Quality of Maternal and Newborn Health Services in Selected Urban Informal Settlements in Nairobi Report

Countdown to 2030
Women's, Children's & Adolescents' Health

APHRC
African Population and Health Research Center
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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1. BACKGROUND

The population of Nairobi, the capital of Kenya, has grown quickly over the past 20 years due to a significant influx of migrants from rural and other urban areas to Nairobi. As per the 2019 census, approximately half of Nairobi's population live in informal settlements which occupy only 5% of the city's land[1]. Maternal and child health outcomes have historically been worse in poor urban settings. According to estimates from a study conducted in all Nairobi informal settlements in 2012, there were 706 maternal deaths per 100,000 livebirths[2,3]. The majority of these maternal deaths could be avoided if available interventions were given in a timely and effective manner[3,4].

According to the Kenya Demographics Health Survey, 2022, infant mortality rate stood at 32 deaths per 1000 livebirths, while neonatal mortality was estimated at 21 neonates' deaths per 1000 livebirths. Neonatal death account for 66% of infant deaths and 51% of under-five deaths[5]. The most crucial time for saving the most maternal and newborn lives is during pregnancy, labor, delivery, and immediate postpartum period[6].

In Nairobi, an estimated 88.7% of births take place in facilities, compared to 61.2% at the national level [7]. The Nairobi cross-sectional slums survey (NCSS) conducted in 2012 indicated over 90% coverage of antenatal care (ANC), though there is heterogeneity across different informal settlement areas. Eighty percent of births in informal settlements were skilled deliveries in health facilities[3]. The coverage of MNH services in Nairobi has increased in the past decade due to initiatives focused on addressing barriers to care, such as free maternity care[8,9]. The increase in demand, however, was not matched in most cases with increases in health facilities' capacity and readiness to deliver the services10. Despite the good coverage of ANC services and delivery care in facilities, maternal mortality in informal settlements was higher than that of the country in general[7].

The quality of care a woman receives during pregnancy, delivery, and postpartum affects her health and that of the child, highlighting the critical need for comprehensive and accessibility to quality healthcare services[4,6]. Quality of care is especially a concern in informal settlements, where most facilities serving the poor are small, privately owned clinics that operate with little supervision and minimal adherence to set standards of care[11,12]. There was also a large variability in facility readiness across types of facilities, and this directly impacts the quality of services received by urban poor populations. Therefore, there was a need to assess the quality of MNH services to understand the disparity between high coverage of services and persistently high mortality.

The study, therefore, aimed to fill the gap by assessing the quality of services offered to urban poor mothers and their newborns, who mostly reside in informal settlements. The study was conducted at health facilities that serve clients in two urban informal settlements in Nairobi, Korogocho and Viwandani.

2. RESEARCH OBJECTIVES

2.1 General Objective

The overarching goal of this study was to assess the quality of maternal and newborn health services available to urban poor women in Nairobi and to understand women's experiences of care.

2.2 Specific Objectives

- Assess the readiness of facilities primarily serving the poorest urban women living in Viwandani and Korogocho informal settlements for essential maternal and newborn health services.
- Assess user experience of patient-centered maternity care in facilities primarily serving the poorest urban women living in Viwandani and Korogocho informal settlements.
- Assess the self-reported provision of patient-centered maternity care by providers of maternal and newborn health services in facilities primarily serving the poorest urban women living in Viwandani and Korogocho informal settlements.

3. METHODOLOGY AND STUDY IMPLEMENTATION

3.1 Study Design

3.1.1 Study area

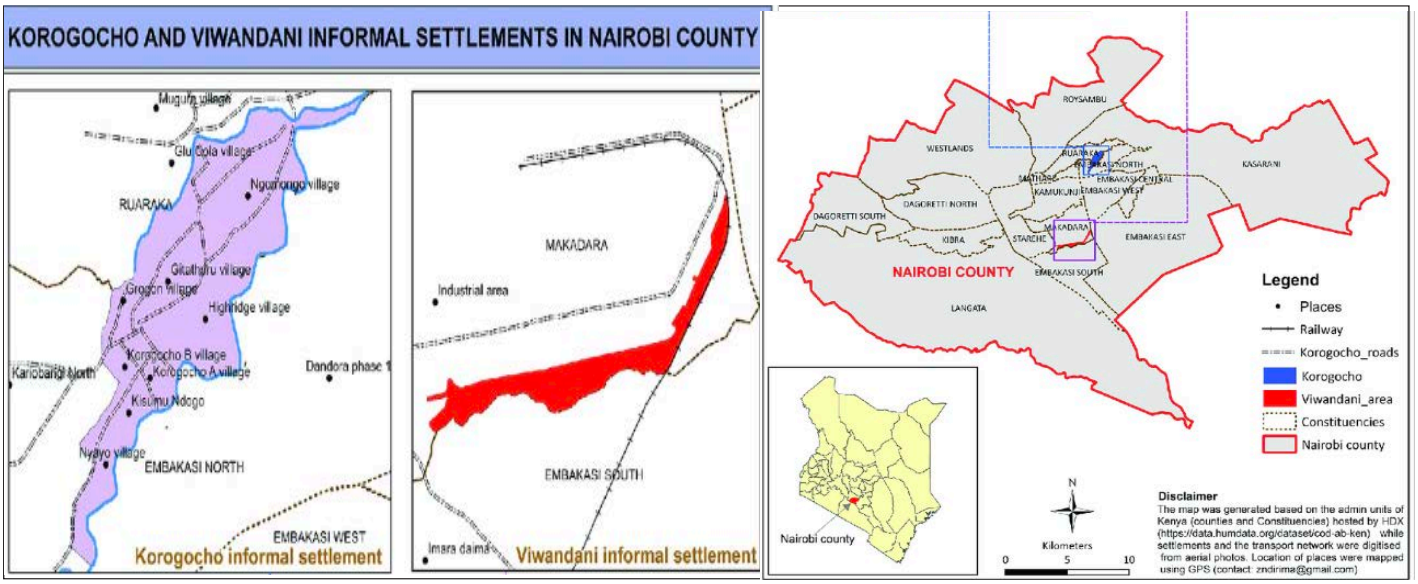
The study was conducted in two urban informal settlements in Nairobi, Korogocho and Viwandani. Poor or lack of basic infrastructure such as roads and sanitation, low education levels, extensive violence and

