



Antenatal Communication Methods in Remote Healthcare Facilities: Perspectives from Health Care providers and Women

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Abstract

This study examined communication methods in antenatal care from the perspectives of healthcare providers and women in Rufunsa District, Zambia, utilizing Giddens' Structuration Theory as a theoretical framework. Employing a qualitative descriptive research design, the study involved semi-structured interviews with five administrative personnel, 14 healthcare providers from selected health facilities 13 pregnant women and 8 members of the Safe Motherhood Action Group (SMAG). Through the analysis of these interviews, the study identified a multifaceted approach encompassing five key communication methods: group education, client-centered education, print media health information, theatre-driven health information, and tech-driven health information. The findings revealed both strengths and weaknesses of these varying methods, emphasizing the need for enhancements to improve antenatal care delivery and maternal health outcomes. Recommendations based on the study's findings advocate for targeted training for healthcare providers, increased resource availability, and community engagement interventions to foster effective and informed communication with pregnant women.

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1. Introduction

Effective communication is important in addressing Zambia's high maternal mortality rate of 252 deaths per 100,000 live births and a neonatal mortality rate of 27 deaths per 1,000 live births (ZDHS, 2020). The 2018 Zambia Demographic Survey shows an increase in women's access to antenatal care (ANC) from 88% to 97% over 26 years, although only 37% of pregnant women seek ANC in their first trimester, and 13% do so in the sixth and seventh months of pregnancy. To enhance maternal health outcomes, the Zambian Ministry of Health implements various interventions focusing on effective communication between pregnant women and healthcare providers. These interactions empower women with knowledge on pregnancy, care options, and their rights (Ministry of Health, 2022) ^[29].

Community engagement activities promote these strategies, promoting participatory learning and informed decision-making. The Ministry facilitates equitable access to quality healthcare through the National Health Strategic Plan (NHSP) 2022-2026, which aligns with WHO's Universal Health Coverage principles and the UN's SDG 3 on health and well-being. In addition, the Ministry has developed the Reproductive Health, Maternal, Newborn, Child, Adolescent Health and Nutrition Communication and Advocacy Strategy (RMNCAH-N) 2018-2025 to enhance access to health services through targeted Social and Behavior

Change (SBC) interventions (MoH, 2017) ^[20].

Maternal healthcare is essential for supporting the health of pregnant women and infants, with ANC playing a pivotal role in providing education and support. Effective communication is necessary for promoting understanding and building trust and encouraging health-seeking behaviours (Campbell et al., 2016). The WHO recommends at least eight ANC contacts for comprehensive care (Tunçalp et al., 2017). However, obstacles such as cultural beliefs, language barriers and resource constraints, particularly in rural areas, may hinder effective communication, potentially leading to misunderstandings and poorer health outcomes (Dahab et al., 2020).

Antenatal care

Antenatal care, a health service for pregnant women, whose main aim is to support a woman and her partner to prepare adequately for the new life and child by providing individualized, shared care (Heinonen, 2021) ^[11] continues to provide forums for health information sharing thereby creating opportunities for health care interactions between health practitioners and the women. In a quest to not only concentrate on the response to complex issues related to ANC practice, organization and delivery but also to prioritizing person-centered care and well-being, not only focusing on reducing morbidity and deaths, the World Health Organization released new ANC recommendations on routine ANC recommending eight antenatal care contacts. The new model recommends pregnant women to have their first contact during the first 12 weeks' gestation, with the following contacts taking place at 20, 26, 30, 34, 36, 38 and 40 weeks' gestation. (WHO, 2016). This helps to increase maternal and fetal assessments to detect complications, improve support and communication between healthcare providers and pregnant women, and increase the likelihood of positive pregnancy outcomes.

Ensuring good communication practices during ANC i.e. providing women with an opportunity to interact and ask questions, listening to them and ensuring accuracy in understanding helps to support and normalize the pregnancy journey (Baron et al, 2018)

The global lifetime risk of maternal mortality is estimated at approximately 1 in 180. There are disparities between developed and developing countries with the former reporting a significantly lower risk (1 in 4,900) and the latter a higher risk (1 in 170 in Pakistan). The differences can be primarily attributed to differences in quality antenatal care provision in the two classifications of regions (Albert et al, 2020) ^[1].

