

Factors Influencing Intended Antenatal Care Utilization in Malawi: A mixed methods approach of Maternal Health outcomes in Mangochi and Zomba districts, Malawi.

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Article info

Received: October 2025
Revised: February 2026
Accepted: March 2026
Published online: 31 May 2026

Keywords: Antenatal care intentions, Community-based programs, Maternal health, Behavioral change.

Abstract

Despite global efforts to improve maternal health, Malawi continues to face high maternal mortality, largely due to low utilization of antenatal care (ANC) services. This study assessed the impact of a community-based sensitization program on women's perceived importance of ANC and intentions to seek care. A mixed-methods approach combined quantitative data from 220 women in Mangochi and Zomba districts with qualitative insights from focus group discussions (FGDs), in-depth interviews (IDIs), and key informant interviews (KIIs). Poisson regression analysis examined factors influencing ANC intentions, while thematic analysis explored socio-cultural and economic barriers. Findings showed that women in the intervention group were 1.5 times more likely to intend early ANC initiation and planned 9% more visits compared to controls. Female-headed households also had stronger intentions for early initiation and frequent visits. Community sensitization significantly improved perceptions of ANC. The study demonstrates that community-led interventions enhance ANC intentions and address structural barriers.

Introduction

Malawi continues to face significant challenges in maternal health, with persistently high maternal mortality rates (MMR) and low utilization of antenatal care (ANC) services. Despite global and national efforts to improve maternal health outcomes, only 58% of pregnant women in Malawi attend the recommended four or more ANC visits, and many initiate care late in pregnancy, missing critical early interventions (Mamba et al., 2017; Mandiwa & Namondwe, 2024). This gap in ANC utilization contributes to preventable complications, as evidenced by Malawi's MMR of 225 deaths per 100,000 live births as of 2023 (WHO, 2026). Addressing these disparities requires a deeper understanding of the barriers to ANC uptake and the potential of community-based interventions to shift perceptions and behaviors.

Antenatal care (ANC) is defined as the care that is received by women during their pregnancy period. Adequate and timely ANC provides opportunities for early detection and management of pregnancy-related risks, offering essential health tasks such as screening, diagnosis, and disease prevention (Yubin Sui et al., 2021). The significance of early and frequent antenatal care attendance during pregnancy cannot be overstated, as highlighted

by Mwenebanda et al (2024). This practice plays a crucial role in identifying and mitigating risk factors during pregnancy, ultimately enhancing maternal and child health outcomes.

Malawi's current guidelines are derived from the 2003 WHO/UNICEF report, which recommended that women attend formal ANC services at least 4 times during each pregnancy. The visits are divided into three trimesters. Ideally, the first visit should be within 12 weeks of pregnancy, but no later than the 16th week. The second visit should be within 24 to 28 weeks, the third at 32 weeks, and the fourth at 36 weeks of pregnancy. Recently, the WHO (2018) increased the recommended number of visits to at least 8 during pregnancy. However, a significant challenge persists, especially in sub-Saharan Africa, where a substantial number of pregnant women, particularly adolescents, initiate antenatal care attendance belatedly. However, despite its recognized importance, the utilization of ANC services in Malawi is influenced by intricate factors indicative of the low levels of utilization (Chatata & Chirwa, 2025; Gomez et al., 2015).

Recent studies highlight the role of socio-cultural, economic, and structural factors in shaping ANC-seeking behaviors. For instance, economic hardships, distance to health facilities, and cultural beliefs hinder the timely initiation of ANC (Chimatiro et al., 2018; Towongo et al., 2023; Udenigwe & Yaya, 2022). Conversely, community-led initiatives, such as education programs, male involvement campaigns, and cash transfers, have shown promise in improving ANC attendance by enhancing perceived benefits and reducing logistical barriers (Somji et al., 2022; Patil et al., 2025). In Malawi, the Titukulane Project's care group model has emerged as a transformative approach, leveraging peer support and localized sensitization to empower women and foster earlier and more frequent ANC visits (Patil et al., 2025).