insecurity, lack of clean and affordable water characterizes the two settlement areas. Figure 1 shows a map of the two informal settlements covered by the Nairoi Urban Health and Demography Surveillance System (NUHDSS).

Korogocho settlement area is located eleven kilometers northeast of the Nairobi city center, covering an area of 1-1.5 square kilometers originally on government owned land in the outskirt of Nairobi and was founded by rural migrants to the city in the 1960s. The settlement is an administrative location of Kasarani Sub County in Nairobi County and is further divided into seven villages and borders Dandora informal settlement which the city's main dumping site for household garbage, industrial refuse, construction debris and sometimes hazardous materials.

Viwandani settlement area is located southeast of Nairobi city center proximity to the city's industrial area and about 7 km from the city center. Viwandani settlement has developed on leftover of former City Council reserve land on the bank of the Nairobi River. Most of its residents work within the industrial area. The settlement is divided into 15 villages.

Figure 1: Map of the study area



3.1.2. Study design

The study employed a cross-sectional study design encompassing a rapid health facility readiness assessment of all health facilities offering maternal and newborn health services within and near the study area. Clients exit surveys with clients seeking delivery services, In-Depth interviews with 24 healthcare providers and, 22observations with selected health facilities offering delivery services, and key informant interviews with county and sub counties health officials.

3.1.3. Study population

Women of reproductive age who had given birth at selected health facilities in two study areas constituted the main study population. The study also targeted healthcare providers, including nurses, clinical officers, obstetricians, and gynecologists. Additionally, the study targeted county and sub-county officials in charge of healthcare in the study areas.

3.1.4. Inclusion criteria

All health facilities offering MNH services to the two study areas were considered for rapid health facility assessment. The client exit surveys participants were women of reproductive age from the study areas who had delivered and discharged from the sampled health facilities. Field interviewers used screening forms to assess the eligibility of participants.

Healthcare providers directly involved in delivery care services in sampled health facilities were considered for IDIs. County and sub-county health officials directly involved in overseeing and supervising maternal and newborn service delivery in the study areas were eligible for the KIIs.

3.1.5. Exclusion criteria

Clients who experienced severe complications or not physically or psychologically stable after childbirth were excluded from the study. Clients who were not residents of the of study area or their surroundings were also excluded from the study. Similarly, women who had complication during delivery were excluded from the study. Healthcare providers not directly involved in delivery services were not considered for the study.

3.2. Sampling

3.2.1. Health facility assessment

All 43 Health facilities serving the two urban poor informal settlements were considered for the rapid facility assessment. All functional facilities providing MNH services in the two study areas were visited a priori to confirm their functionality and eligibility to participate in the survey and a readiness assessment questionnaire administered. The facility in charge and other department heads within the facilities were interviewed.

3.2.2. Client exit survey

To compute the number of women to be interviewed for the client exit survey, we used a point estimate of patient-centered maternity care of 66.9% 13, a precision of 10% and an alpha type I error of 5%. The study assumed a non-response rate of 15 % and a design effect of 2. The final sample of clients needed for the client exit survey was 412 clients.

Field interviewers were assigned to each sampled health facility to conduct client exit interviews at the time of discharge. Prior to discharge, maternity care service providers introduced the clients to the field interviewers. The data collectors administered the consent form to seek consent from clients. Clients were screened using a recruitment form to assess eligibility. Eligible clients with access to a telephone number were booked for a phone interview while those with no access to a phone were considered for a face-to-face interview within the facility premises.

3.2.3. Healthcare provider interviews

In-depth interviews from one service provider from each of the 22 health facilities offering delivery services and two providers from high volume facilities were conducted.