Comparatively, the record in developing countries may not be good enough, but it is in itself an indication of opportunities to be taken advantage of in the area of communication of health information between health care providers and pregnant women. Unfortunately, these opportunities are usually missed because the women do not attend all the required visits to receive the quality which ensures reception of the full potentiality of antenatal care services. Research carried out to review the inadequate use of antenatal services in a range of low-income countries revealed some reasons why women in Africa are not attending antenatal clinics. Factors associated with non-attendance of ANC were classified into three categories namely accessibility, attitudes to ANC and interpersonal issues and specifically outlined to include distance, cost, waiting time, quality of care, perceptions, relationship with healthcare providers, pregnancy disclosure, family conflict (Andrew et al, 2014). Further, as earlier mentioned, there are

assertions that non-attendance of antenatal care services is tied to some traditional beliefs and myths that are strongly held by some pregnant women. Studies have shown that records of women shunning antenatal care services are high especially in rural areas (Kawungezi et al, 2015) ^[16]. Tran, Gottval et al., (2012) confirm that women in urban areas and environments where there is more income are more likely to access adequate antenatal care characterized by three indicators namely number of visits, timing of visits and content of services as compared to women in rural and marginalized areas and environments where there is less income.

Communication in Antenatal Care

Literature reveals a strong connection between effective communication and health-seeking behavior among pregnant women, suggesting that those receiving clear, culturally appropriate, and timely information are more likely to engage in antenatal care (ANC) services (Dahab et al., 2020). This study posits that communication is vital for improving accessibility to antenatal services, as highlighted by Corcoran (2007), who argues that "Communication is an important part of health promotion," addressing key health issues through behavior change strategies.

Several communication approaches in ANC include group education, client-centered education, print media, and technology-driven methods. Group education promotes shared learning and mutual support among pregnant women (Baron et al., 2018), while client-centered education focuses on personalized interactions, meeting women's specific health needs (Lippke et al., 2021) ^[18]. Print media, including pamphlets and posters, can effectively relay health information, although language barriers and limited distribution may hinder their impact, especially in rural areas (Mahar et al., 2012). Technology-driven communication methods such as mobile applications and social media offer promising avenues for enhancing real-time interactions and health information dissemination, although their impact may be impeded by language barriers and limited distribution, particularly in underserved areas (Ganle et al., 2014) ^[10]. This study evaluated existing antenatal communication methods at Rufunsa healthcare facilities and assessed women's perceptions of the communication used during ANC services. The Zambian Ministry of Health emphasizes early and consistent ANC attendance by promoting its importance through various strategies, including the Reproductive Health, Maternal, Newborn Child, Adolescent Health and Nutrition Communication and Advocacy Strategy for 2018 to 2021. The research operated on the premise that communication is key to the effective provision of ANC services. Negative attitudes and practices leading to delayed or inconsistent ANC attendance may result from insufficient communication between healthcare providers and women. Sharma and Sharma (2015) note that communication is effective when it achieves the desired response.

However, it remains unclear whether the information shared with pregnant women during ANC is sufficient for them to feel satisfied and positively respond to the messages. Non-attendance or partial attendance at required visits may hinder the uptake of antenatal information, consequently impacting negatively on behavior change.

Statement of the Problem

Health is a fundamental right, and access to health information that promotes healthy behaviors is equally essential. The Ministry of Health has developed communication strategies and approaches for sharing

antenatal information with pregnant women. Effective antenatal communication is important to enable women respond positively to services and to ensure high-impact interventions that influence maternal and infant health outcomes.

Despite the established antenatal care communication structures (Kodero, 2017; Andrzejczak, 2024) ^[17, 3] and the recognized importance of clear communication (Chang et al., 2018), there remains uncertainty about the types of communication used and a lack of empirical evidence on the effectiveness of various approaches to achieve improved antenatal care (Lippke et al., 2021) ^[18]. This study seeks to explore antenatal communication interactions between healthcare providers and pregnant women, utilizing Gideon's Structuration Theory to examine the dynamics between social structure and individual agency.

There is limited understanding of how healthcare providers share antenatal information with women at clinics, and research on integrating communication approaches into routine healthcare practices is scarce. Additionally, it remains unclear whether the right communication channels are being used and if the content is packaged to meet the needs of individual women and the health system.

Leaving these gaps unaddressed, leads to ignoring important factors such as communication in antenatal care, resulting in ineffective communication approaches, dissatisfaction with communication processes, and reduced engagement with antenatal services. This neglect could further negatively impact maternal and neonatal health, potentially increasing mortality rates and adversely affecting perceptions of the healthcare system.

This research aims to address these issues by investigating the antenatal communication approaches used by healthcare providers in Rufunsa healthcare facilities, with the goal of enhancing the communication of antenatal information and improving the overall quality of care for pregnant women in the region.