Furthermore, social determinants are a major underlying cause of health inequities. Improving maternal health outcomes through action on Social Determinants of Health (SDH) may improve women's health-seeking behavior (Rutarembwa et al., 2015; Kuppusamy et al., 2023; Marmot, 2005). In particular, the WHO frameworks highlight how broader structural and socioeconomic factors such as education, income, gender norms, and access to health services shape women's ability and motivation to attend ANC (Alibhai et al., 2022). In Malawi, for instance, women with higher education and income levels are more likely to recognize the importance of early ANC and afford transport, while those constrained by poverty, distance, and patriarchal decision-making often delay or miss visits (Kachimanga et al, 2020).

Complementing this, the Community Agency and Behavioral Intentions frameworks emphasize the collective and psychological dimensions of ANC use. Community agency captures how local networks, women's groups, and traditional leaders foster supportive norms and collective accountability for ANC attendance, while behavioral intention models (such as the Theory of Planned Behavior) explain how attitudes, perceived social expectations, and self-efficacy influence a woman's decision to seek care. Together, these perspectives show that ANC utilization depends not only on structural determinants but also on how communities mobilize social support and how individual women internalize motivation and perceived control to act on their intentions.

Several studies have explored the interconnection between social determinants and ANC visit use at the national level. The interconnection between social determinants and ANC visit use largely focused on rural and urban divide and at national level (Ng'ambi et al., 2022; Mandiwa and Namondwe, 2024; Mwenebanda et al., 2024; Murray-Watson et al., 2025; Chatata and Chirwa, 2025). Hence, demonstrating the effect of these social factors on ANC use in rural settings was warranted.

This study examines the impact of such interventions on women's perceived importance of ANC and their intentions to utilize services in Mangochi and Zomba districts. Drawing on mixed-methods data, we explore how sensitization programs influence maternal health beliefs and address policy gaps in ANC accessibility. The main objective of the study is to examine the impact of the Titukulane Project's community-based intervention (e.g., care groups and nutrition programs) on women's intentions to utilize antenatal care (ANC) services specifically, the timing of first ANC visit and number of intended visits in Mangochi and Zomba districts, Malawi. We also

seek to identify socio-demographic and household factors associated with ANC-seeking intentions. And explore perception shifts and barriers influencing ANC utilization through qualitative narratives.

Methodologies

This study adopted a mixed-methods approach, integrating both quantitative and qualitative data to examine the determinants of antenatal care (ANC) utilization and the quality of maternal health services. The combination of numerical trends and contextual narratives enabled a more comprehensive understanding of the barriers and facilitators influencing ANC-seeking behavior in Eastern Malawi.

Qualitative component

Study context

The study was conducted in Zomba and Mangochi districts, located in the Eastern Region of Malawi, where the Titukulane Project has been actively implemented. These districts are characterized by predominantly rural populations with notable disparities in maternal health service access and outcomes. Study participants were women of reproductive age, aged 18 or older, who had given birth within the two years preceding the survey. Qualitative data was collected through focus group discussions (FGDs), in-depth interviews (IDIs), and key informant interviews (KIIs). These interviews were conducted in the local language and involved a wide range of participants, including women of reproductive age (18–50 years), Health Surveillance Assistants (HSAs), community leaders, and project facilitators.

A total of 4 FGDs were conducted across both districts, organized by gender and age categories (18–19, 20–24, and 25–50) to ensure participant comfort and encourage open discussion. Each group consisted of 6–8 participants and was stratified by socio-economic status to foster relatability and inclusion. Male and female discussions were held separately to promote free expression. IDIs were used to supplement the FGDs by providing deeper, individualized insights into topics that may not have been fully explored in group settings. In each district, we had 1 IDI with a mother who had a 2-year-old infant and was a beneficiary of the project. 3 KIIs were conducted in each district with individuals possessing expert knowledge of maternal health issues and the Titukulane intervention. We interviewed health personnel, particularly Health Surveillance Assistants (HSAs) and nurses, as well as community leaders, such as chiefs, to gain a contextual understanding of the interventions. These interviews focused on challenges experienced by beneficiaries, disaggregated by gender and vulnerability, and provided critical reflections on the design and effectiveness of ongoing interventions. Refer to the annex for more specification on the composition of the people we sampled and interviewed for the whole project.

Qualitative Data Analysis

All qualitative interviews were audio-recorded (with participants' consent), transcribed into English, and analyzed using thematic content analysis. Transcripts were reviewed iteratively to ensure familiarity with the data and to identify emerging themes. A thematic matrix, developed based on the study's objectives, guided the coding process and enabled systematic comparison of patterns across data sources.