The in-depth interviews aimed to assess providers' perception on offering quality healthcare service and adherence to maternal and newborn guidelines. The interviews gathered information on demographic characteristics, the providers' roles, patient-centered maternity care, job satisfaction, training, and understanding of any alterations in MNH services due to the Covid-19 pandemic.

3.2.4. Key informant interviews

Three key informant interviews with two sub-County health officers and one County health officer were conducted. Participants were mobilized, and interviews were scheduled at the participants' own convenient time.

3.3. Recruitment of Data Collectors

The study used 18 field interviewers to collect data, with two specifically for qualitative interviews. Quantitative field interviewers were diploma holders in social work, public health, or clinical related courses, with previous experience in data collection activities using SurveyCTO. Field interviewers for the readiness assessment had clinical experience, and conversant with data collection using SurveyCTO. Two qualitative interviewers were diploma holders in social science or any related field with previous experience in conducting interviews both in Kiswahili and in English languages.

3.4. Training and Pre-testing

Field interviewers were taken through a four-day training with a structured client exit and qualitative data collection tools. Tools were pre-tested during training, and a pilot was conducted in two facilities from neighboring subcounties offering MNH services. The health facility readiness assessment interviewers were trained separately for four days. The tool was piloted in four facilities neighboring the study area.

3.5. Data Collection

3.5.1. Response rates

A total of 465 clients were screened from the sampled health facilities after being discharged with no complication to determine eligibility for either phone- or facility-based interview. A total of 298 clients were eligible for the phone-based interview out of a sample target of 351 for a response rate of 84.9%. Ten clients refused to participate in the study, 19 were unreachable by phone, and 24 were found to be ineligible (add reasons for ineligibility). For the facility-based interviews, the study recruited 114 clients out of targeted 114 clients for a 100% response rate. For the health provider's interviews, a total of 24 health providers out of a target of sample of 24 were interviewed. For the health facility assessment, the study targeted all 43 health facilities serving clients from the two study areas, out of which 4 facilities refused to take part in the study, one facility was dropped because it was demolished prior to the scheduled date of interview. Lastly, for the observation, 22 facilities were identified and participated in the study.

Table 1: Sample breakdown

	Phone-based client exit survey	Facility-based client exit survey	Health provider interviews	Health Facility Assessment	Observation
Target sample	351	114	24	43	22
Refused to consent	10	0	0	4	0
Unreachable	19	0	0	1	0
Ineligible	24	0	0	0	0
Final sample	298	114	24	38	22
Response rate (%)	84.9	100	100	88.4	100

3.5.2 Client exit survey

Client exit survey was conducted between the 20th of February and 20th March 2023. 17 (74%) of the targeted 22 health facilities agreed to participate in the study. Clients were recruited upon discharge from the facility and taken through a screening process to confirm eligibility to participate in the study. Eligible clients were taken through the study consenting process. Those who agreed to participate were scheduled to have either a phone-based interview later or a facility-based interviews done the same day.

3.5.3 Key informant interviews

Three KIIs with three different stakeholders: one County health official and two sub-county health officers were conducted. Field interviewers were guided by a semi-structured interview guide and were issued with the participant description forms. The interviews were audio recorded and transcribed verbatim.

3.5.4 Facility observation

A total of nineteen facilities had successful observations conducted out of 22 facilities providing MNH services in Korogocho and Viwandani. The observations were based on provider-patient interaction and observation of the facility in four principal areas: reception, triage, maternal and child health unit, and discharge area. Three facilities were small and did not have any client-provider interactions observed during the data collection days, resulting in an overall success rate of 85.7%.

3.5.5 Health facility readiness assessment

The interviewers were guided by a structured questionnaire uploaded in SurveyCTO v2.80. The questionnaire had eleven sections and field interviewers visited each service area listed for the interview. An option was also available for the facility in-charge who had knowledge in various sections to participate in responding to all the questions in the survey. The interviewers had an observation component where they were to be escorted by the participants to sections where some of the specific questions asked were available.

3. 6. Data Cleaning and Processing

3. 6.1. Data cleaning

Data collection was done using tablets and transmitted to an online server for storage using mobile internet connection. The final data were downloaded from the SurveyCTO server and checked for any data quality issues such as duplication, errors in selection of facility, survey type, data missing interviewer names and correction made. The data from IDI and KII sessions were audio recorded, transcribed verbatim, and coded using NVivo v12.

3. 6.2. Quality assurance procedures

Several spot-checks were conducted during the whole data collection period with any inconsistency noted and shared with the interviewer for correction.

3. 6.3. Data analysis

3. 6.3.1. Qualitative data analysis

Data analysis included familiarization, identification of categories and themes, and development of a coding framework and report writing template. Second, a research team member and the coder independently read two transcripts and then compared codes, and categories were then developed from the initial codes and merged into themes to produce the codebook. The developed codebook was discussed and validated with other research team members from the selected project countries into a codebook for use in the analysis. Transcripts were then cleaned and saved in rich-text format for importation into NVivo SQR software and analyzed.

