

BMJ Open Antenatal care interventions in Afghanistan from 2000 to 2024: a rapid realist review

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ABSTRACT

Introduction In response to the high maternal mortality in Afghanistan, the government emphasised enhancing antenatal care (ANC) coverage to improve skilled birth attendance and reduce maternal mortality. This study aimed to explain how and why ANC interventions worked, for whom, and under what circumstances in Afghanistan between 2000 and 2024.

Methods A rapid realist review was conducted to identify underlying programme theories and examine contextual factors and key mechanisms influencing ANC outcomes, with input from a panel of national experts. Data were extracted using context–mechanism–outcome (CMO) configurations to develop and refine theories for policy recommendations.

Results From 3502 papers, 1860 duplicates were removed, 63 were screened for full text and 25 were included in the final review. In total, 29 CMOs were inferred across nine interventions, classified at individual, interpersonal, community and institutional levels. We found that ANC interventions could work best by empowering women and healthcare workers (HCWs), involving husbands, hiring female community health workers (CHWs), ensuring regular contact with the same HCWs, endorsing health messages by the government, incentivising CHWs and designing and implementing interventions using participatory approaches. Interventions are less successful when there is a lack of community trust in service quality or HCW qualifications, low decision-making ability among women, discomfort during travel to health facilities, adherence to traditional practices and beliefs, hiring CHWs from outside the community, chronic stress and lack of support among HCWs and unrecognised incentives.

Conclusion Our evidence synthesis can inform donors, policymakers and implementers on how to design more effective ANC interventions to achieve better health outcomes in Afghanistan. By emphasising intervention evaluation and ANC quality improvement, it highlights the importance of key social elements, such as cultural norms, power dynamics, relationships, beliefs and trust, which are likely to maximise impact. Community involvement is essential for designing and implementing effective and sustainable ANC interventions.

INTRODUCTION

In the early 2000s, Afghanistan earned a reputation as the worst place in the world for a woman to experience pregnancy, marked

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Methodological adaptability demonstrated the applicability of a rapid realist review in fragile, data-scarce settings.
- ⇒ The inclusion of a national expert panel enriched theory development and helped address gaps in the published literature.
- ⇒ Limited reporting of mechanisms in primary studies constrained the depth of realist theory development.
- ⇒ The absence of direct input from community members may have constrained contextual richness.
- ⇒ The use of a theory-driven approach enabled the study to move beyond traditional effectiveness reviews by exploring how and why interventions work or do not work in Afghanistan.

by an alarming maternal mortality ratio of 1600/100,000 live births.^{1,2} During this period, the newly established government, the Islamic Republic of Afghanistan, was in the process of reconstructing its health system after decades of war and instability while lacking a proper peace settlement.³ The Ministry of Public Health (MoPH) was facing many challenges, including the absence of baseline indicators and insufficient local public health expertise for effective programme development and implementation.⁴ Despite the absence of epidemiological data to guide prioritisation, both local and international stakeholders agreed that women and children were the most vulnerable populations.⁴

In response to the high maternal mortality ratio, the MoPH incorporated antenatal care (ANC) into the package of interventions offered free of charge in public health facilities in 2005.⁵ The aim was to improve skilled birth attendance and eventually reduce maternal mortality and improve maternal health outcomes.^{5,6} ANC contains a series of healthcare activities, encompassing screening and diagnosis, disease prevention and health promotion components to diminish the risks



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of illness and death for mothers and newborns.⁷ In 2002, the WHO introduced global ANC care guidelines recommending four ANC visits, later revised in 2016 to recommend a minimum of eight visits for a better pregnancy experience.^{7,8}

In Afghanistan, both the health system and population health surveys recommend four ANC visits as a key indicator to measure the quality of ANC services.^{5,9} This implies that the country is still at a very early stage of implementing the WHO's 2016 guidelines of eight ANC visits. Over the past two decades, driven by government and international organisations' initiatives, the coverage of at least one ANC visit has notably expanded. However, access to four ANC visits has shown stagnant improvement.⁹ Additionally, challenges such as under-use of services and persistent urban–rural disparities remained.^{9,10}

Multiple studies have highlighted different factors associated with ANC uptake in Afghanistan: education, wealth status, ethnicity, areas of residence, knowledge about ANC among women and their families, transportation and healthcare providers' behaviour.^{10–13} Additional studies have investigated the impact of socio-cultural factors on poor maternal health indicators, including ANC. These factors include early marriage, frequent childbirth, lack of spacing between pregnancies, intimate partner violence and women's decision-making ability, particularly when seeking healthcare.^{13–15} These factors are deeply intertwined with Afghan society's traditional attitudes and rituals.¹⁵

Despite sustained technical efforts and significant investments by the government and international community over the past two decades, improving access to quality ANC services remains a major challenge in Afghanistan. Previous studies have assessed the effectiveness and content of ANC interventions, often identifying barriers and women's experiences through qualitative approaches.^{10,12,16} However, none have systematically explored the underlying programme theories or mechanisms driving the success or failure of these interventions. Therefore, we aimed to explain how and why ANC interventions work, for whom, and under what circumstances in Afghanistan between 2000 and 2024. To achieve this, a rapid realist methodology was employed to identify underlying programme theories and examine the contextual factors and key mechanisms contributing to both positive and negative ANC outcomes to inform policy recommendations.

METHODS

Review design

A rapid realistic review (RRR) was conducted.¹⁷ The study followed the RRR steps recommended by Saul *et al*¹⁷ to map existing literature and develop guiding rules for policy-making. The RRR approach is inherently iterative and inductive rather than hypothesis-testing, allowing for the progressive refinement of emerging explanations. We used the original configuration type,

context–mechanism–outcome (CMO), to unpack the context and interaction between underlying mechanisms influencing implementation activities.^{17,18}

It also adhered to the Realist and Meta-narrative Evidence Synthesis reporting standards for realist evaluations.¹⁹ The review did not entail the collection of primary data and thus did not necessitate ethical approval.

Rationale for using realist review approach

Given the 2021 governmental transition and resulting socio-political changes, including adjustments in the health system and donors' contributions in Afghanistan, it is timely and crucial to understand the contextual factors and mechanisms that have led to the success or failure of these interventions. Recognising key lessons can enhance future policy frameworks and prevent already limited wastage of resources in Afghanistan and similar countries.

Realist reviews, or realist synthesis, are explanatory and strive to unpack how, why, for whom and in what contexts policies and programmes work or do not work.²⁰ They challenge the idea of generalisability and prioritise explanatory theories that illuminate how contexts influence the outcomes of policies and programmes, providing recommendations that go beyond mapping the scope of knowledge or measuring programme effectiveness.^{17,20}

The RRR methodology was selected over a traditional RR owing to its suitability for generating timely, policy-relevant insights in complex and rapidly evolving contexts like Afghanistan. Unlike traditional realist reviews, which require extensive time for theory testing, RRR streamlines this process by incorporating expert panels (EPs) to refine and validate programme theories. This approach was particularly relevant in the Afghan context, where empirical evidence is limited, and expert knowledge plays a crucial role in contextualising findings. Additionally, this review was part of a PhD thesis; given the time constraint of the PhD programme, RRR was deemed the most appropriate method, allowing for a more efficient synthesis of available evidence while maintaining methodological rigour.

Composition of the national expert panel

The EP comprised seven public health professionals with substantial experience in the Afghan health sector. At the time of the study, three were based in Afghanistan, whereas four resided abroad but had previously worked in-country. Five panel members held medical degrees, and several had occupied senior positions within the MoPH, including two with over a decade of experience in the Reproductive, Maternal, Neonatal, Child and Adolescent Health department. Additional experience among the panel included work with the United Nations Population Fund, WHO and a local non-governmental organisation on initiatives related to health system strengthening and maternal and reproductive health. The panel also included a specialist in realist synthesis from Paris Cité University and the first author, a PhD candidate at the University of Toulouse with previous professional

experience at the MoPH and WHO. All members are co-authors of this paper. Regular collective meetings were held with the panel throughout the study, and panel members were consulted individually for specific information, documents or clarification on issues that arose during the joint meetings.

Search strategy

The literature search was conducted with the assistance of two university librarians. Systematic searches were conducted in four databases: PubMed (Medline), Embase (Em3), Web of Science and CINAHL, with Google Scholar searched for complementary literature. A temporal filter narrowed the search to data from 2000 to 2022, later extended to 2024. The key words included “antenatal*” and “Afghan*”.

Screening and data extraction

Titles, abstracts and subsequent full-text screening were facilitated using Covidence.²¹ All databases were searched systematically on 20 November 2022. A repeated search with the same keywords was conducted in April 2024 to cover the new literature from 2022 to 2024. Initial screening was conducted collaboratively by the primary researcher and another student. Inclusion and exclusion criteria were clearly defined in advance and consistently applied throughout the review process.