Quantitative component

The Titukulane Project's 2023-2024 Participant-Based Survey (PaBS), implemented by IFPRI-Malawi in Zomba and Mangochi districts, utilized a quantitative approach with a two-stage cluster sampling strategy to assess 33 key outcome indicators that could not be routinely monitored. In the first stage, villages (clusters) were randomly chosen from 19 Traditional Authorities (TAs) across the two districts, covering 3,774 villages. Selection was done using Probability Proportional to Size (PPS), considering the number of registered project participants. The second stage involved systematically sampling 889 participants through fractional interval sampling from the Titukulane STREAM MIS database, in which households and individuals had unique identifiers. However, for the purpose

of this specific analysis on women and maternal health, we only used 220 women who were direct beneficiaries of the caregroup interventions to assess the impact and the outcomes of the intervention. The sampling frames consisted of 95,247 participants, categorized into 28,186 value chain producers, 4,796 off-farm livelihood participants, and 62,265 maternal and child health participants, ensuring balanced representation across interventions. A total of 47 clusters were established for maternal and child health, value chain, and off-farm activities, with around 10 participants per cluster. To maintain accuracy, results were weighted according to the target beneficiary population.

Ethical Considerations

Prior to data collection, all participants were fully informed about the study's purpose, confidentiality measures, and their rights—including the right to refuse participation or withdraw at any time. Informed consent was obtained verbally before each interview, and all interviews were conducted in private settings to ensure confidentiality. Participation was entirely voluntary, and respondents did not incur any costs. The researchers adhered to the highest ethical standards in conducting the study and committed to performing all activities with utmost diligence, ensuring a safe, respectful, and collaborative environment throughout the process. The study also upheld the principles outlined in the *UN Convention on the Rights of Persons with Disabilities*, available at <https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities.html>. Furthermore, the research protocol received ethical clearance from the Institutional Review Board of the International Food Policy Research Institute (IFPRI) in Michigan, United States of America.

Variables

Dependent variable

The study examined two count-based dependent variables related to antenatal care (ANC) intentions: (1) the number of intended ANC visits during pregnancy and (2) the intended timing of the first ANC visit (measured in months of gestation). Where the intentions are not observed behaviour but rather intentions of future aspirations of ANC uptake and use based on their newly attained knowledge and sensitization of the titukulane care group interventions.

Independent variable

The primary independent variable was participation in the care group intervention, a community-based program targeting women of reproductive age. These groups provided integrated support, including nutrition interventions (e.g., Nutrition Cash Transfers), maternal health education, and peer-led sensitization on ANC best practices. Through regular meetings, women received guidance on early initiation of ANC, visit frequency, and maternal-child health strategies. The intervention aimed to shift perceptions, reduce structural barriers, and empower women to prioritize ANC.

Model specification

To examine count-based outcomes related to antenatal care (ANC) intentions, Poisson regression analysis was employed. This method is particularly suited for modeling dependent variables that are non-negative integers (Hinde, 1982), such as the number of intended ANC visits and the intended timing of the first ANC visit in months. The Poisson model assumes that the mean and variance of the outcome variable are equal, making it appropriate for count data. The general functional form of the model is specified as:

$$\log(\lambda_i) = \beta_0 + \sum_{i=0}^n \beta_i X_i + \mu_i \dots\dots\dots (1)$$

where λ_i represents the expected count for the i -th observation, β_0 is the intercept, and β_1 to β_i are coefficients corresponding to the predictor variables X_1 to X_i and μ_i is our error term. Model fit was evaluated using the Wald chi-square test, which assesses whether all coefficients jointly differ from zero. A pseudo-R-squared value was also reported to provide a general indication of the model's explanatory power. Furthermore, the residual deviance was compared with the degrees of freedom to check for overdispersion.

To facilitate interpretation, the estimated coefficients were exponentiated to obtain incidence rate ratios (IRRs). These IRRs represent multiplicative changes in the expected count of ANC-related outcomes. For instance, an IRR of 1.02 for the *care group* variable in the ANC visits model would imply that women in the intervention group intended 2% more visits compared to those in the control group, holding all else constant.