Specific Objective

To understand communication methods used in antenatal care between healthcare providers and pregnant women

Theoretical Framework of the Study

This study aimed to understand antenatal communication between healthcare providers and women in selected healthcare facilities in Rufunsa District, using Structuration Theory as its foundation. Structuration Theory was developed in 1976 by British sociologist Anthony Giddens, to examine how people interact and how their actions create rules and structures that influence behavior. Giddens emphasizes the duality of structure, explaining the interdependence of social action and individual agency. He posits that action is both enabled and constrained by the rules and resources that shape interactions. The theory defines three fundamental structures—signification (interpretation), legitimation (norms of behavior), and domination (resources for achieving goals)—which vary depending on individual interpretations. Therefore, individuals can either reproduce or change existing structures through their actions while striving for ontological security, underscoring the importance of shared social practices involving elements of both individuals and shared structures.

The research adopted Structuration Theory to connect communication practices with the healthcare structures that influence them, analyzing how social practices (communication approaches) shape and are shaped by healthcare systems. It provides insights into the interactions

between healthcare providers and pregnant women, revealing the structures that support or obstruct effective communication. The study incorporated the Socio-Ecological Model (2025), to illustrate the relationships affecting healthcare provision across different levels, including individual, interpersonal, organizational, community, and policy dimensions. While Structuration Theory offers valuable insights, it has limitations, such as a tendency to prioritize individual actions over collective agency and structural factors, difficulty in establishing clear boundaries between agency and structure, and lack of adequately addressing power dynamics and their effects on social structures. Critics also argue that concepts like "structure" and "agency" may be challenging to define and operationalize, and the theory may neglect the perspectives of marginalized groups and the complexities of power, ideology, and economic structures.

Empirical Studies and Literature Gap

The existing literature highlights several gaps regarding effective communication in antenatal care (ANC), including knowledge gaps related to the restricted focus on certain types of communication, population gaps that overlook health service providers, and methodological gaps resulting from small sample sizes (Cutajar et al., 2020). Despite recognizing the significance of communication in maternity care there has been no agreement by researchers or professionals on what constitutes "effective communication." A cross-sectional survey in Pakistan revealed differences in maternal mortality rates between developed and developing countries and underscored the impact of quality ANC on health outcomes (Albert et al., 2020; Alkema et al., 2016; Filippi et al., 2016; WHO, 2015) ^[1]. Raine et al. (2020) researched on pregnant women in South Australia, finding that the language used in ANC greatly affects women's experiences and emotions.

A study in Western Sydney revealed that negative statements from educators predominated during labor classes, which may affect women's perceptions of care (Cutajar et al., 2020). Rodger et al. (2013) note varying preferences for information channels among pregnant women. In Pakistan, poor antenatal communication was evidenced through exit interviews revealing inadequate information, education, and very poor IEC materials in terms of quality and quantity (Mahar et al., 2012). Further, a qualitative review in England called for addressing barriers in antenatal communication by understanding women's experiences to prevent maternal and neonatal well-being risks (Andrzejczak et al., 2024).

Internationally, research emphasized the need for effective communication initiatives. Milnes (2022) highlighted the importance of preparing midwifery students for effective communication during clinical placements for implementation of effective communication during ANC services. Additionally, a study on HIV-positive pregnant women in Kenya found that mobile phone counseling enhanced accessibility to ANC services, helping the women to make informed decisions regarding their pregnancy and health issues (Okal et al., 2022).

Research by Laiseer et al. (2022) in Tanzania and Zambia revealed that women acknowledge the benefits of ANC but their attendance is influenced by individual motivations and external influences with determining factors that include development of approaches that support respectful care, application of positive narratives and active community support. Furthermore, a mixed-methods study in Luapula Province noted women's desires for improved maternity services and clear communication from healthcare providers

(Chibuye et al., 2018). The study advocates for implementation of effective communication between healthcare providers and women, characterized by clear and accurate information sharing, community engagement on health benefits, communication channels allowing for feedback mechanisms, managing client- expectations, capacity building for staff and volunteers.

Effective communication not only empowers women but also influences their healthcare decisions.

(Bwalya et al., 2018). Addressing negative experiences reported by pregnant adolescents may require tailored communication strategies to improve ANC access which would include devising communication strategies and approaches to support the sharing of positive and encouraging experiences to enhance effective communication and build friendly health atmospheres. Lastly, a study in Lusaka emphasized the need for increased information sharing about danger signs in pregnancy, highlighting a gap in healthcare provider communications (Banda, 2016). Overall, effective communication is essential in enhancing ANC accessibility and improving maternal health outcomes.