3. 6.3.2. Quantitative data analysis

Person-centred maternity care (PCMC) overall score, and three domain-specific scores for respective care, communication and autonomy, and supportive care were computed using the client exit data. The scores were calculated as a summative score with a minimum score of 0 and a maximum score of 100 for each woman 13. The scores were then normalized to 100 and reported in percentage. Likert scale response options frequencies for each of the 30 questions asked were reported as part of the complete PCMC scale.

Facility readiness scores for three service areas: antenatal care, normal labor, and delivery services (BeMONC), and care for the small or sick newborn (SSN) were estimated using the facility assessment data. For each service area, proportion of facilities offering the service and that had the necessary equipment, diagnostics, medicines, amenities, and human resources items available and functional were computed. Facility readiness scores for each service, and within each service area and domain-specific readiness scores for the equipment, diagnostics, medicines, basic amenities, and human resources domains were computed. The scores were computed as summative scores based on availability and functionality of essential items needed to offer high quality services, following WHO's Harmonized Health Facility Assessment methodology. Median overall and domain-specific readiness scores for each service were computed. All scores were normalized to one hundred and reported in percentage.

3. 6.4. Ethical approvals

The ethical approval was obtained from Amref Health Africa and a research permit from the National Commission of Science, Technology, and Innovation (NACOSTI). Approvals were also obtained from the County, Sub-County Health offices and from the health facilities.

Informed consents were obtained from participants before interviews in either English or Swahili. Participants were informed of their right to abstain from participation in the study or to withdraw consent to participate at any time without reprisal. Participation was voluntary after the participant had fully understood the information and freely given informed consent. Confidentiality was strictly observed.

All study investigators and field staff signed the data confidentiality agreement form before embarking on data collection, which binds them to keep any data they collect confidential and only utilize it for intended purposes.

4. FINDINGS

4.1. Clients Socioeconomic and Demographic Characteristics

Table 2 presents background characteristics of clients based on age groups, education levels, marital status, ethnicity, employment status, number of children, and modes of transport used to reach facilities by study site. 55.3% of the interviews were phone-based interviews with more phone interviews done in Viwandani compared to Korogocho. Most clients (82.5%) were aged between 20-34 years. Most clients had secondary and above (74.8%) level of education, and in a marital union (87.1%). The major ethnic groups were Luhya (24.0%) and Luo (22.8%). Two-thirds of the clients (63.1%) were unemployed, a higher proportion in Viwandani (65.5%) compared to Korogocho (57.6%). Most clients had 2 to 4 children (67%). Regarding transportation, the common mode of transport to health facility was public transport (30.9%) and walking (24.6%).

Table 2: Client socioeconomic and demographic characteristics by survey modality

	Korogocho % [95%CI]	Viwandani % [95%CI]	Total % [95%CI]
Interview type			
Phone-based	41.0 [35.6,46.7]	59.0 [53.3,64.4]	44.7 [39.9,49.5]
Facility-based	54.5 [45.2,63.5]	45.5 [36.5,54.8]	55.3 [50.5,60.1]
Phone-based	66.9 [59.7 73.3]	77.6 [71.8 82.6]	72.8 [68.3 76.9]
Facility-based	33.2 [26.7 40.3]	22.4 [17.4 28.3]	27.2 [23.1 31.7]
Women's age group (years)			
15-19	7.6 [4.6,12.5]	5.3 [3.0,9.1]	6.3 [4.3,9.1]
20-34	83.7 [77.6,88.4]	81.6 [76.0,86.1]	82.5 [78.5,85.9]
35-49	8.7 [5.4,13.7]	13.2 [9.4,18.2]	11.2 [8.5,14.6]
Education level			
None	0.5 [0.1,3.8]	0.9 [0.2,3.5]	0.7 [0.2,2.2]
Primary	26.6 [20.7,33.5]	22.8 [17.8,28.7]	24.5 [20.5,28.8]
Secondary +	72.8 [65.9,78.8]	76.3 [70.4,81.4]	74.8 [70.5,78.8]
Marital status			
In union	83.2 [77.0,87.9]	90.4 [85.8,93.6]	87.1 [83.5,90.1]
Not in union	16.9 [12.1,23.0]	9.7 [6.4,14.2]	12.9 [10.0,16.5]
Ethnic group [Nairobi only]			
Kikuyu	23.9 [18.3,30.6]	13.6 [9.7,18.7]	18.2 [14.8,22.2]
Luhya	25.0 [19.3,31.8]	23.3 [18.2,29.2]	24.0 [20.1,28.4]
Luo	34.2 [27.7,41.4]	13.6 [9.7,18.7]	22.8 [19.0,27.1]
Kamba	9.2 [5.8,14.4]	25.0 [19.8,31.1]	18.0 [14.5,22.0]
Kisii	1.6 [0.5,5.0]	12.3 [8.6,17.2]	7.5 [5.3,10.5]
Other	6.0 [3.3,10.5]	12.3 [8.6,17.2]	9.5 [7.0,12.7]
Employment status			
Not employed/no income	57.6 [50.3,64.6]	67.5 [61.2,73.3]	63.1 [58.3,67.7]
Employed (public, private)	5.4 [2.9,9.8]	8.8 [5.7,13.2]	7.3 [5.1,10.2]
Self-employed	19.0 [14.0,25.4]	13.2 [9.4,18.2]	15.8 [12.6,19.6]
Informal/casual labor	17.9 [13.0,24.2]	10.5 [7.2,15.2]	13.8 [10.8,17.5]
Birth Order			
1 child	29.4 [23.2,36.4]	28.5 [23.0,34.7]	28.9 [24.7,33.5]
2 to 4	65.8 [58.6,72.3]	68.0 [61.6,73.7]	67.0 [62.3,71.4]
5+	4.9 [2.6,9.2]	3.5 [1.8,6.9]	4.1 [2.6,6.6]
Mode of transportation to reach facility			
By foot	25.0 [19.3,31.8]	24.2 [19.1,30.3]	24.6 [20.6,29.0]
Motorbike	28.3 [22.2,35.2]	14.1 [10.1,19.3]	20.4 [16.8,24.6]
Taxi	13.6 [9.3,19.4]	28.2 [22.7,34.4]	21.7 [17.9,25.9]
Public transport	32.1 [25.7,39.2]	30.0 [24.3,36.3]	30.9 [17.9,25.9]
Other	1.1 [0.3,4.3]	3.5 [1.8,6.9]	2.4 [1.3,4.5]
N	**184**	**228**	**412**