Table 1: Definition of the variables used in the model

Variable	Description
RMNCAH	A binary variable on women's self-reported assessment of whether reproductive, maternal, newborn, child and adolescent health services had improved
Age	A continuous variable capturing the age of the respondent.
Household size	A continuous variable that captures the number of people in the household
Number of under five children	A categorical variable captures the number of children in a household under five years old.
Nutritional intervention	A dummy variable (1/0) indicating if an individual received this intervention.
Female household head	A dummy variable (1/0) indicating the household head being either male or female.
Marital status	A dummy variable (1/0) indicating if an individual is married
Number of visits	A continuous variable that captures the number of ANC visits that a mother took in their previous pregnancy (2 years preceding the survey)
Timing of visits	A continuous variable capturing how soon an expecting woman started their ANC visits in months
Location	A categorical variable capturing the two districts that were sampled

Results

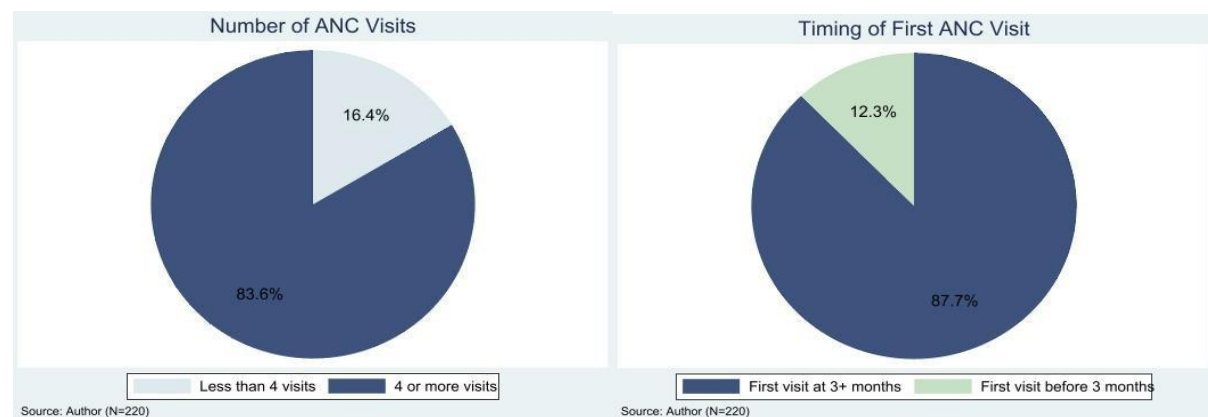
Table 2: Descriptive statistics of the variables used

Variable (N= 220)	Mean	Min	Max
Intended visits (<i>as a count</i>)	9.6	0	9
Care group	94.1%	0	1

Number of visits (<i>as a count</i>)	4.855	0	10
Timing of first visit (<i>in months</i>)	3.314	0	7
Nutritional intervention	95.9%	0	1
Household size (<i>as a count</i>)	5.591	2	20
Age (<i>in years</i>)	30.74	18	50
Marital status			
Married	72.3%	0	1
Female household head	23.6%	0	1
under five children	1.332	0	4
Location			
Zomba	41.8%	0	1
Mangochi	58.2%	0	1
RMNCAH Q			
Quality of care has improved	.236	0	1

The study analyzed data from 220 respondents who were beneficiaries of the project to explore demographic and household characteristics associated with future intentions in antenatal care utilization. Most participants were part of care groups (94.1%) and had received nutritional interventions (95.9%), indicating substantial outreach of community health programs. The mean household size was approximately 6, with the household size ranging from 2 to 20 members. From our sample, we observe that the mean age of the respondents was 30.7. Furthermore, marital status data showed that 72.3% of the women were married, and 23.6% lived in female-headed households. Households had an average of 1.33 children under the age of five. In terms of geographic distribution, 58.2% of the respondents resided in Mangochi district, while 41.8% were from Zomba district.

Figure 1: The distribution of ANC outcomes



The figure shows the distribution of ANC frequency and timing across samples, with 83.6% attending more than 4 visits during their pregnancies. However, 87.7% women attended their first visit after the first 3 months of pregnancy, which still shows a lag in the desired Sustainable Development Goals (SDG) targets.