2. Methodology

Philosophical Underpinning and Research Design

The research adopted a combined Interpretivism and Constructivism paradigm approach, examining the phenomenon of communication among healthcare providers and their interactions within antenatal care systems. This philosophical foundation acknowledges that knowledge derives from human experiences that can be interpreted and co-constructed. The ontological stance is relativist, recognizing multiple context-specific realities. The epistemological position maintains that knowledge is co-constructed through interaction and human perception, while the axiological approach remains value-laden, emphasizing transparency and validity. A qualitative descriptive research design guided this study, chosen for its ability to provide nuanced insights into communication approaches between healthcare providers and women in antenatal care services. The design prioritizes meanings and interpretations of participants regarding their experiences and contexts without imposing theoretical frameworks and models nor manipulating variables (Doyle, 2020).

Participants and Sampling Procedure

The research was conducted in selected health facilities in Rufunsa District, representing both peri-urban and rural settings.

Table 1: Health Facility Distribution in Rufunsa District

No.	Category of Health Facility	Number of Facilities
1	Rural Health Centers	7
2	Rural Health Post	20
3	Hospital	2

Source: Autograph

The sample frame for healthcare providers comprised staff responsible for maternal healthcare at the facilities. Antenatal mothers were defined as women aged between 18 and 45 years who must have attended at least four antenatal clinics and have babies aged between six weeks and three months old. The study population of women who attended antenatal clinics across 29 facilities in Rufunsa District was 2,942 out of which a sample size of 13 women was drawn. Other participants included 5 Ministry of Health administrative staff, 14 healthcare providers and 8 SMAG members. The

research utilized homogeneous purposive sampling for antenatal women and expert purposive sampling for healthcare practitioners.

Data generation and Analysis

The study involved interviews and focus group discussions with Ministry of Health staff, antenatal women and SMAGs. Data gathering employed semi-structured interviews and focus group discussions. The semi-structured interview guides were used to gather data from healthcare providers working in maternal and child health (MCH) departments and women who attended antenatal clinics as well as SMAGs. Focus group discussions gathered 8-12 childbearing women to discuss antenatal practices, perceptions, attitudes, and beliefs. Health staff provided insights on antenatal-related interventions, and community member volunteers shared their antenatal communication experiences with pregnant women. All interviews were audio-recorded and transcribed verbatim to ensure descriptive validity. Data analysis employed emergent thematic analysis using NVIVO software.

Validity and Rigor

The study recognizes certain limitations in terms of generalizability and theoretical application; however, it upholds its validity and rigour through the use of purposive sampling and the inclusion of a diverse range of participants. Ethical considerations were paramount, ensuring voluntary participation, informed consent, privacy protection, and the comfort of infants during interviews. All research activities proceeded only after obtaining necessary approvals from the University of Zambia Research Ethics Committee and the National Health Research Authority.

3. Research Findings and Discussion

Overview

This section discusses the findings from the field during the data-gathering process. The analysis of transcripts from focus group discussions (FGDs) and in-depth interviews (IDIs) of the key informants and selected participants provided insights into the existing communication approaches employed during antenatal care. Systematic thematic analysis was done using NVIVO. This involved identifying codes, and categorizing patterns and themes from the transcribed recorded in-depth interviews and focus group discussions.

Demographic characteristics of participants

The researcher identified key informants from the Ministry of Health and relevant participants from community members to gather information through in-depth interviews and focus group discussions. The Ministry of Health staff were selected from the Headquarters (HQ), Provincial Office, District Office, and selected health facilities in Rufunsa District. Personnel selected for interviews at Ministry HQ and Province were from the Maternal and Child Health Care and Health Promotion Departments. At the facility level, data was gathered from health care providers representatives from the five zones in Rufunsa District namely Rufunsa, Mpanshya, Chinyunyu, Nyangwena and Kankumba. The actual facilities selected were Chimusanya Health Post, Chinyunyu Rural Health Centre, Chitemalesa Health Post, Lukwipa Rural Health Centre, Kankumba Rural Health Centre, Mpanshya Hospital Affiliated Health Centre, Nyangwena Rural Health Centre, Kanyongoloka Health Post. From the community, the research participants selected included SMAG members and women in the mentioned communities who support antenatal services and those who have had recently accessed antenatal

services respectively.

Research Question: What communication methods are utilized in antenatal care between healthcare providers and pregnant women?

Interviews with participants showed that the communication approaches for ANC information existed and that the approaches were implemented at both facility and community levels. The communication methods included group education, client centered education, print media health information, theatre-driven health information and tech-driven health information. The approaches are discussed below as main themes and subthemes with supporting participant quotes.