4.2 Provision and Content of Maternal and Newborn Health Services

4.2.1. Birth history and care seeking during pregnancy

The study examined birth history and care-seeking behaviors during pregnancy. About 14.1% of clients mentioned that they have experienced a miscarriage or stillbirth and 9.0% mentioned they have ever delivered by caesarean section. About 8.3% experienced complications during their last pregnancy. Almost all clients 99% mentioned that they went for antennal care for their last pregnancy, with a majority (77.2%) of them visiting public health facilities. Two thirds of the clients (63%) had four or more ANC visits during their last pregnancy while only 3.6% reported 8 or more ANC visits. All clients reported that they had their blood pressure, blood samples, and urine samples taken and underwent HIV tests during ANC visits. A significant number of clients reported not receiving counseling on pregnancy danger signs (11.5%), counseling on nutrition (13.5%), Iron Folic Acid (IFAS) supplementation (23.3%), and Intermittent Preventive Therapy (SP/Fansidar) (78.9%). Most of the clients (76.5%) delivered at public government facilities with a significant number of clients in Viwandani delivering at private for-profit facilities (10.1%), and faith-based facilities (20.6). Most clients (85.4%) made decisions either jointly or independently on the choice of place of delivery. Most of the clients interviewed used the Linda Mama program (88.3%) to pay for delivery during their last pregnancy. A significant proportion of clients from Korogocho (23.3%) paid cash during their delivery compared to Viwandani (15.4 %).