Table 3: Estimation results on intentions towards ANC utilization

	Model 1: Intended months	Model 2: Intended visits
Care group	1.469*** (0.360)	1.089*** (0.257)
RMNCAH_Q	-1.083*** (0.240)	-0.312 (0.443)
Nutritional intervention	-1.089** (0.539)	-0.414 (0.400)
Household size	0.093 (0.065)	0.052 (0.059)
Age	0.692*** (0.358)	0.943*** (0.308)
Marital status	0.278 (0.495)	0.790* (0.432)
Female household head	1.167*** (0.449)	1.109*** (0.380)
Under five	0.088 (0.292)	0.113 (0.240)
_cons	-0.114 (1.055)	-1.532 (0.954)
F		
p	0.000	0.000
N	220	220

Standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Model 1: Intended Months of ANC Initiation

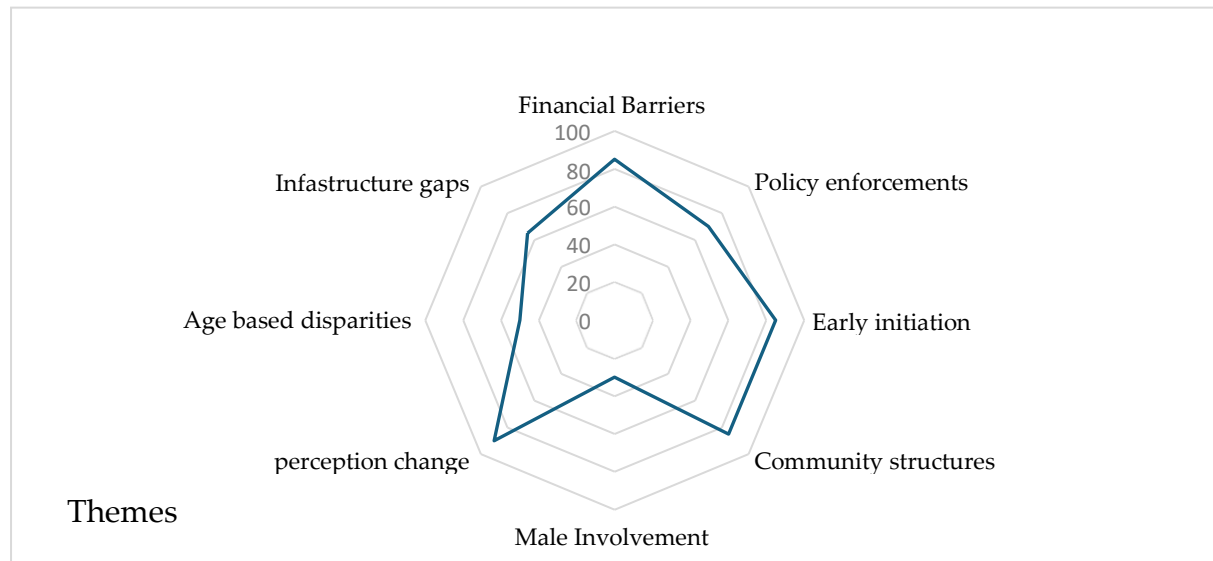
The first Poisson regression model examined factors influencing the intended timing of the first ANC visit (measured in months of pregnancy). Results showed that women in the care group intended to initiate ANC significantly earlier, with a coefficient of 1.469 ($p < 0.001$), indicating they planned to start care nearly 1.5 months sooner than non-intervention participants. Female-headed households also demonstrated stronger intentions for early initiation (coefficient = 1.167, $p < 0.01$). Women who reported having experienced low quality in RMNCAH showed a negative relationship, indicating that they weren't willing to initiate check-ups earlier (coefficient = -0.25, $p < 0.01$). Those in the nutritional intervention show an inverse relationship with early initiation (coefficient = -1.089, $p < 0.05$). Age also showed a positive relationship with the intentions of women's care-seeking behaviour. Furthermore, marital status, household size, and presence of under-five children showed no significant effects. The model was statistically significant overall ($p < 0.001$) and explained substantial variation in intended timing.