The review included studies that examined the experiences of women, HCWs and other relevant stakeholders involved in the design, delivery or utilisation of ANC services in Afghanistan. Eligible interventions were those related to ANC, whether delivered as stand-alone (vertical) services or as part of integrated healthcare packages. Studies evaluating specific ANC components—such as contraception counselling during ANC visits, blood testing or vitamin supplementation—were also included. Interventions not directly related to ANC were excluded. The review considered empirical studies employing qualitative, quantitative or mixed-methods designs, as well as service evaluations, while excluding study protocols. Only articles published in English between 2000 and 2024 were included; studies published in other languages or prior to 2000 were excluded.

Evidence was appraised according to richness and rigour.^{22–23} Richness assessed the density of evidence in the papers concerning CMO relevant to the study’s scope. Rigour examined the credibility and trustworthiness of the data. Studies were checked for richness and rigour after the screening was completed. For each study, ratings were assigned for richness (thick, medium and thin) and rigour (yes and no); see online supplemental appendix 1. The appraisal of the study methods was carried out using MMAT.²⁴

Following the appraisal phase, key data elements were systematically extracted into an Excel sheet, including authors, study objectives, methodology, contextual factors, mechanisms and outcome measures. To ensure

greater clarity about the included interventions, the TIDieR-PHP reporting guideline was applied.²⁵

Data analysis and data synthesis

This approach involves developing, refining and testing programme theories that theorise the underlying mechanisms driving change. The programme theory defines the statement linking context, mechanism and outcome (referred to as CMO).

In line with realist review methodology, CMO elements were not extracted as predefined variables but were constructed during the analysis phase. Empirical data on study characteristics, intervention components, contextual factors and outcomes were first extracted and then interpreted to develop CMO configurations. Guided by relevant literature and EP opinion, this process aligned with Pawson’s view of CMOs as analytical constructs developed through synthesis.^{17–20} The first author conducted the synthesis, sharing results with senior authors and EP for validation. The focus was on understanding what mechanisms were responsible for the improvement or deterioration of the ANC interventions’ outcomes and in what contexts these mechanisms were activated. Positive or negative outcomes were reported based on the original authors’ interpretation. A socio-ecological framework was applied to organise the configurations across multiple levels of influence: individual (pregnant women), interpersonal (household and HCW), community (neighbourhood) and institutional levels (health system and policy).²⁶

The CMO has been defined as follows:

- Context: changes introduced with the ANC interventions, including tangible resources, such as staff and consumables, and non-tangible resources, such as forces, social structures, rules and systems of reactions through which reasons are formulated;
- Mechanisms: reasoning and reactions of the agents to the resources provided by ANC interventions that trigger a change
- Outcome: result or consequences of the ANC interventions (intended or unintended; positive or negative).

RESULTS

A total of 3502 records, including 100 from the grey literature, were imported into Covidence for screening. After the removal of 1860 duplicates, 1642 records proceeded to title and abstract screening, which was conducted independently by two reviewers. Of these, 1579 were excluded because they clearly did not meet the predefined inclusion criteria based on their titles and abstracts. The remaining 63 articles underwent full-text assessment for eligibility, resulting in the inclusion of 25 studies in the final review (figure 1).

Summary of the included studies

In total, one study was a cluster randomised trial,²⁷ and three studies were non-randomised population-based intervention studies.^{28–30} Another study was a

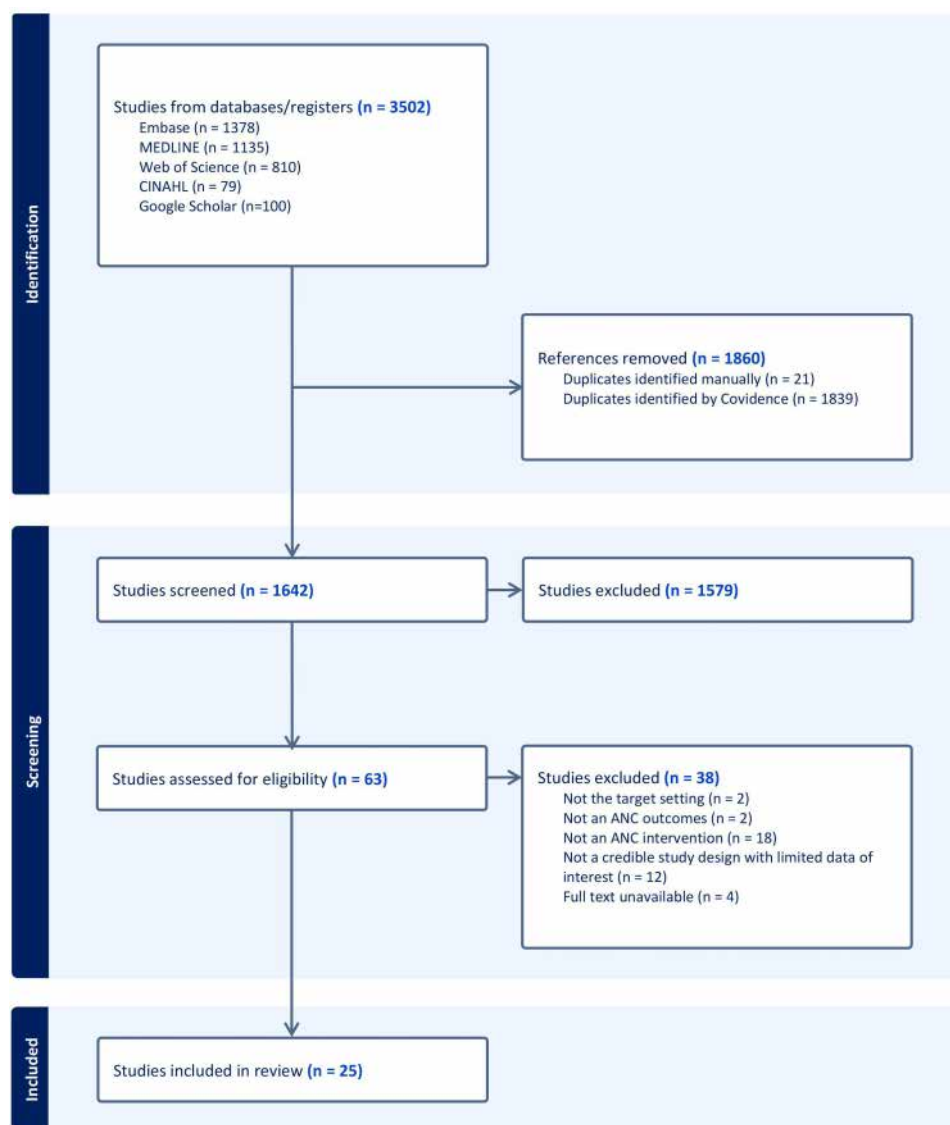


Figure 1 Preferred reporting items for systematic reviews and meta-analyses of the selection process for the rapid realist review. ANC, antenatal care

single-group, baseline/follow-up feasibility study of a pilot intervention.³¹ Nearly half of the studies were observational studies of interventions, both quantitative and qualitative, with the primary data collection targeting pregnant women or HCWs (n=10).^{10 32–40} The other half of the studies were secondary data analyses of national cross-sectional studies, with the ANC intervention or ANC components as the outcome of interest (n=10).^{12 14 16 41–47} Four of the aforementioned studies were multi-country surveys.^{14 32 33 46} The earliest study was published in 2008. The majority of papers are being published after 2018 (n=20), which suggests an upswing in capacity and interest in the areas of research (table 1).

Key findings

We identified 29 CMOs verified over several meetings with the EP. CMOs that were not approved by the EP were excluded. The contexts in which each mechanism operates and the observed outcome identified for each

mechanism were summarised narratively as CMOs and confirmed by the EP (online supplemental appendix 2).

The identified interventions included ANC as a component, with none focusing solely on ANC; see online supplemental appendix 3. The studies reviewed show variations in the intervention components, the context within which the intervention was implemented, and targeted mechanisms. Despite the heterogeneity of the data, these studies contributed to generating a list of programme theories, statements that link context, mechanism and outcome. These programme theories were classified into individual, interpersonal, community and institutional levels.²⁶

Programme theories for individual level (pregnant women)

In figure 2, the CMO configurations are summarised at the individual level, focusing on pregnant women's beliefs, feelings, abilities and empowerment. The contexts identified are mostly rooted in the community's social norms.