Table 3: Birth history and care seeking during pregnancy by survey modality

	Korogocho % [95%CI]	Viwandani % [95%CI]	Total % [95%CI]
History of miscarriage/stillbirth	17.4 [12.6,23.6]	15.8 [11.6,21.1]	16.5 [13.2,20.4]
History of C-Section	10.9 [7.1,16.3]	7.5 [4.7,11.7]	9.0 [6.6,12.2]
Any pregnancy complications during last pregnancy	12.5 [8.4,18.1]	16.2 [12.0,21.6]	14.6 [11.5,18.3]
Place of delivery			
Public (MoH)	85.3 [79.4,89.8]	69.3 [63.0,75.0]	76.5 [72.1,80.3]
Private for profit	3.3 [1.5,7.1]	10.1 [6.8,14.7]	7.0 [4.9,10.0]
Faith based	11.4 [7.6,16.9]	20.6 [15.8,26.4]	16.5 [13.2,20.4]
Decision to deliver in facility			
Own	37.0 [30.3,44.2]	34.2 [28.3,40.6]	35.4 [31.0,40.2]
Partner's/family member's	16.3 [11.6,22.4]	13.2 [9.4,18.2]	14.6 [11.5,18.3]
Joint	46.7 [39.6,54.0]	52.6 [46.1,59.1]	50.0 [45.2,54.8]
Mode of payment for delivery [Nairobi only]			
Cash	23.3 [17.3,30.5]	15.4 [11.1,21.0]	18.8 [15.1,23.1]
NHIF	2.5 [0.9,6.5]	11.1 [7.5,16.1]	7.4 [5.1,10.5]
Linda Mama	87.4 [81.3,91.8]	88.9 [83.9,92.6]	88.3 [84.6,91.2]
Number of ANC contacts			
No ANC	0.5 [0.1,3.8]	1.3 [0.4,4.0]	1.0 [0.4,2.6]
1-3 contacts	31.0 [24.7,38.0]	33.8 [27.9,40.2]	32.4 [28.2,37.2]
4-7 contacts	65.8 [58.6,72.3]	60.5 [54.0,66.7]	63.0 [58.1,67.4]
8+ contacts	2.7 [1.1,6.4]	4.4 [2.4,8.0]	3.6 [2.2,6.0]
Number of ANC contacts			
No ANC	0.5 [0.1,3.8]	1.3 [0.4,4.0]	1.0 [0.4,2.6]
1-3 contacts	31.0 [24.7,38.0]	33.8 [27.9,40.2]	32.4 [28.2,37.2]
4-7 contacts	65.8 [58.6,72.3]	60.5 [54.0,66.7]	63.0 [58.1,67.4]
8+ contacts	2.7 [1.1,6.4]	4.4 [2.4,8.0]	3.6 [2.2,6.0]
Don't know	0 [0 0]	0.4 [0.1 3.1]	0.2 [0.0 1.7]
N	**184**	**228**	**412**
Place of ANC			
Public (MoH) facility	85.8 [79.9,90.2]	70.2 [63.9,75.9]	77.2 [72.9,81.0]
Private facility	14.2 [9.9,20.1]	29.8 [24.2,36.1]	22.8 [19.0,27.1]
N	**126**	**145**	**271**
Timely ANC initiation	24.6 [18.9,31.4]	23.6 [18.5,29.6]	24.0 [20.1,28.4]
ANC content			
Blood pressure	99.5 [96.2,99.9]	100.0 [0.0,0.0]	99.8 [98.3,100.0]
Blood sample	97.8 [94.3,99.2]	99.6 [96.9,99.9]	98.8 [97.1,99.5]
Urine sample	97.8 [94.3,99.2]	99.1 [96.5,99.8]	98.5 [96.8,99.3]
HIV test	99.5 [96.2,99.9]	99.6 [96.9,99.9]	99.5 [98.1,99.9]
Counseling: pregnancy danger signs	87.4 [81.8,91.5]	89.3 [84.6,92.8]	88.5 [85.0,91.2]
Counseling: nutrition	92.4 [87.5,95.4]	81.8 [76.2,86.3]	86.5 [82.8,89.5]
IFA Supplementation	73.2 [66.3,79.2]	79.6 [73.8,84.3]	76.7 [72.4,80.6]
IPTp (SP/Fansidar)	30.1 [23.8,37.1]	33.3 [27.5,39.8]	31.9 [27.5,36.6]
N	**183**	**225**	**408**

4.2.2. Content of care during delivery and immediate newborn care

Contents of care during delivery and newborn are summarized in Table 4. During childbirth, slightly more than half (55.1%) of clients were assisted by nurses, midwives, or students, and this was slightly higher in Viwandani compared to Korogocho. 39.3% of the clients were assisted by doctors, specialists, or clinical officers with a small percentage (5.6%) receiving assistance from other healthcare cadres (unskilled) such as pharmacy assistants, administrative assistants, cleaners, security guards, receptionist, drivers, and food service workers. About 8.3% of clients experienced complications during labor or delivery slightly higher in Korogocho (10.3 %) compared to Viwandani (6.6%). The majority (88.4%) were provided with private beds during labor or delivery. Only 1 in 10 clients (11.6%) were accompanied to the health facility by partners or family members during labor or delivery; the proportion was slightly higher in Korogocho (17.4%) compared to Viwandani (10.5%). Regarding the length of stay in the facility after delivery, 71.1% spent 24-48 hours, 16% spent less than 24 hours, and 12.9% spent more than 48 hours.

In terms of the quality of care, after delivery, almost all clients (95.0%) had skin-to-skin contact with their baby, 85.8% experienced timely initiation of breastfeeding (within one hour of birth), and 11.9% reported that chlorhexidine was applied to the umbilical cord after cutting with more clients reporting in Korogocho (17%) compared to Viwandani (8%). Almost all clients (95.6%) were offered postnatal care (PNC) checks before discharged. Among those who received PNC checks, two-thirds (67.3%) were offered counseling on danger signs after delivery, half (50.3%) received counseling on postpartum family planning, 9 out 10 clients had their blood pressure measured, 93.9% had their newborns receive PNC checks before discharge, and 95.9% received an appointment for the next PNC check.