Model 2: Intended Number of ANC Visits

The second Poisson regression analyzed predictors of the total number of intended ANC visits. Care group participation again showed a strong positive effect (coefficient=1.089, $p < 0.001$), with members planning about one more visit than non-members. Female-headed households similarly intended more visits (coefficient = 1.109, $p < 0.01$). Older women (coefficient=0.943, $p < 0.001$) and married women (coefficient = 0.790, $p < 0.05$) also reported intentions to attend ANC more frequently. Unlike the timing model. The overall model was significant ($p < 0.001$), though with slightly less explanatory power than the timing model. Both models highlight how care group participation and female household leadership consistently promote stronger ANC engagement across different dimensions of care-seeking.

Qualitative Results

Figure 2: Emergent Themes and narratives from the qualitative analysis



The qualitative findings provided a nuanced context to the quantitative results, revealing how social, economic, cultural, and structural factors influence women's engagement with antenatal care (ANC) and maternal health services. Six interconnected themes emerged from the analysis.

Economic and Material Support as Enablers of Care-Seeking

Across the study sites, participants consistently linked financial and material assistance—particularly through Nutrition Cash Transfers (NCTs)—to improved ANC attendance and engagement with maternal health services. Women explained that such support enabled them to overcome direct costs (e.g., transport) and indirect costs (e.g., food security) that might otherwise prevent clinic visits.

“Women were being helped a lot, especially with food, as they were using those funds to buy food not only for themselves but the whole family.” (FGD, Namabvi)

“For women who had no money to use for transportation to the hospital, they could use the same money.” (FGD, Namabvi)

These accounts demonstrate that economic support not only addresses immediate material needs but also serves as a strong motivator for engaging with preventive health services.

Community Structures and Leadership as Catalysts for Maternal Health Engagement

Community-level actors—such as care groups, cluster leaders, and volunteers—played a critical role in mobilising women for ANC. Care groups raised awareness on the importance of early ANC initiation, while cluster leaders served as respected motivators and points of contact for health information.

“They were encouraged that as soon as they realize that they are pregnant, they need to access the antenatal care service in good time.” (KII HSA, Namabvi)

Women also described the social encouragement of collective clinic visits as women in the same community:

“We even have days where groups of women go together to the hospitals for check-ups, we mobilize each other, and we go to the clinics.” (FGD, Namabvi)

In communities where these structures were active, women not only attended ANC more consistently but also maintained contact with health workers between visits, sometimes receiving services directly in their villages. These findings highlight the influence of community structures in translating health promotion messages into sustained care-seeking behaviours.

ANC Utilization: Promising Practices and Persistent Gaps

Narratives from participants expressed that health worker counselling and community sensitization improved ANC awareness and attendance, with many women expressing pride in participation and perceiving it as both a right and a duty.

“They [health personnel] advise that when a woman suspects pregnancy, she should start [ANC] immediately.” (FGD, Chiunda)

“Women now proudly attend ANC... they know it’s their right and it is their responsibility as expecting mothers to go for frequent check-ups, in case something is wrong.” (KII, GVH-Wife-Chopi)

Participants from both districts described attending ANC checkups as “obvious. However, persistent gaps remained. Climatic events such as floods disrupted access, and some older women delayed ANC based on prior childbirth experience:

“The river has no bridge... a pregnant woman drowned last year.” (KII, GVH-Wife-Chopi)

“Young girls rush to clinics, but older women delay, saying, ‘My body is used to pregnancy.’” (KII, HSA-Kandole)

However, key informants from the health clinics expressed that older women do require to go to the hospital for checkups, because they are also prone to complications. These findings show that while awareness and uptake are improving, geographical and generational barriers remain.

Gender Dynamics and Male Involvement

Despite campaigns to promote male participation in ANC, turnout remained low. While some men assisted with transport, most prioritised income-generating activities over clinic attendance.

“Few men attend clinics... even with prioritization we tell them that those who came with partners will be treated first, turnout is low. Although some husbands escort wives to ANC to ‘show off’ well-dressed families.” **(KII, HSA-Kandole)**

Although the health personnel emphasized how men should come, women in the communities don’t seem to have issues with it, especially those with husbands, as they say the men have bigger priorities and wouldn’t expect them to stand in line all day for ANC.

“The men are gone to the farms and markets in the mornings to bring something back home. It’s hard for them to make time for these check-ups.” **(FGD, Malemia)**

This highlights the ongoing need for gender-sensitive interventions that address economic realities while fostering shared responsibility for maternal health.