Group Education

Group education communication approach was a primary teaching method during antenatal care sessions. The approach involved interactive discussions or participatory physical interactions with antenatal care women and often involved teaching in a group setting in an open space, under a tree or in clubs, providing an opportunity for women to learn collectively. Sub-themes that emerged from this main theme were group discussions and health information. Among health care staff interviewed, group education was emphasized as a mode of communication in ANC as follows: "Normally it is just....eeeh...physical interactions. Sharing health information in groups. So group discussions are done. In groups, mothers will be put in a shelter or in a room then they are educated on." [KII: Pk3]

"To communicate with the women it could be....maybe...focus group discussions. It could be just...maybe...a session. During antenatal services, normally it's just ah... physical interactions" [FGD: R3- Pd1]

"Aah basically we sometimes use groups when we are giving them health information about antenatal services and their care during pregnancy." [IDI: Pc8]

The group education method was also confirmed by mothers and the SMAGs and women as shown in the following participant quotes:

"When we come for antenatal as we are seated together like this, they teach us." [FGD: R10 - Pd6]

"They teach us together because people are too many, we are a lot, so if they get one by one time will be less and you would find that it is night so they just teach all of us together in groups." [FGD: R6 - Pd3]

"Yes, they do talk to us in groups again they do put us in groups." [IDI: Pc3]

"They are grouped and being taught on how things should be as they come to deliver" [IDI: Pv7]

Client-Centered Education

The other approach reported was client-centered education. Through this communication method, women received personalized information which was centered on them to ensure that their personal health needs were met as the health practitioners interacted with them. Tailoring information to individual needs ensures specialized care, addressing specific concerns and circumstances which usually allows handling private matters. Client-centered education was not only implemented at the facility level but it was also used in communities. At the facility level the women were attended to individually during physical interactions whereas in communities, women were visited in their homes to have personal discussions. Emerging sub-themes from the client-centered education approach were: one-on-one, personalized

approach, direct communication and door-to-door. The following verbatims confirm the use of the client-centered approach at the facility level:

"We also use one-to-one especially when they get into the palpation room. I think the one-to-one is more effective because it targets an individual and it may be able to be more focused because you are looking at this person as an individual and that is what WHO now is emphasizing on. It has to be client-centered care" [KII: Pk1]

"We also do one-on-one with the antenatal mothers especially] when they are coming to establish their individual dates" [KII: Pk5]

"We also engage in verbal communication, tailoring our approach based on individual needs. [FGD R4- Pd1]

The SMAGs and women interviewed confirmed the existence of the client-centered education communication method in ANC as evidenced by the following verbatims:

"When discussing private issues, we normally use one-on-one kind of communication". [IDI: Pv1]

"We have one-on-one interactions. This personalized approach ensures that individual concerns and questions are addressed, catering to the unique needs of each pregnant woman. [IDI: Pc11]

"They take us aside and talk to us one by one to attend to us individually but many times they communicate with us as a group after that; they ask questions." [FGD: R3 - Pd6]

The following verbatims confirmed the client-centered communication approach at the community level:

The SMAGs are volunteers per se, so they go in the communities, so they use different approaches. It can be.... Maybe...public places, door-to-door" [FGD: Pd1]

"Then we also go in villages from door to door to teach the women on antenatal issues" [IDI: Pv2]

Print Media Health Information

In addition, print media health information communication approach was used in antenatal care services. This approach focused on the use of written and visual materials including pamphlets, brochures and other print materials. Other examples given for print and visual materials were notices, flyers, papers, books and registers. Healthcare facilities leverage on the print and visual materials as a supplementary method to share health information with pregnant women. Integrating teaching aids, pamphlets, papers posters emerged as a prominent health information communication strategy on antenatal care. These materials are presented in both English and local languages to cater for women with different literacy abilities. Sub themes which emerged under this main theme were print materials, visual materials, written materials and teaching aids. The strategy was identified by Ministry staff as highlighted in the following participants' quotes:

"We also use pamphlets, and then there are a few posters that we send in the facilities that are talking about danger signs, for example, in a pregnant woman." [KII: Pk1]

"On a daily basis on a weekly basis or daily basis, whatever campaigns we have planned that you see there are materials and they are disseminated." [KII: Pk3]

"Sometimes we do have pamphlets and posters, brochures, flyers" [FGD: R4- Pd1]

"When offering antenatal care services we use one-on-one, groups, pamphlets, posters and drama." [IDI: Pv1]

"We have posters on nutrition, for example. We also have books." [KII: Pk6]

"At the facilities, we gather the women to teach them using a handbook which has messages and pictures for illustrations.