Table 4: Content of care: delivery and immediate newborn care

	Korogocho %	Viwandani %	Total % [95%CI]
Assistance during childbirth			
Doctor/Specialist/Clinical officer	42.9 [36.0,50.2]	36.4 [30.4,42.9]	39.3 [34.7,44.1]
Nurse/Midwife/Trained BA/Student	51.6 [44.4,58.8]	57.9 [51.4,64.2]	55.1 [50.3,59.9]
Other	5.4 [2.9,9.8]	5.7 [3.3,9.6]	5.6 [3.7,8.3]
Complications during labor/delivery	10.3 [6.7,15.6]	6.6 [4.0,10.6]	8.3 [6.0,11.3]
Private bed for labor/delivery	89.1 [83.7,92.9]	87.7 [82.8,91.4]	88.4 [84.9,91.1]
Accompanied by partner/family during labor or delivery	17.4 [12.6,23.6]	10.5 [7.2,15.2]	11.6 [10.6,17.3]
Length of stay in facility			
< 24 hours	12.5 [8.4,18.1]	18.9 [14.3,24.5]	16.0 [12.8,19.9]
24-48 hours	71.2 [64.2,77.3]	71.1 [64.8,76.6]	71.1 [66.5,75.3]
>48 hours	16.3 [11.6,22.4]	10.1 [6.8,14.7]	12.9 [10.0,16.5]
Content of care			
Immediate skin-skin contact	93.9 [89.2,96.6]	96.0 [92.5,97.9]	95.0 [92.4,96.8]
Timely initiation of breastfeeding (within one hour of birth)	83.0 [76.8,87.8]	88.0 [83.1,91.7]	85.8 [82.0,88.8]
Chlorhexidine applied to umbilical cord after cutting	16.9 [12.1,23.0]	7.9 [5.0,12.2]	11.9 [9.1,15.4]
Maternal PNC check before discharge	95.7 [91.5,97.8]	95.6 [92.0,97.6]	95.6 [93.2,97.2]
N	**184**	**228**	**412**
Among those who got a maternal PNC check:			
Counselling: danger signs after delivery	63.6 [56.3,70.4]	70.2 [63.8,75.9]	67.3 [62.5,71.7]
Counselling: postpartum family planning	46.6 [39.3,54.0]	53.2 [46.6,59.8]	50.3 [45.3,55.2]
Blood pressure measurement	93.2 [88.4,96.1]	87.6 [82.5,91.4]	90.1 [86.7,92.7]
Newborn PNC check before discharge	94.6 [90.2,97.1]	93.4 [89.4,96.0]	93.9 [91.2,95.9]
Appointment for next PNC check	96.2 [92.2,98.2]	95.6 [92.0,97.6]	95.9 [93.5,97.4]
N	**176**	**218**	**394**

4.2.3. Experiences of person-centered maternity care

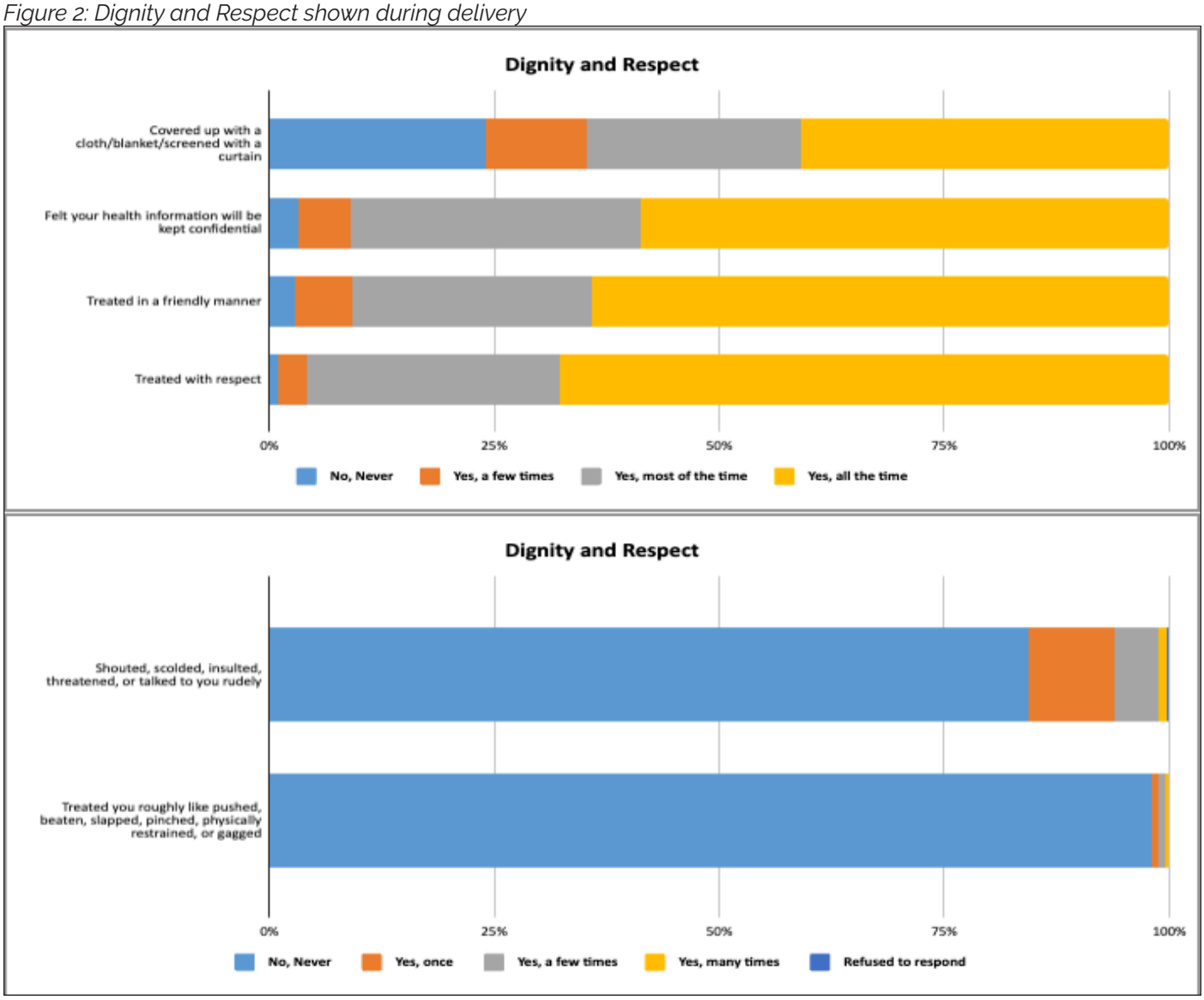
The study focused on evaluating experiences of person-centered maternity care from clients, health providers and key informants from the two urban informal settlements across three domains: dignity and respect, communication and autonomy, and supportive care.