Cultural Shifts and Enforcement of Facility-Based Deliveries

Narratives emphasized that traditional norms favoring home births have declined, largely due to advocacy linking them to preventable maternal deaths.

“Religious beliefs about ancestral laws to give birth at home are gone. It has been proven that many who give birth at home lose their lives.” **(FGD, Chiunda)**

Local bylaws reinforced facility deliveries through fines, though these penalties sometimes created resentment among poorer families.

“Laws exist... if anyone gives birth at home, they are charged by the chiefs, and when you go to the hospital for post-natal check-ups, you are also charged by the health providers.” **(FGD, Chiunda)**

The data suggest that while enforcement has been effective in changing norms, it may also exacerbate economic strain for the most vulnerable.

Financial and Structural Barriers to Maternal Healthcare Access

Even with free maternal healthcare policies, indirect costs—such as transportation, food, and opportunity costs—continued to deter facility use. And later on leading to avoidable complication that come during pregnancy and sometimes delivery.

“One thing that makes a person give birth at home is the lack of money to go to the hospital... due to transportation difficulties, a person may choose to give birth at home.” **(FGD, Chiunda)**

“If they go to Mangochi [hospital], what will they eat? What will the children eat? They think, ‘Will they not charge me money?’ So, they stay home.” **(FGD, Chiunda)**

Distance to facilities was an obstacle in most areas, as some women found it difficult to continue with check-ups later in their pregnancy period. As well as young mothers being too scared, when the days towards delivery become closer because of the distance.

The qualitative findings reveal a significant shift in community perceptions toward maternal healthcare, with hospital deliveries now widely accepted due to enforced policies and awareness of risks associated with home births. Early ANC initiation has improved through care group interventions, though age-based disparities persist, as older mothers often delay care, citing prior pregnancy experience. While community structures like cluster leaders, volunteers and care groups have effectively mobilized women. Male involvement remains critically low, with few husbands participating in ANC visits despite its proven benefits. Persistent infrastructure gaps – particularly flood-damaged bridges and distant clinics – continue to undermine access, disproportionately affecting rural women. Together, these findings highlight the need for targeted interventions.

Discussion

Our findings reveal that women exposed to care group interventions were significantly more likely to intend earlier ANC initiation and higher visit frequency, highlighting the value of community-based strategies in shifting norms and autonomy (Neal et al., 2018; Hibusu et al., 2024). However, persistent barriers such as economic constraints, male disengagement, and uneven healthcare quality persist and highlight the need for targeted policy actions.

This study demonstrates that participation in the care group intervention and residence in female-headed households was strongly associated with improved ANC-seeking intentions, evidenced by both earlier intended initiation and higher planned visit frequency. Quantitatively, care group members were 1.5 times more likely to intend early ANC initiation and planned 9% more visits than non-members, aligning with qualitative reports of women describing ANC as a "right and responsibility" after sensitization. Female-headed households similarly showed stronger intentions, likely reflecting greater autonomy in healthcare decision-making—a theme echoed in focus groups where women emphasized peer support and economic interventions (e.g., Nutrition Cash Transfers) as key enablers.

However, the unexpected negative association between perceived poor RMNCAH service quality and intended ANC timing suggests contextual barriers, such as facility-level inefficiencies or targeting of higher-risk pregnancies, which qualitative data revealed as deterrents ("They think, 'Will they not charge me money?' So, they stay home"). Notably, while marital status and older age predicted more intended visits, they had no significant effect on timing, highlighting that socio-demographic factors influence ANC engagement in distinct dimensions—a nuance highlighted by qualitative accounts of older women delaying care due to prior pregnancy experience ("My body is used to pregnancy").

Okedo-Alex (2019) reported that several factors—including unplanned pregnancy, previous pregnancy complications, limited decision-making autonomy, lack of spousal support, long distance to health facilities, absence of health insurance, and high service costs—were negatively associated with the overall uptake, timing, and frequency of antenatal care (ANC) visits. Similarly, Ikemeh et al. (2025) found that women with positive perceptions of life satisfaction were more likely to utilize ANC services, whereas those who experienced gender-based violence or approved of wife beating had significantly lower odds of attending ANC, reflecting low self-esteem and limited empowerment. The observed negative relationship in their study likely stems from low levels of empowerment, as the research was conducted predominantly in rural settings characterized by poor road infrastructure and restricted access to services—findings that align with those of Gebeyehu et al. (2022) and Ayele et al. (2025). Although not investigated in the study, women in the rural areas have higher parity, findings which other studies have identified as contributing to lowering the probability of ANC use. The Malawi Demographic and Health survey (NSO, 2024) shows that women in the rural areas have higher parity than their urban counterparts. This finding indicates that women residing in rural areas tend to have a higher number of children, a factor that previous research, such as Okedo-Alex et al. (2019), has associated with lower utilization of antenatal care (ANC). Multiparous women may perceive themselves as more experienced and familiar with pregnancy and