" [IDI: Pv2]

The finding was verified by SMAGs and women through the following participant quotes:

"We use posters and stick them on the water points." [IDI: Pv4]

"When you come for antenatal they use posters that they stick on the walls. Sometimes they teach us on the posters that they stick on the walls." [IDI Pc5]

Further, it was revealed that the women as well as the spouses who escorted their wives appreciated the use of teaching aids and visuals used for antenatal communication because the materials confirmed the information that they received. It comforted them knowing that the information they received was factual. Participants quotes from SMAGs and women highlighted below substantiated this:

"We like the teachings because they teach us well and when they use posters we become happy because it shows us that what they are teaching us is not fake but true. When we use our books with pictures to educate the antenatal women, the women understand more. Even the men (husbands) who escort them appreciate and understand our teachings when we use the materials. As a result, they all participate in the discussions as they are able to follow the discussions" [IDI: Pv2]

Although print and visual materials emerged as a crucial health information on antenatal care communication approaches, their distribution in facilities falls short of the significant need, leaving a substantial gap.

"Aah, posters... yes they are there. Aaah.... it depends with what we have been provided with. For a long time, we have not received them." [KII: Pk4]

"We have both (print materials) in English and local language but local languages are inadequate and like I have indicated (phone ringing). We place them at the clinic, community, homes and we use brochures" [FGD: R1- Pd1]

Theatre-driven Health Information

Theatre-driven health information was another notable communication method used in antenatal care. According to the findings, this approach was recorded as going beyond routine antenatal visits. The communication approach which was used as a supplementary communication tool rather than being primary involved sharing antenatal information in an entertaining manner while capturing the attention of the women. The emerging sub-theme under this method was drama. Only a few research participants mentioned use of the theatre-driven health information approach. The following participant quotes from Ministry staff revealed existence of this method.

"We useand drama". [KII: Pk4]

"Drama, it's used but not with the normal antenatal visits" [KII: Pk2]

"One of the options is drama." [KII: Pk11]

SMAGs and women verified the usage of the theatre-driven health information method on antenatal care as highlighted in the following verbatim quotes:

"We do use drama" [IDI: Pv1]

"The reference to drama and pictures on the walls indicates a multimedia approach" [IDI: Pc3]

Although the theatre-driven health information communication approach was recognized as one of the valuable methods for ANC communication, its

implementation remained limited. Its sporadic use was confirmed by a health staff:

"Drama, it's used rarely... and when we use it, it is not with the normal antenatal visits" [IDI: Pk2]

Tech-driven Health Information

Another key communication approach employed in antenatal care communication is incorporating technology during antenatal care service provision. The study revealed the existence of tech-driven health information communication methods in antenatal care. This approach leveraged the need for an enhanced approach that supports real-time and widespread health information dissemination. This involves the use of electronic gadgets such as computers, radios, televisions, and phones. Emerging sub-themes for tech-driven health information methods included the use of technology, social media, virtual platforms, Facebook, computers, phones and WhatsApp. Participants' quotes from Ministry staff highlighted the following insights:

"We also use technology. We have formed WhatsApp groups" [KII: Pk1]

"Virtual platforms are utilized for training and education sessions, fostering continuous learning. We also use phones to follow up cases and also, in our Maternal and Child Health Department we have TV sets now in the waiting bay." [KII: Pk2]

"Computers are there. And sometimes they are even given phone numbers We use technology. We use radio and television and smartphones" [KII: Pk4]

"So phones, aah computers, social media ... eeh.... Ministry of Health Facebook page where we can share information" [FGD: R3- PD1]

"Programs are aired on radio and television, messages are sent on smart phone" [IDI: Pv1]

"For some interventions we use technology. We do this by using laptops. Sometimes we use phones... we use the phone, the app." [KII: Pk6]

"We have some slots on live radio programs and TV to air I think different topics on antenatal on ZNBC." [KII: Pk8]

Challenges in the utilization of tech-driven health information in rural areas due to practical limitations were highlighted. This underscores the need for considering infrastructure and access when implementing communication approaches.

"Normally it's just physically interactions, so it is one-on-one. We do encourage [technology] in big facilities... We are using aah the smart care which is an online system." [KII: Pk3]

Interviews with women showed that equipment for tech-driven communication approaches was lacking in the facilities and that the women would like to have access to equipment, a factor which would motivate ANC attendance. This is substantiated by the following participant quote:

"We need technology like scanning machines since here we have electricity. In my case I spend a lot of money boarding buses going to hospitals for scanning." [IDI: Pc3]

In areas where there is inadequate use of tech-driven communication method, participants expressed the need to have more use of the approach. The following participant quote from a health staff revealed this:

"We envision utilizing videos to showcase antenatal matters so that the women understand the issues more." [KII: Pk11]

While some SMAGs leverage the tech-driven

communication method, others refrained from employing the method. This suggests that while technology is present, it serves as a supplementary tool rather than a primary means of communication.

