was limited to PubMed, Embase and Scopus databases; thus, publications in excluded databases might be missing in this review. Nevertheless, we conducted a grey literature search alongside these databases to cover other relevant resources. Although

we carefully considered the search terms used in our strategy, we recognise that there may be publication bias, as not all interventions/programmes for MNH will have been published.

A broad range of study designs were employed in the studies included in this review. However, most employed quantitative approaches with only a small fraction using qualitative and mixed-methods approaches. Given the nature of MNH interventions and the complexity of the challenges facing women and newborns, multidisciplinary research and mixed-methods approaches are needed to add depth to understanding the contextual nuances of MNH. This helps to uncover unknown and emerging factors which potentially informs better use of limited resources. An important domain to consider within the spectrum of factors that can influence MNH outcomes is the quality of services received by women and children,¹⁰⁷ especially if they suffer mistreatment.^{108 109}

Conclusion

Using a novel framework combining WHO recommendations for MNH, the continuum of care and the social determinants of health frameworks, most MNH interventions were aligned with the WHO recommendations and focused on the proximal social determinants of health. These were related largely to health system factors within health facilities. In addition, our findings show only a few programmes targeting the structural social determinants of maternal health such as religious and cultural barriers and MNH policies and highlights the relative neglect of non-facility-based interventions. The evidence evaluating MNH outcomes was mostly quantitative and with only a few benefiting from qualitative and mixed-methods approaches, thus limiting the exploration of contextual factors that influence MNH outcomes. Therefore, efforts to improve MNH in Nigeria and other similar contexts may need to focus greater attention on implementing MNH interventions and measuring context-specific challenges beyond the health facility. This may help to accelerate progress towards the SDG goal of ending preventable maternal and newborn deaths.

Twitter Naima Nasir @naimanasir and Adeniyi Kolade Aderoba @ade_aderoba

Contributors The conception and design of the research was conducted by all authors (NN, AKA and PA). Data collection and analysis and interpretation of results were conducted by NN, AKA and PA. The first draft of the manuscript was written by NN, and AKA and PA contributed to this version. All authors contributed to subsequent revisions. All authors read and approved the final manuscript. NN acts as guarantor for this manuscript.

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ORCID iDs

Naima Nasir <http://orcid.org/0000-0001-6817-9447>

Adeniyi Kolade Aderoba <http://orcid.org/0000-0002-4333-9093>

Proochista Ariana <http://orcid.org/0000-0002-0154-2237>

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