the routine care provided during ANC, which can lead to delayed initiation of visits and fewer overall contacts with health services.

Consistent with our study, previous research across sub-Saharan Africa and Malawi highlights that antenatal care utilization is shaped by a complex interplay of socio-economic, cultural, and institutional factors. Chimatiro et al. (2018) identified that delayed ANC initiation in Malawi often stems from financial barriers, long distances to facilities, and entrenched cultural beliefs surrounding pregnancy disclosure. Similarly, Mandiwa and Namondwe (2024) found that service quality, provider attitudes, and structural inefficiencies significantly influence women's willingness to seek ANC. At the community level, studies such as Patil et al. (2025) and Somji et al. (2022) highlight the transformative role of group antenatal care and peer-led interventions in increasing early ANC attendance and fostering supportive networks for expectant mothers.

Beyond Malawi, evidence from Andegiorgish et al. (2022) and Fenta et al. (2024) in multi-country analyses demonstrates that maternal education, household autonomy, and economic empowerment consistently predict higher ANC engagement. Conversely, Barankanira et al. (2023), Khanal et al., (2023) and Turi et al. (2020) observed that geographic inequalities, poor infrastructure, and inconsistent health messaging continue to constrain service uptake despite improved awareness. Consistent with the findings of Amare et al. (2025), our results indicate that socioeconomic disadvantage remains a significant determinant of inadequate antenatal care utilisation, reinforcing evidence that structural inequalities continue to shape maternal health service uptake across sub-Saharan Africa.

Moreover, Hibusu et al. (2024) in Zambia and Islam et al. (2023) in Bangladesh reported that perceived quality of maternal care and pregnancy intention strongly mediate ANC-seeking behavior supporting our finding that negative experiences with RMNCAH services reduce the likelihood of early initiation. Collectively, these studies affirm that improving ANC utilization requires integrated approaches that enhance both access and perception of care quality, empower women's decision-making, and sustain community-level engagement.

Policy Implications

The findings highlight the importance of community-based maternal health interventions, like the care group model, in promoting ANC utilization. Policymakers should prioritize gender-sensitive programming, given that female-headed households demonstrated stronger ANC intentions, possibly due to greater autonomy in healthcare decision-making. Additionally, the mixed effects of RMNCAH quality and nutritional interventions suggest that program design matters—future initiatives should ensure consistent messaging and address potential barriers that might inadvertently delay care-seeking. Investments in male engagement could further enhance ANC uptake, particularly in male-headed households where intentions were lower.

Study Limitations

This study has several limitations. First, the small sample size (N=220) may limit statistical power and generalizability, particularly for subgroup analyses. Second, the absence of key control variables—such as education, income, distance to health facilities, and prior pregnancy experiences—means unmeasured confounders could influence the results. Future research should incorporate these factors to better isolate program effects. Furthermore, Longitudinal studies tracking real-world ANC utilization would strengthen causal inferences. Despite these constraints, the findings provide valuable insights for improving maternal health interventions.

Conclusion

This study demonstrates that community-based interventions, particularly the *care group* model, significantly improve women's perceptions and intentions to utilize antenatal care (ANC) services in Malawi. Quantitative findings revealed that participants in the intervention group were 1.5 times more likely to intend early ANC

initiation and planned 9% more visits than non-participants, with female-headed households showing similarly strong intentions. Qualitative insights highlighted the role of economic support (e.g., Nutrition Cash Transfers) and peer mobilization in shifting perceptions of ANC from a discretionary choice to a "right and responsibility." However, persistent barriers such as male disengagement, economic constraints, and geographic inequities highlight the need for multifaceted strategies to sustain these gains.

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