“We do not use radio or television in our communication.” [IDI: Pv4]

Regarding the usage of radio as a tool for ANC communication contradictory views emerged. While one

participant cited extensive use of radio, other participants reported that they do not use radio due to lack of coverage.

“We use a lot of community radios... we have some slots which Crown TV and ZNBC.” [KII: Pk2]

“Unfortunately, we do not use radio. because we are out of coverage.” [KII: Pk3]

“We do not have access to radio and television.” [IDI: Pv2]

Table 2: Coding on Communication Methods

No.	Main Theme	Sub-Themes	Socio-Ecological
1	Group Education	Group Discussions	Interpersonal
		Health Information Sharing	
2	Client-Centered Education	One-On-One Interactions	Individual
		Personalized Approach	
3	Print Media Health Information	Written & Visual Materials	Institutional
		Teaching Aids	
4	Theatre-Driven Health Information	Drama as Communication	Community
5	Tech-Driven Health Information	Use of Technology	Interpersonal
		Social Media Engagement	

Source: Interview Results

Application of the Structuration Theory Agency and Structure

The study was anchored on Giddens’s Structuration Theory which hinges on two elements of agency and structure as dynamic interaction which influences the goal of a system under study. Therefore, for this study’s findings, in a process

of thematic coding, elements of communication were identified, following agency and structural elements in antenatal care services, under the five levels of a Socio-Ecological Model. The five levels are: individual, interpersonal, institutional, community and policy as outlined in Table 3 below:

Table 3: Identified Elements for Agency and Structure

No.	Identified Elements		
1.	Agency		
	(a) Individual	(b) Interpersonal	
	<ul style="list-style-type: none"> Client-centered education Comprehension Reflexivity 	<ul style="list-style-type: none"> Group Education Tech-driven health information Communication approaches 	
2	STRUCTURE		
	(a) Institutional	(b) Community	(c) Policy
	<ul style="list-style-type: none"> IEC Capacity Building Communication Approaches Healthcare Provider factor Structures at National, Provincial, District and Facility 	<ul style="list-style-type: none"> Theatre-driven Communication Approaches Communication Engagement Structures at the National Provincial, District, Facility and Community Levels 	<ul style="list-style-type: none"> Resource & Support Communication structures at the National and District Levels

Source: Interview Results

The analysis of communication in antenatal care within Rufunsa District reveals a complex interplay between agency structure, as described by Giddens's Structuration Theory. The interactions between health providers and pregnant women significantly impact communication experiences during antenatal care. The discussion explores various elements of agency under this theoretical framework.

Exposition of Agency Elements

(a) Individual Communication in Antenatal Care

Key aspects of agency include client-centered education, comprehension, and reflexivity. Client-centered education tailors communication approaches to meet the specific health needs of individual pregnant women, fostering trust and rapport, which ultimately enhances patient satisfaction and health outcomes (Stewart et al., 2024). However, low health literacy remains a barrier for some women, complicating their uptake of antenatal services (Lippke et al., 2021) [18]. Therefore, educational outreach interventions must simplify health information and make it accessible and culturally

relevant. Comprehension is vital for effective communication; structured feedback loops enable women to seek clarification, reinforcing Giddens' concept of mutual influence between actions and social structures. Poor communication skills among providers can lead to misunderstandings, necessitating training and structured follow-ups to enhance comprehension (Bako et al., 2022). Reflexivity, or the ability to reflect on experiences, empowers both healthcare providers and pregnant women to adapt their communication strategies based on feedback and personal experiences, ultimately improving the quality of structured interactions and maternal health outcomes (Klouda et al., 2018; Andrzejczak et al., 2024).

(b) Interpersonal Communication in Antenatal

Group education emerged as a significant communication approach in antenatal care, facilitating shared learning among pregnant women and fostering supportive community interactions, as supported by Årestedt et al. (2020). This method strengthens knowledge retention but can face

challenges due to language diversity and cultural misconceptions, highlighting the need for culturally competent facilitators to ensure effective communication (Finlayson & Downe, 2013). Additionally, the integration of technology into communication approaches, such as mobile applications and social media, presents a substantial advancement in antenatal care. Participants recognized the potential of these tech-driven methods for improving real-time communication and access to important health information, confirmed by research from Ganle et al. (2014)^[10]. However, disparities in technological access, especially in rural areas, hinder pregnant women's engagement, highlighting a need for investments in technological infrastructure to improve communication access in underserved populations.

The diversity of communication methods—ranging from group and client-centered education to print and tech-driven health information—illustrates the multifaceted nature of agency in antenatal care. Healthcare providers exercise their agency by using various techniques tailored to the specific needs of pregnant women, although the effectiveness of these methods can be influenced by the surrounding structural environment. Barriers such as inadequate training for healthcare staff and limited resources may hinder communication quality (Jepnetich et al., 2013). As a result, comprehensive communication training programs for healthcare workers are important for overcoming these challenges and ensuring effective adaptation of communication approaches to meet patient needs.