Table 1 Summary of the included studies

	Authors	Publication year	Methodology	Study aim(s)	Participants	Study setting
1	Kim <i>et al</i> ⁴⁴	2016	Cross-sectional observational	To analyse inequality and inequity of inpatient, outpatient and maternal healthcare services in public vs private facilities	Women who had one or more births in the last 5 years	Data retrieved from Mortality Survey 2010
2	Rahmani and Brekke ¹⁰	2013	Qualitative	How pregnant women and healthcare providers experience the existing ANC and obstetric healthcare in Afghanistan	Pregnant women, doctors, midwives and traditional birth attendants	Kabul and Ghazni provinces
3	Currie <i>et al</i> ³⁵	2021	Cross-sectional	Examination of providers' and clients' experiences to measure and promote respectful maternal care in Afghanistan	Maternity care providers	Public health facilities
4	Rahman <i>et al</i> ⁴⁵	2022	Secondary data analysis	Examined the intersecting effects of ANC visits, women's education, household wealth and household decision-making autonomy on institutional delivery and delivery assisted by a skilled birth attendant	Women of reproductive age (15–49)	Data extracted from DHS 2015
5	Todd <i>et al</i> ³⁴	2008	Cross-sectional	To determine obstetric providers' attitudes towards and testing for HIV, hepatitis B and syphilis among antepartum patients in Kabul	Doctors and midwives	Three maternity hospitals, Kabul
6	Siekman <i>et al</i> ³²	2018	Mixed methods	To better understand the context-specific barriers and enablers to improving IFA supplementation coverage and adherence	Women and service providers	Afghanistan +6 other countries
7	Newbrander <i>et al</i> ³⁹	2014	Qualitative methods	To determine traditional practices of women, families and communities about maternal and newborn care.	Members of households	Kabul, Bamyan, Herat, Jawzjan and Takhar
8	Edmond <i>et al</i> ³⁰	2018	Non-randomised, population-based intervention survey	To assess the effects of the CHW home visiting programme on the proportion of institutional delivery, ANC and PNC visits	Female CHWs and women	Bamyan and Kandahar provinces
9	Viswanathan <i>et al</i> ⁴²	2012	Cross-sectional	To determine whether the presence of a CHW in the community is associated with increased use of modern contraception, ANC and SBA	Households	Data retrieved from AHS 2006
10	Edmond <i>et al</i> ²⁹	2019	Non-randomised, population-based intervention study	To assess the effectiveness of the MoPH CCT intervention on use of health facilities for delivery and the effects on (i) maternal care seeking for non-incentivised services such as ANC and (ii) community CHW's motivation to perform home visits	Women given birth to one or more children in the last 12 months	Badghis, Bamyan and Kandahar

Continued

Table 1 Continued

	Authors	Publication year	Methodology	Study aim(s)	Participants	Study setting
11	Stanikzai <i>et al</i> ⁴¹	2023	Cross-sectional	This study aimed to assess the contents of ANC services and identify predictors of the use of services by pregnant women during ANC	Women who gave birth in the past 2 years or were pregnant at the time of survey	Data retrieved from AHS 2018
12	Reddy <i>et al</i> ⁴⁰	2023	Descriptive study of a midwife-led intervention	To increase access to an integrated package of essential SRH services and minimal initial service package with a specific focus on the prevention of postpartum haemorrhage and screening and management of pre-eclampsia and eclampsia	Midwives and households	Kabul +9 other provinces
13	Anik <i>et al</i> ⁴⁶	2021	Observational cross-sectional	To investigate the adequacy of ANC in South Asia and how adequacy is associated with WESES	Women with one live birth in the 3–5 years preceding the survey	South Asia countries, including Afghanistan
14	Engineer <i>et al</i> ²⁷	2016	Cluster randomised trial	To test whether P4P could improve maternal and child services.	Households, health facilities and HCWs	442 facilities from 11 P4P provinces
15	Lebrun <i>et al</i> ³¹	2020	Feasibility study single-group, baseline/follow-up study	Assessing a pilot implementation of the MAMA programme in four provinces of Afghanistan	Pregnant women and their husbands	80 health post-catchment areas in the five provinces of Afghanistan.
16	Mirzazada <i>et al</i> ³⁷	2020	Mixed methods	To explore the direct effects of conflict on provision of RMNCAH&N services and describe the contextual factors influencing these services.	Households and key informant	Data extracted from DHS 2015 and MICS
17	Alemi <i>et al</i> ⁴⁴	2021	Secondary data analysis	To examine the association between male attendance during ANC and the use of reproductive healthcare services	Women aged 16–59 years	Data extracted from DHS 2015
18	Edmond <i>et al</i> ²⁸	2020	Cross-sectional	To assess the association between MHTs and service usage for essential preventive services such as ANC	Pregnant women and children under 5	Data extracted from HMIS 2017 and DHS 2015
19	Liu L <i>et al</i>	2023	Cross-sectional study	To explore the effects of IPV on the frequency of ANC visits among pregnant women	Women who had given birth within the past 12 months	Data extracted from DHS 2015
20	Ansari <i>et al</i> ³⁶	2019	Multi-method approach	To assess the quality of the early detection and management of pre-eclampsia /eclampsia in health facilities and skilled birth attendants' perceptions of their working environment	Public and private health facilities and skilled birth attendants	Public and private facilities
21	Tawfiq <i>et al</i> ¹²	2023	Secondary analysis	To examine the sociodemographic predictors of timely ANC initiation in ever-married women during their latest pregnancies	Women with ANC visits	Data retrieved from AHS 2018

Continued

Table 1 Continued

	Authors	Publication year	Methodology	Study aim(s)	Participants	Study setting
22	Sherley <i>et al</i> ¹⁶	2020	Secondary analysis	To explore potential health system causes for any difference in antenatal tetanus toxoid-containing vaccine coverage by residence area.	Women with a live birth in the 5 years preceding the survey	Data retrieved from the DHS 2015
23	Dadras ⁴⁷	2023	Secondary analysis	To shed light on the pivotal role of women's empowerment in enhancing maternity care utilisation	Women aged 15–49 years	Data retrieved from the DHS 2015
24	Kim <i>et al</i> ³⁸	2022	Secondary analysis	To assess the relationship between travel time, availability of EmOC and satisfaction/perceived quality on maternal healthcare utilisation in northern Afghanistan.	Households	Data retrieved from multiple secondary data sources
25	Madaj <i>et al</i> ³³	2022	Multi-country cross-sectional study	To identify the essential components of ANC and PNC and to assess whether resources are in place to provide these to women	Management team and HCWs	Afghanistan, Chad, Ghana and Tanzania

ANC, antenatal care; CCT, Conditional Cash Transfer; CHW, community health worker; DHS, Demographic and Health Survey; EmOC, Emergency Obstetric Care; HMIS, Health Management Information System; IFA, iron and folic acid; MAMA, Mobile Alliance for Maternal Action; MICS, Multiple Indicator Cluster Survey; MoPH, Ministry of Public Health; PNC, Postnatal Care; P4P, pay-for-performance; SBA, Skilled Birth Attendant; WESES, Women's Empowerment and Socioeconomic Status.

Having education, living in an urban area and having access to ANC services do not guarantee complete ANC attendance if women believe that ANC visits are necessary only when they have complications.¹⁰ When women are young, not empowered and have low decision-making power, they do not receive adequate ANC services, even if they reside in wealthy and urban environments.^{34 47} The sense of embarrassment 'shame' associated with pregnancy

upholds women from disclosing their problems to family members or HCWs.¹⁰ Additionally, the discomfort of wearing a burqa during pregnancy and the presence of unknown men on public transportation discourage women from attending ANC visits.¹⁰ In contrast, literacy, regardless of the level of education, and a strong attitude against spousal violence lead to adequate ANC uptake.⁴⁷ The CMO configurations identified are presented below:

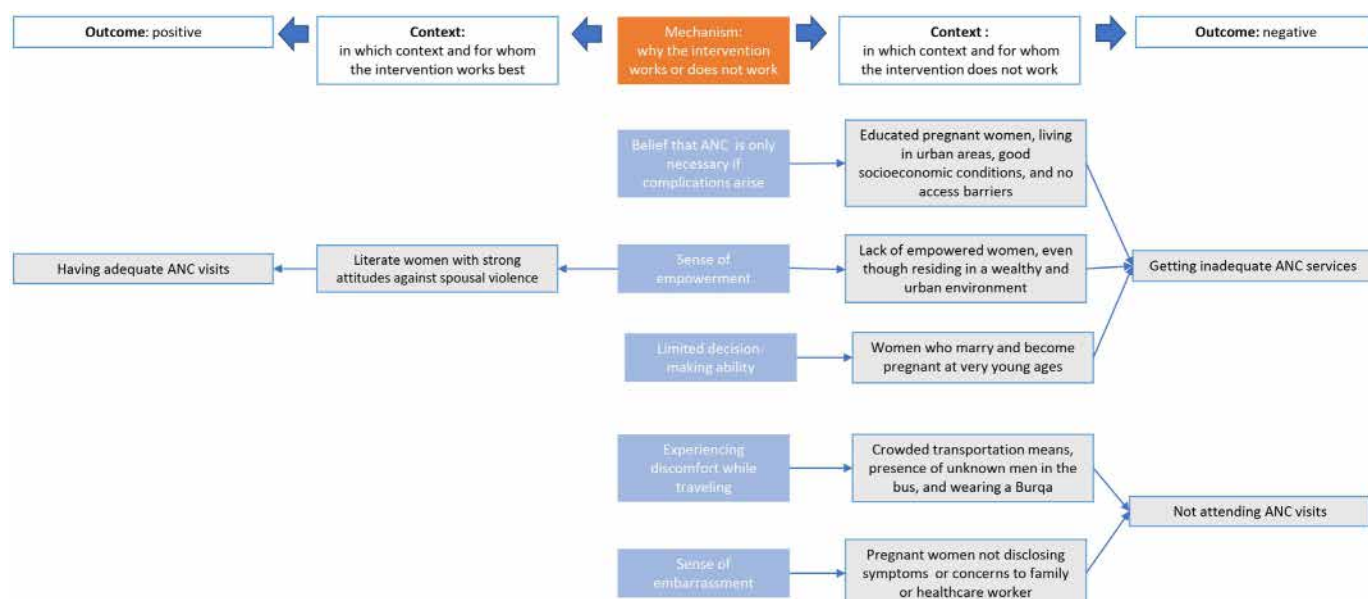


Figure 2 Programme theories for individual level. ANC, antenatal care

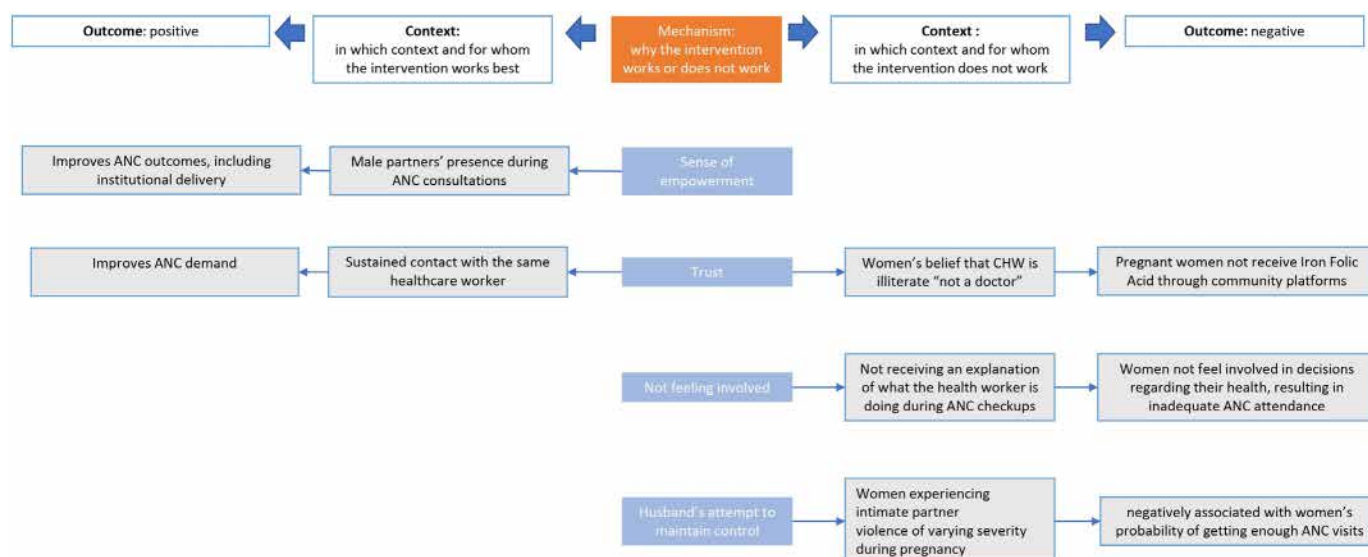


Figure 3 Programme theories for interpersonal level. ANC, antenatal care; HCW, healthcare worker

CMO 1: Educated women in urban areas with higher socioeconomic position (C) might not attend the recommended ANC visits (O) because they believe they do not need medical care when feeling healthy (M).¹⁰

CMO 2: Literate women with strong attitudes against spousal violence (C) are more empowered (M), leading to better ANC uptake (O).⁴⁷

CMO 3: Disempowered women, even in wealthy and urban environments (C), receive inadequate ANC (O) due to low empowerment to demand better quality services and active discrimination of the ANC provider (M).^{12 46}

CMO 4: Young pregnant women (C) have lower decision-making power (M), resulting in inadequate ANC (O).⁴⁷

CMO 5: Limited and uncomfortable transportation options, combined with wearing a 'burqa' and presence of other unknown men (C), make pregnant women feel uncomfortable (M) and reluctant to travel, leading to missed ANC visits (O).¹⁰

CMO 6: Pregnant women feel embarrassed to discuss symptoms to a family member or an HCW (C and M), leading to delays in seeking healthcare or not seeking care at all (O).¹⁰

Programme theories for the interpersonal level (household and healthcare worker)

In figure 3, CMO configurations are summarised at the interpersonal level, focusing on pregnant women's interactions with their household members and HCWs.

When husbands accompany pregnant women to ANC consultations, women feel empowered, leading to more informed healthcare decisions and increased ANC attendance.⁴⁴ Conversely, when husbands use violence against pregnant women to maintain control, it negatively affects ANC attendance.¹⁴

The societal expectation for women to exhibit strength and resilience often influences the level of support they

receive from key family decision-makers, such as their husbands and mothers-in-law.³⁹ This expectation can result in a reluctance or refusal to seek medical care, even when complications arise during pregnancy, resulting in lower ANC visits. In some Afghan societies, using formal health services is perceived as shameful by households, as it publicly demonstrates the need for help during vulnerable times, reinforcing the avoidance of public healthcare services and ANC intake.

Trust plays a crucial role in the interaction between HCWs and pregnant women. Consistent contact with the same HCW during ANC outreach services improves trust and increases the demand for ANC. In contrast, when the volunteer CHWs with limited education and training provide iron and folic acid (IFA) tablets, women refuse to take them due to a lack of trust in CHWs' qualifications.³²

Additionally, during ANC consultations, if the provider does not explain the procedures, women feel uninvolved in the process, resulting in inadequate ANC intake.³⁵ The CMO configurations identified are presented below:

CMO 7: male partner presence during ANC visits (C) empowers women to seek necessary healthcare (M), improving ANC and institutional delivery rates (O).⁴⁴

CMO 8: violence is rooted in the intimate partner's attempt to maintain control of their partner (C and M) that restricts women's mobility and access to healthcare, leading to fewer ANC visits (O).¹⁴

CMO 9: the expectation for women to be strong (M) results in a lack of support from family decision-makers, particularly husband and mother-in-law, for seeking medical care, even in complications (C), leading to low ANC attendance (O).¹⁰

CMO 10: in some Afghan societies, using formal health services is seen as shameful by households (C and M), leading to avoidance of public healthcare services (O).³⁹

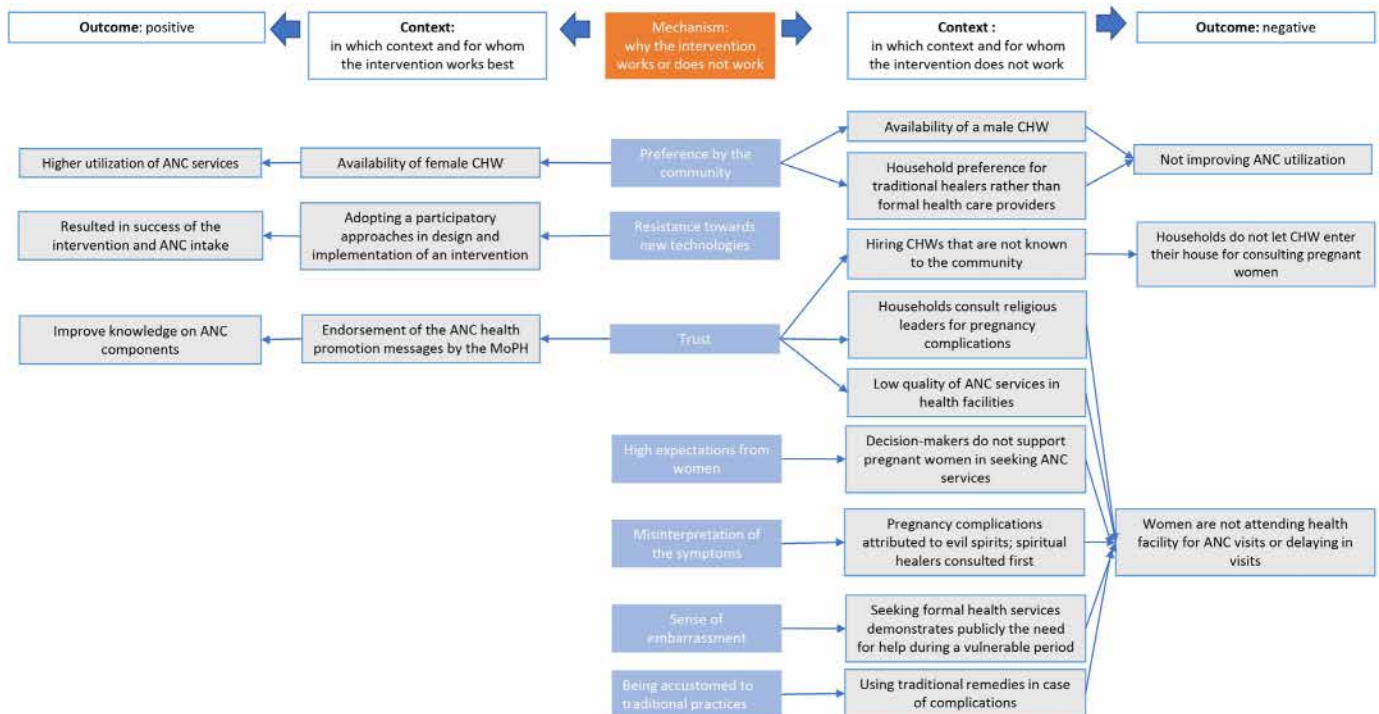


Figure 4 Programme theories for community level. ANC, antenatal care; CHW, community health worker; MoPH, Ministry of Public Health

CMO 11: regular interactions with the same HCW (C) foster trust (M) between families and health workers, leading to higher ANC demand (O).²⁸

CMO 12: when CHWs are illiterate (C), women doubt their abilities and training ‘not a doctor’ (M), resulting in the low uptake of IFA through community platforms (O).³²

CMO 13: the lack of communication and involvement during ANC (C) makes women feel excluded from their care decisions (M), reducing their engagement in the process (O).³⁵

Programme theories for community level (neighbourhood)

In figure 4, CMO configurations are summarised at the community level, focusing on communities’ preference, trust, resistance, customs and norms.

Some household decision-makers, mainly husbands or mothers-in-law, trust and prefer that women receive pregnancy-related care from traditional healers or religious leaders rather than HCWs.³⁷ This preference also extends to the gender of the CHW where female CHWs improve the usage of ANC, whereas male ones are associated with no CHW engagement at all.⁴² Misinterpretation of pregnancy symptoms, such as convulsions being viewed as ‘evil spirit’ possession, also leads people to rely on religious leaders, thereby delaying medical care.¹⁰

A lack of trust in the quality of services provided at health facilities further discourages households from seeking ANC.³⁹ In contrast, religious leaders gain higher levels of trust within the community due to their constant presence and frequent interactions with male household members.³⁹

The familiarity of CHWs with community affected ANC services uptake. When CHWs are not well-known to the community, households are less likely to trust them and consequently do not permit pregnant women to seek their services, leading to reduced ANC attendance.^{29 30}

In contrast, trust has been successfully established in other interventions. For instance, in the Mobile Alliance for Maternal Action intervention, government-endorsed health promotion messages significantly enhanced trust and improved knowledge regarding ANC.³¹ Interventions that used participatory approaches in design and implementation phases faced less resistance from the community, resulting in better outcomes and increased ANC intake.⁴⁰ The CMO configurations identified are presented below:

CMO 14: in some communities with high illiteracy rates, households prefer traditional or religious healers over healthcare professionals (C and M), reducing maternal health service utilisation (O).³⁷

CMO 15: in the context of available health facilities (C), community misinterpretation of convulsions as ‘evil spirit’ possession (M) leads to delays in seeking medical care, worsening the condition (O).¹⁰

CMO 16: doubts about the quality of public health facilities (C and M) discourage households from seeking care, even in emergencies (O).³⁹

CMO 17: religious leaders’ frequent contact with household men (C) builds high trust (M), leading households to seek their advice even during health emergencies (O).³⁹

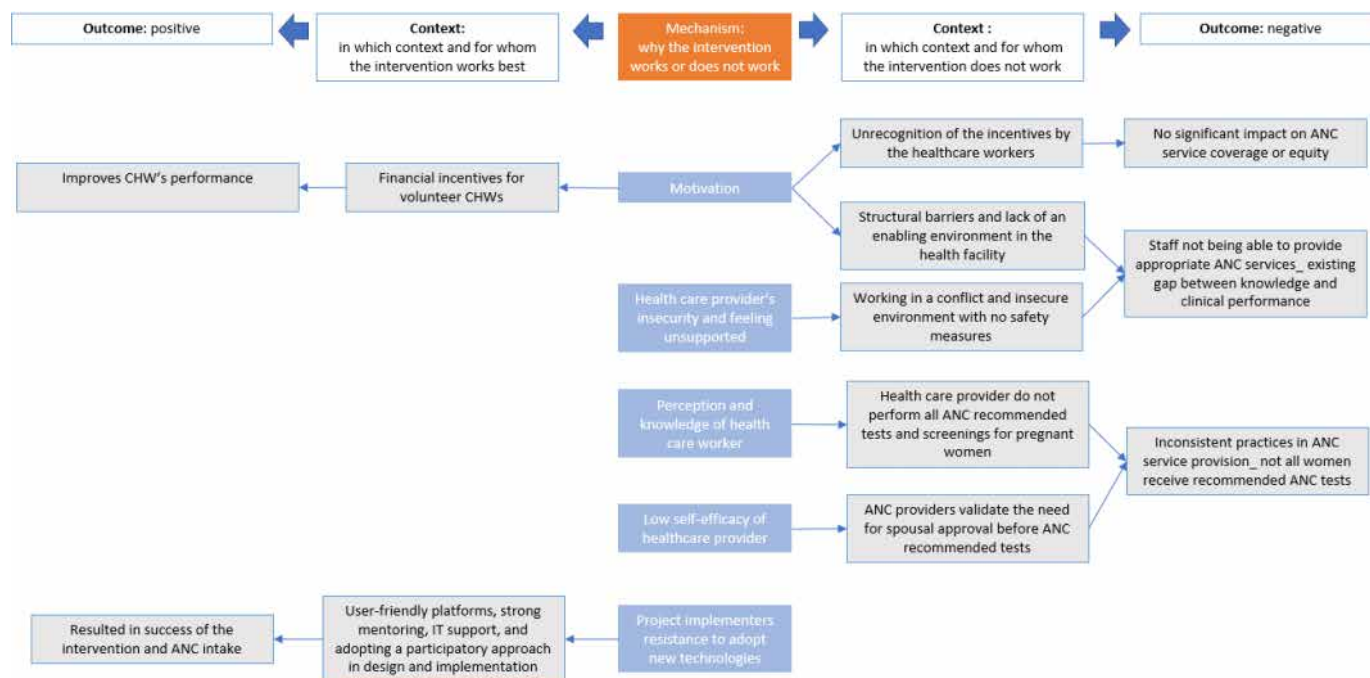


Figure 5 Programme theories for institutional level. ANC, antenatal care; CHW, community health worker

CMO 18: in rural settings, reliance on traditional remedies because households are used to managing problems on their own (C and M) delays or suppresses contact with healthcare facilities, even during complications (O).¹⁰

CMO 19: preference for female CHWs in the community (C and M) increases usage of ANC and other maternal services (O), whereas male CHWs' impact is the same as having no CHW at all (O).⁴²

CMO 20: the presence of CHWs who are not from the community (C) fails to increase ANC coverage in the poorest communities owing to a lack of trust in CHWs (M), leading to reduced ANC access (O).^{29 30}

CMO 21: anonymous and private access to approved health information (C) reassures participants (M) and successfully involves men in maternal health decisions, improving ANC knowledge and couples' joint decision-making (O).³¹

CMO 22: in fragile, post-COVID-19 contexts, resistance to adopting digital health interventions (C and M) was mitigated by the user-friendly design of the intervention and strong support systems from the community, leading to successful intervention outcomes (O).⁴⁰

Programme theories for institutional level (health system and policy)

In figure 5, CMO configurations are summarised at the institutional level, focusing on HCWs' knowledge, motivation, self-efficacy, safety and support, and resistance to new technologies.