Exposition of Structure Elements

(a) Institutional

IEC Materials: The findings highlight the critical role of Information, Education, and Communication (IEC) materials in supporting antenatal care communication. However, participants noted significant gaps in available resources, particularly in local languages. Mahar et al. (2012) emphasize that poor or absent IEC materials severely limit women's understanding and engagement in their health care. Addressing this barrier requires robust efforts at the institutional level, enhancing the provision of culturally relevant educational resources that cater to women's varying literacy levels.

Capacity Building: Effective communication approaches also hinge on the capacity of healthcare providers. The study identified an urgent need for continuous training programs focused on improving communication skills while emphasizing cultural sensitivity and technological proficiency (Albert et al., 2020)^[1]. By strategically investing in capacity-building initiatives, healthcare organizations can empower providers to navigate the complexities of communication within antenatal care, ultimately improving the quality of interactions with the pregnant women.

Communication Approaches: Institutional Frameworks: Institutional frameworks guiding communication practices are essential for the dissemination of antenatal information. However, a lack of consistency in enforcing communication protocols may lead to gaps in women's understanding of health messages. Institutional strategies should be systematized, ensuring that healthcare providers are not only aware of but also trained in best practices for effective communication throughout their training and ongoing professional development.

(b) Community

Theatre-Driven Health Information: The findings regarding theatre-driven health communication reveal an impactful yet

underutilized approach for enhancing the understanding of antenatal care topics among pregnant women. Despite its advantages in engaging presentations, this creative method will regularly be under-applied. Ngigi et al. (2018) argue that innovative communication methods can significantly improve health education delivery. To optimize this approach, healthcare systems should encourage the consistent use and incorporation of drama and storytelling techniques into community outreach efforts, thereby improving the relevance and impact of health messages.

Community Engagement: The presence of Safe Motherhood Action Groups (SMAGs) as community-level structures demonstrates the importance of effective communication channels between healthcare providers and pregnant women. These grassroots organizations facilitate health education outreach while serving as vital links for promoting antenatal care attendance (Chibuye et al., 2018). To enhance community engagement, healthcare systems must support SMAGs through training and resources, which will enable them to effectively disseminate important antenatal care information.

(c) Policy

Resource Allocation and Support: The study's findings indicate that policy-level decisions significantly shape communication within antenatal care. Inadequate funding, particularly for developing educational materials in local languages and supplying necessary IEC resources, poses significant barriers to effective antenatal communication. Policymakers must allocate resources strategically to address these structural impediments and ensure comprehensive access to antenatal care information.

Communication Structures at National and District Levels: The establishment of effective communication structures at both national and district levels is essential for informing the dissemination of antenatal information. The findings suggest that developing systematic guidelines and collaborative frameworks can assist healthcare providers in navigating communication challenges and thereby improving maternal health outcomes. Policymakers should be encouraged to invest in enhancing these structures, ensuring that communication strategies are adaptive, inclusive, and responsive to the needs of the communities they serve.

4. Conclusion

This study comprehensively examined communication approaches in antenatal care within Rufunsa District, employing Giddens' Structuration Theory. The study highlights that cultural contexts play a crucial role in determining the success of communication approaches, indicating that customized approaches—such as the incorporation of technology or innovative educational methods—can engage and participate. Ultimately, recognizing the reciprocal relationship between individual agency and structural influences enables healthcare providers to empower pregnant women, fostering a more responsive and inclusive healthcare system. This empowerment, in turn, improves overall maternal health outcomes by encouraging informed and active participation in antenatal care.

5. Recommendations

To improve antenatal care communication, policymakers must focus on increasing the availability and accessibility of communication resources. This includes providing healthcare providers with up-to-date materials and training in cultural competence to enhance their effectiveness. Regular evaluations of antenatal communication strategies and

approaches should also be conducted to identify improvements. Collaborative efforts with community stakeholders are recommended to foster a participatory approach to antenatal education, which can enhance communication relevance and effectiveness.

6. Future Research

Future studies should aim to replicate this research in diverse contexts to assess varying communication practices. Longitudinal studies are recommended to evaluate the long-term impact of different communication methods on antenatal care and ultimately maternal health outcomes. Additionally, research should explore the integration of technology in rural settings to improve access and communication. Finally, studies focusing on the specific training needs of healthcare providers can inform the development of tailored training program to enhance engagement with pregnant women.

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8. Conflict of Interest

The authors report has no conflict of interest.

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