Inadequate infrastructure, persistent supply shortages and lack of an enabling environment in health facilities demotivated HCWs from delivering appropriate services.³⁵ Financial incentives enhanced motivation and performance.²⁹ However, when HCWs did not perceive

these incentives, their motivation remained low, resulting in no improvement in ANC coverage.²⁷

In conflict-affected areas, HCWs were chronically stressed and received inadequate support, hindering their ability to provide appropriate care.³⁵

Inconsistent practices were evident among ANC providers, linked to their knowledge of managing pregnancy complications and their perception of the rarity of the disease in the community.^{33 34} ANC providers often uphold cultural norms requiring spousal approval for healthcare decisions, reflecting low empowerment to make independent clinical decisions, resulting in inconsistent ANC care.^{34 47}

In fragile contexts, introducing user-friendly platforms, strong mentoring, information technology support systems and adopting a participatory approach in design and implementation reduced resistance to new technologies.⁴⁰ The CMO configurations identified are as follows:

CMO 23: financial incentives for CHWs, despite conflict and insecurity (C), enhance their motivation (M) and performance in referring women for institutional delivery (O).²⁹

CMO 24: limited recognition of incentives by HCWs (C) fails to improve their motivation (M), job satisfaction or client satisfaction, resulting in the absence of a significant change in service coverage or quality (O).²⁷

CMO 25: inadequate infrastructure and persistent supply shortages in health facilities (C) demotivate HCWs (M) and hinder respectful maternal care (O).³⁵

CMO 26: perceptions that infections are rare and a lack of knowledge of ANC providers (M) contribute to inconsistent practices in managing pregnancy complications and conducting tests for diseases such as HIV

and hepatitis in hospitals, despite test availability (C), resulting in gaps in care (O).^{34 36}

CMO 27: female ANC providers often uphold cultural norms requiring spousal approval for healthcare decisions, including for ANC tests (C and O), reflecting low empowerment to make independent clinical decisions (M).³⁴

CMO 28: health workers in conflict zones (C) experience chronic stress and feel unsupported (M), impairing their ability to provide appropriate and respectful maternal care (O).^{35 36}

CMO 29: in fragile, post-COVID-19 contexts, resistance of intervention implementers to adopting digital health interventions (C and M) was mitigated by the user-friendly design of the intervention and strong support systems from the community, leading to successful intervention outcomes (O).⁴⁰

DISCUSSION

We identified 29 programme theories across nine interventions implemented in Afghanistan from 2000 to 2024, all validated by the national EP. In most reviewed interventions, ANC was part of a larger initiative, reflecting Afghanistan's integrated health sector model.⁵ Although integration offers advantages by aligning services, processes and staff, it also adds complexity, making it challenging to identify which specific intervention components drive positive outcomes.⁴⁸ However, some researchers argue that in low-capacity or fragile settings, vertical or disease-specific interventions may be more effective in delivering targeted outcomes, as integration can overwhelm under-resourced systems or lead to diluted accountability and focus.⁴⁹

We identified a limited number of intervention evaluation studies. The studies reviewed showed variation in the intervention components, context within which the intervention was implemented and targeted mechanisms. Despite the heterogeneity of the data, these studies have contributed to generating programme theories described across four socio-ecological levels: individual, interpersonal, community and institutional.²⁶

Findings from this review highlighted that societal norms restricting women's autonomy create a multi-faceted challenge for pregnant women seeking ANC. Women are often not permitted to visit health facilities unless accompanied by a male family member, typically their husband. Nevertheless, many men perceive accompanying their pregnant wives to health facilities as beneath their dignity. This belief stems from traditional views that consider maternal health exclusively a woman's issue. In Afghanistan, the health system has also been influenced by this perception, as maternal wards are typically designated for women, with men often prohibited from entering.⁴⁴ Existing literature suggests that men's involvement in ANC increases ANC uptake, improves ANC outcomes and enhances women's mental health.^{50 51} However, some researchers caution that promoting male

involvement without addressing underlying gender inequalities may inadvertently reinforce male dominance over reproductive health decisions, potentially undermining women's autonomy.⁵²

Our results highlight that in Afghanistan, HCWs' decisions are also influenced by social norms, with many relying on family's approval for clinical decisions. This reflects that HCWs are not empowered enough to make medical decisions beyond social norms that benefit pregnant women, which leads to inconsistent practices during ANC provision. A study among midwives found that they upheld the belief that husbands should determine their wives' access to healthcare services.³⁴ Some older midwives even believed that a husband had the right to divorce his wife if she contracted a sexually transmitted infection, even if he had infected her.³⁴ Studies in other countries, Africa, Asia and Latin America, also confirm that HCWs' attitudes, behaviours and perceptions highly influence women's ANC uptake.⁵³

When it comes to decision-making power, mothers-in-law and husbands often decide about ANC visits, especially for young women with low decision-making power. This is a common pattern in many hierarchical cultures.^{54 55} Some believe that women should be strong and resilient, making them reluctant to support ANC visits. This perception arises from the belief that pregnancy is a natural event and does not require professional supervision. Additionally, given its association with sexual activity, pregnancy is often linked to shame, leading women to avoid discussing it openly. These cultural perspectives are not unique to Afghan women; similar views have been reported by women in Pakistan and other low-income and middle-income countries (LMICs).^{10 54} Although this complex web of social norms and beliefs reinforces barriers to ANC access, empowerment is found to be positively associated with improved access to ANC services. Literate women with a strong attitude towards intimate partner violence were more likely to complete their ANC visits. The association between women empowerment and ANC uptake is also recognised in several other contexts.^{46 47}

From a system perspective, studies emphasise the 'social' elements of a health system, such as cultural norms, power dynamics, relationships, beliefs and trust, that are likely to contribute to the interventions' performance gains.^{56 57} Few studies in our review have explicitly highlighted 'trust' as a key factor contributing to the failure of interventions. Trust is crucial for the effective operation of the healthcare system and improves interactions between patients and providers. When trust is present, patients are more likely to seek healthcare services, communicate their health needs and follow treatment plans.⁵⁷ Studies highlighted a link between trust and motivation of HCWs.⁵⁸ Highly motivated staff provide high-quality services, which in turn fosters interpersonal trust between HCWs and the community.⁵⁸ Some interventions, such as pay-for-performance (P4P) intervention, that intended to boost HCW's motivation

through financial rewards, showed limited success in Afghanistan because of implementation issues, such as payment delays and lack of recognition of the incentive by HCWs.⁵⁹ Studies conducted in other contexts have confirmed that P4P mechanisms could be less effective in weak healthcare systems.^{60 61}

The trust also stems from the presence of 'bonding' and 'linking' social capital between healthcare providers and service users.⁵⁸ Many HCWs live in the communities they serve and share similar cultural and social identities with the patients, which contributes to the trust developed through repeated interactions. The review found that ANC uptake decreases when a CHW is assigned from a different community, reflecting the community's low trust in the unfamiliar CHW. This finding aligns with evidence from other low- and middle-income settings, where trust in healthcare providers is closely tied to social proximity and shared community identity. Studies from sub-Saharan Africa and South Asia have shown that CHWs embedded within their own communities—who share language, culture and social networks with service users—are more likely to be trusted and effective in promoting ANC uptake.⁶²

The results also suggest that inadequate infrastructure and lack of an enabling environment, along with chronic stress caused by conflict, demotivated HCWs from providing respectful and appropriate ANC. In Afghanistan, physical violence and threats against HCWs are frequent in conflict zones but are underreported.⁶³ Gilson argues that in contexts where political and economic crises are prolonged, HCWs often express unprofessional behaviours and practices reflecting low morale, which erodes trust between the community and the health system.^{35 57} Additionally, in such contexts, humanitarian assistance is sometimes used as a political tool, further eroding trust between the community and the healthcare system.⁶⁴ A study conducted in 10 conflict-affected countries highlights that the motivation of HCWs and trust are key factors for effective healthcare delivery in conflict settings.⁶⁴

Few studies have assessed the quality of ANC services, focusing instead on the number of ANC visits. The single benchmark of four ANC visits has diverted attention from the substantive content of ANC services. Interventions, such as Conditional Cash Transfer (CCT) and P4P, exacerbated this situation by incentivising four ANC visits as the only indicator of good ANC performance.^{27 29} However, it is the content of ANC services that leads to improved outcomes, not merely the number of visits. Similar quality-coverage gaps have been documented in many LMICs.⁶⁵ Some have proposed alternative indicators that encompass both the quantity and quality of services.⁶⁵ The lack of attention to the quality of ANC services also deteriorated trust between the community and the health system. Hence, religious leaders trusted by the community have gained influence. Although religious leaders may enhance community trust in healthcare, over-reliance on them can risk reinforcing conservative norms that restrict

women's access to comprehensive reproductive services, particularly for contraception and other reproductive rights, deeply influencing the community's attitudes and health-seeking behaviours.⁶⁶

In Afghanistan, a considerable proportion of women receive ANC services from private clinics.¹² However, no studies have evaluated the quality, content or effectiveness of private sector ANC services. The lack of attention to the private sector was also documented elsewhere.⁴¹

This study highlights the need for sustained investment in women's education and empowerment, with culturally sensitive community-based initiatives helping to increase women's involvement in healthcare decisions and ANC uptake. These initiatives have proven effective in other settings. For instance, a cluster randomised controlled trial in southern Ethiopia found that community-led health education significantly raised the likelihood of at least one ANC visit and facility-based delivery.⁶⁷ In line with the inherently social and relational nature of health systems, the findings also highlight the critical role of social elements—such as trust, interpersonal relationships, cultural norms, power dynamics and beliefs—in shaping the effectiveness of ANC interventions. These elements are central to the development of responsive health policies and system reforms. Further research is needed to examine how these social dynamics influence the success or failure of ANC initiatives in Afghanistan contexts. Strengthening the capacity of local health researchers is also essential for addressing context-specific challenges and knowledge gaps in maternal health. This review also emphasises the need to culturally adapt maternity care strategies through participatory approaches involving local communities. Research is needed to identify the most effective ways of involving communities in maternal healthcare while respecting cultural values and safeguarding women's health. Additionally, training, supporting and incentivising HCWs—particularly CHWs—is crucial for improving ANC delivery and outcomes. Finally, engaging husbands in ANC can contribute to improved maternal health outcomes by fostering supportive environments and shared decision-making. Additional research is necessary to understand how male involvement is shaped by cultural and social norms and design interventions that empower women while ensuring male engagement remains respectful of women's autonomy. In addition, future studies should go beyond measuring the frequency of ANC visits and examine the quality of interactions and services provided during those visits.

The use of a theory-driven approach enabled this study to move beyond traditional effectiveness reviews by examining how and why ANC interventions work within the Afghan context. The methodological adaptability of the RRR demonstrated its relevance for use in fragile, data-scarce settings. Additionally, the inclusion of a national EP enriched theory development and helped address gaps in the published literature. However, this study also has several limitations. Although expert input was

incorporated, the absence of direct engagement with community members—including women and frontline HCWs—may have limited the depth of contextual understanding. The review relied on available literature and expert opinion, which may have introduced selection and interpretation bias. Additionally, limited reporting of mechanisms in the included studies constrained the depth of realist theory development, suggesting the existence of hidden mechanisms. The broad review time-frame (2000–2024) may have introduced inconsistencies because of changes in policy, governance and health system structures over time. Most of the included studies were observational or qualitative, with only a few evaluating intervention outcomes, making it difficult to assess the effectiveness of specific ANC interventions. Furthermore, the exclusion of non-English publications may have limited the scope of the study. The findings are also highly context-dependent and may not be generalisable to other fragile or low-resource settings without further contextual analysis. Finally, the evolving political context in Afghanistan, including bureaucratic and restrictive governance under Taliban rule, limited the study's ability to engage directly with current policymakers.

CONCLUSION

There is a critical need to invest in evaluation in Afghanistan. Further studies should systematically investigate the pathways through which ANC interventions lead to outcomes and provide deeper insights into how programme design shapes these mechanisms and outcomes. Moreover, this review highlights a renewed emphasis on the quality and content of ANC services. Recognising the social nature of health systems, ANC interventions should consider 'social' elements of health systems, such as cultural norms, power dynamics, relationships, beliefs and trust, likely to generate performance gains. Community involvement is essential for designing and implementing effective and sustainable ANC interventions.

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REFERENCES

- 1 ReliefWeb. Afghanistan is among worst places on globe for women's health, say UNICEF and CDC - Afghanistan, 2002. Available: <https://reliefweb.int/report/afghanistan/afghanistan-among-worst-places-globe-womens-health-say-unicef-and-cdc>
- 2 Bartlett L, LeFevre A, Zimmerman L, *et al*. Progress and inequities in maternal mortality in Afghanistan (RAMOS-II): a retrospective observational study. *Lancet Glob Health* 2017;5:e545–55.
- 3 Sopko JF. What we need to learn: Lessons from twenty years of Afghanistan reconstruction. 2021.
- 4 Newbrander W, Ickx P, Feroz F, *et al*. Afghanistan's basic package of health services: its development and effects on rebuilding the health system. *Glob Public Health* 2014;9 Suppl 1:S6–28.
- 5 WHO-EPHS. WHO MiNDbank - The Essential Package of Hospital Services for Afghanistan 2005/1384, 2022. Available: <https://www.mindbank.info/item/5610>
- 6 WHO MiNDbank. National Health Policy 2005–2009 and National Health Strategy 2005–2006, Available: <https://extranet.who.int/mindbank/item/2043>
- 7 WHO. WHO recommendations on antenatal care for a positive pregnancy experience, 2016. Available: <https://www.who.int/publications-detail-redirect/9789241549912>
- 8 Villar J, Ba'aqeel H, Piaggio G, *et al*. WHO antenatal care randomised trial for the evaluation of a new model of routine antenatal care. *Lancet* 2001;357:1551–64.
- 9 Issuu. Afghanistan Health Survey 2018: Executive Summary by Koninklijk Instituut voor de Tropen, 2019. Available: <https://issuu>.

- com/royaltropicalinstitute/docs/kit_afghan_survey_8pages_summary_sc
- 10 Rahmani Z, Brekke M. Antenatal and obstetric care in Afghanistan—a qualitative study among health care receivers and health care providers. *BMC Health Serv Res* 2013;13:166.
 - 11 Akseer N, Bhatti Z, Rizvi A, et al. Coverage and inequalities in maternal and child health interventions in Afghanistan. *BMC Public Health* 2016;16:797.
 - 12 Tawfiq E, Fazli MR, Wasiq AW, et al. Sociodemographic Predictors of Initiating Antenatal Care Visits by Pregnant Women During First Trimester of Pregnancy: Findings from the Afghanistan Health Survey 2018. *Int J Womens Health* 2023;15:475–85.
 - 13 Yeo S, Bell M, Alaofè H, et al. Afghan women's empowerment and antenatal care utilization: a population-based cross-sectional study. *In Review* [Preprint] 2022.
 - 14 Liu L, Liang D, Anwar S, et al. Overlooked impact of less severe physical violence on antenatal care visits: Findings from South Asia. *J Glob Health* 2023;13.
 - 15 van Egmond K, Naeem AJ, Verstraeten H, et al. Reproductive health in Afghanistan: results of a knowledge, attitudes and practices survey among Afghan women in Kabul. *Disasters* 2004;28:269–82.
 - 16 Sherley J, Newton S. The association between area of residence and sufficient antenatal tetanus vaccination in women ages 15–49 in Afghanistan: an analysis of the 2015 DHS dataset. *Glob Health Res Policy* 2020;5:51.
 - 17 Saul JE, Willis CD, Bitz J, et al. A time-responsive tool for informing policy making: rapid realist review. *Implement Sci* 2013;8:103.
 - 18 De Weger E, Van Vooren NJE, Wong G, et al. What's in a Realist Configuration? Deciding Which Causal Configurations to Use, How, and Why. *Int J Qual Methods* 2020;19:1609406920938577.
 - 19 Wong G, Westthorp G, Greenhalgh J, et al. Quality and reporting standards, resources, training materials and information for realist evaluation: the RAMESES II project. *Health Serv Deliv Res* 2017;5:1–108.
 - 20 Pawson R, Greenhalgh T, Harvey G, et al. Realist review—a new method of systematic review designed for complex policy interventions. *J Health Serv Res Policy* 2005;10 Suppl 1:21–34.
 - 21 Covidence. Better systematic review management, Available: <https://www.covidence.org/>
 - 22 Dada S, Dalkin S, Gilmore B, et al. Applying and reporting relevance, richness and rigour in realist evidence appraisals: Advancing key concepts in realist reviews. *Res Synth Methods* 2023;14:504–14.
 - 23 Wong G, Greenhalgh T, Westthorp G, et al. RAMESES publication standards: realist syntheses. *BMC Med* 2013;11:21.
 - 24 Hong QN, Fàbregues S, Bartlett G, et al. The Mixed Methods Appraisal Tool (MMAT) version 2018 for information professionals and researchers. *EFf* 2018;34:285–91.
 - 25 Campbell M, Katikireddi SV, Hoffmann T, et al. TIDieR-PHP: a reporting guideline for population health and policy interventions. *BMJ* 2018;361:k1079.
 - 26 McLeroy KR, Bibeau D, Steckler A, et al. An ecological perspective on health promotion programs. *Health Educ Q* 1988;15:351–77.
 - 27 Engineer CY, Dale E, Agarwal A, et al. Effectiveness of a pay-for-performance intervention to improve maternal and child health services in Afghanistan: a cluster-randomized trial. *Int J Epidemiol* 2016;45:451–9.
 - 28 Edmond K, Yousufi K, Naziri M, et al. Mobile outreach health services for mothers and children in conflict-affected and remote areas: a population-based study from Afghanistan. *Arch Dis Child* 2020;105:18–25.
 - 29 Edmond KM, Foshanji AI, Naziri M, et al. Conditional cash transfers to improve use of health facilities by mothers and newborns in conflict affected countries, a prospective population based intervention study from Afghanistan. *BMC Pregnancy Childbirth* 2019;19:193.
 - 30 Edmond KM, Yousufi K, Anwari Z, et al. Can community health worker home visiting improve care-seeking and maternal and newborn care practices in fragile states such as Afghanistan? A population-based intervention study. *BMC Med* 2018;16:106.
 - 31 Lebrun V, Dulli L, Alami SO, et al. Feasibility and Acceptability of an Adapted Mobile Phone Message Program and Changes in Maternal and Newborn Health Knowledge in Four Provinces of Afghanistan: Single-Group Pre-Post Assessment Study. *JMIR Mhealth Uhealth* 2020;8:e17535.
 - 32 Siekmans K, Roche M, Kung'u JK, et al. Barriers and enablers for iron folic acid (IFA) supplementation in pregnant women. *Matern Child Nutr* 2018;14.
 - 33 Madaj B, Gopalakrishnan S, Quach A, et al. Where is the “C” in antenatal care and postnatal care: A multi-country survey of availability of antenatal and postnatal care in low- and middle-income settings. *BJOG* 2022;129:1546–57.
 - 34 Todd CS, Ahmadzai M, Smith JM, et al. Attitudes and practices of obstetric care providers in Kabul, Afghanistan regarding antenatal testing for sexually transmitted infection. *J Obstet Gynecol Neonatal Nurs* 2008;37:607–15.
 - 35 Currie S, Natiq L, Anwari Z, et al. Assessing respectful maternity care in a fragile, conflict-affected context: Observations from a 2016 national assessment in Afghanistan. *Health Care Women Int* 2024;45:169–89.
 - 36 Ansari N, Manalai P, Maruf F, et al. Quality of care in early detection and management of pre-eclampsia/eclampsia in health facilities in Afghanistan. *BMC Pregnancy Childbirth* 2019;19:36.
 - 37 Mirzazada S, Padhani ZA, Jabeen S, et al. Impact of conflict on maternal and child health service delivery: a country case study of Afghanistan. *Confl Health* 2020;14:38.
 - 38 Kim C, Tappis H, Natiq L, et al. Travel time, availability of emergency obstetric care, and perceived quality of care associated with maternal healthcare utilisation in Afghanistan: A multilevel analysis. *Glob Public Health* 2022;17:569–86.
 - 39 Newbrander W, Natiq K, Shahim S, et al. Barriers to appropriate care for mothers and infants during the perinatal period in rural Afghanistan: a qualitative assessment. *Glob Public Health* 2014;9 Suppl 1:S93–109.
 - 40 Mohan Reddy GM, Shaikh TK, Sreejit EM, et al. Digitally strengthened, midwife-led intervention to reach the unreached mothers across ten conflict-prone provinces of Afghanistan during humanitarian crisis. *Nurs Midwifery Stud* 2023;12:114–23.
 - 41 Stanikzai MH, Tawfiq E, Jafari M, et al. Contents of antenatal care services in Afghanistan: findings from the national health survey 2018. *BMC Public Health* 2023;23:2469.
 - 42 Viswanathan K, Hansen PM, Rahman MH, et al. Can community health workers increase coverage of reproductive health services? *J Epidemiol Community Health* 2012;66:894–900.
 - 43 Kim C, Saeed KMA, Salehi AS, et al. An equity analysis of utilization of health services in Afghanistan using a national household survey. *BMC Public Health* 2016;16:1226.
 - 44 Alemi S, Nakamura K, Rahman M, et al. Male participation in antenatal care and its influence on their pregnant partners' reproductive health care utilization: insight from the 2015 Afghanistan Demographic and Health Survey. *J Biosoc Sci* 2021;53:436–58.
 - 45 Rahman M, Saha P, Uddin J. Associations of antenatal care visit with utilization of institutional delivery care services in Afghanistan: intersections of education, wealth, and household decision-making autonomy. *BMC Pregnancy Childbirth* 2022;22:255.
 - 46 Anik AI, Islam MR, Rahman MS. Do women's empowerment and socioeconomic status predict the adequacy of antenatal care? A cross-sectional study in five South Asian countries. *BMJ Open* 2021;11:e043940.
 - 47 Dadras O. The individual- and community-level women's empowerment and utilization of maternity care services in Afghanistan: a multilevel cross-validation study. *Int Health* 2024;16:428–37.
 - 48 Baxter S, Johnson M, Chambers D, et al. The effects of integrated care: a systematic review of UK and international evidence. *BMC Health Serv Res* 2018;18:2018.
 - 49 Mills A. Mass campaigns versus general health services: what have we learnt in 40 years about vertical versus horizontal approaches? *Bull World Health Organ* 2005;83:315–6.
 - 50 Yargawa J, Leonardi-Bee J. Male involvement and maternal health outcomes: systematic review and meta-analysis. *J Epidemiol Community Health* 2015;69:604–12.
 - 51 Tekleslasie W, Deressa W. Husbands' involvement in antenatal care and its association with women's utilization of skilled birth attendants in Sidama zone, Ethiopia: a prospective cohort study. *BMC Pregnancy Childbirth* 2018;18:315.
 - 52 Dudgeon MR, Inhorn MC. Men's influences on women's reproductive health: medical anthropological perspectives. *Soc Sci Med* 2004;59:1379–95.
 - 53 Mannava P, Durrant K, Fisher J, et al. Attitudes and behaviours of maternal health care providers in interactions with clients: a systematic review. *Global Health* 2015;11:36.
 - 54 Finlayson K, Downe S. Why do women not use antenatal services in low- and middle-income countries? A meta-synthesis of qualitative studies. *PLoS Med* 2013;10:e1001373.
 - 55 Bitew DA, Getahun AB, Gedef GM, et al. Determinants of household decision making autonomy among rural married women based on Ethiopian demography health survey: a multilevel analysis. *BMC Womens Health* 2024;24:216.
 - 56 Whyte E, Olivier J. Social values and health systems in health policy and systems research: a mixed-method systematic review and evidence map. *Health Policy Plan* 2020;35:735–51.

- 57 Gilson L. Trust and the development of health care as a social institution. *Soc Sci Med* 2003;56:1453–68.
- 58 Ezumah N, Manzano A, Ezenwaka U, *et al.* Role of trust in sustaining provision and uptake of maternal and child healthcare: Evidence from a national programme in Nigeria. *Social Science & Medicine* 2022;293:114644.
- 59 Salehi AS, Borghi J, Blanchet K, *et al.* The cost-effectiveness of using performance-based financing to deliver the basic package of health services in Afghanistan. *BMJ Glob Health* 2020;5:e002381.
- 60 Singh NS, Kovacs RJ, Cassidy R, *et al.* A realist review to assess for whom, under what conditions and how pay for performance programmes work in low- and middle-income countries. *Soc Sci Med* 2021;270:113624.
- 61 Turcotte-Tremblay A-M, De Allegri M, Gali-Gali IA, *et al.* The unintended consequences of combining equity measures with performance-based financing in Burkina Faso. *Int J Equity Health* 2018;17:109.
- 62 Enguita-Fernández C, *et al.* *An International Journal for Research, Policy and Practice*.
- 63 Haar RJ, Read R, Fast L, *et al.* Violence against healthcare in conflict: a systematic review of the literature and agenda for future research. *Confl Health* 2021;15:37.
- 64 Singh NS, Ataullahjan A, Ndiaye K, *et al.* Delivering health interventions to women, children, and adolescents in conflict settings: what have we learned from ten country case studies? *Lancet* 2021;397:533–42.
- 65 Hodgins S, D'Agostino A. The quality-coverage gap in antenatal care: toward better measurement of effective coverage. *Glob Health Sci Pract* 2014;2:173–81.
- 66 Oxford Academic. Health seeking behaviour and health service utilization in Pakistan: challenging the policy makers | Journal of Public Health, Available: <https://academic.oup.com/jpubhealth/article-abstract/27/1/49/1549284>
- 67 Yoseph A, Teklesilasie W, Guillen-Grima F, *et al.* Community-Based Health Education Led by Women's Groups Significantly Improved Maternal Health Service Utilization in Southern Ethiopia: A Cluster Randomized Controlled Trial. *Healthcare (Basel)* 2024;12:1045.