4.2.3.1. Dignity and respect

Most clients believed they were treated with respect (96%) and in a friendly manner (91%) most of the time at the health facility they attended. Two-thirds of the clients (64.8%) said they were appropriately

covered up with cloth, blanket, or screened with a curtain most of the time. Additionally, 91% of the clients felt confident that their health information would be kept confidential at the facility most or all the time. However, a significant percentage of clients (15.5%) reported experiencing negative interactions, such as being shouted at, scolded, insulted, threatened, or spoken to rudely, at least a few times during their visits (Figure 2).

Figure 2: Dignity and Respect shown during delivery



The county officials were aware of the importance of having the healthcare workers understand and implement patient-centered maternity care. This includes patients' right to consented care, dignified care, non-discriminatory treatment, stigmatization, confidentiality, and privacy, right to no physical and or emotional abuse, and a good rapport between the women and service providers. County officials highlighted the importance of sensitization on patient rights and responsibilities to the health care workers through the provision of information to empower the women to exercise their rights in informed decision-making in relation to their care. An informed client could therefore take responsibility.

"We need to do a lot of sensitizations for the clients to know their responsibilities and also their rights so the health care workers to also know the client's rights and how to treat them and how to have the right attitude to stand for the mothers, and also we have the debrief session for the staff to be able to talk about their hardships and how to handle them." KII Sub County official

"... we are promoting what we call the client's rights. So, we discuss your rights, and we also tell you what your responsibilities for you are to enjoy these rights. So, it is kind of mutual accountability between you and your clients so that we don't have blame games at the end of the whole session like they were not treated right." KII sub-county official

"I will not say for all the facilities or for all the staff but there is great improvement, very much remarkable improvement and I will use Pumwani as an example as one of our best-practiced facilities. We have come a long way with that facility in terms of respectful care. It was known for all the wrong reasons, and it has been in the media and everywhere but right now the image has changed…." KII sub-County official

The healthcare providers were knowledgeable, and a majority reported practices of respectful maternity care and treating their clients with dignity and respect. Importance, of including patients in their management care and individualized care was part of the standard care and some healthcare providers also considered the psycho-socio-cultural aspects in delivering care. Patient awareness and inclusion in their management was highlighted as a facilitator to women cooperating with the healthcare providers, improving overall experience in delivery care, and enhancing better maternal and child outcomes.

"For me, when the mother comes, I just greet the mother and ask her how I can help her. The mother can tell me that she is in pain for example. There are first-time mothers who are sometimes not aware that they are about to deliver so once they tell you that they are in pain, I go ahead and assess them and when I find out the mother is in labor that is when I go ahead to explain on the expectations. We keep privacy, confidentiality and we respect their opinion, and we expect them to help us in labor management because we are not going to manage this mother without their consent. You do not want to share mothers' details with any other clients because in the labor room privacy is key, you do not want to expose a mother that we are going to assess her private parts, in the labor room we have curtains and we ensure the curtains are drawn and then the doors are closed before we examine and also when we discuss the status of the mother if I am the one assessing we discuss it just the two of us, we do not share information." IDI healthcare provider

"According to our profession, we are taught on ethics on how to address clients. You will not start harassing them and they have come to deliver. You have to treat them the way you would like to be treated. We talk to them in a polite way because if you harass them, they will not be in a position to cooperate so you have to talk to them in a polite way so that they will feel free to even express their feelings." IDI healthcare provider

"Off course in the delivery room, you have to be understanding. You have to understand the woman is in pain but, you have to be firm in your decision so that you get good outcomes at the end of the day. If the mother is not cooperative, you have to get them to know that whatever they are doing might have a poor outcome, so they have to co-operate and do what they are supposed to do and so that we work as a team so that we get good outcomes at the end of the day." IDI healthcare provider

"No we don't shout, we need to be firm….Nowadays we do not shout or be rude to clients, you do not need to slap the client, we have an ambulance, if this mother is uncooperative you see the baby is going to be affected, an innocent baby we have an ambulance so we just call the Level Four or Five facilities to save this baby. In other instances when the mother is very uncooperative, you can't assess her, maybe laying or doing something you feel that will affect the baby… the baby can die before delivery, that is when we need to take urgent action, we can either call the next of kin to talk to the mother. If we have talked to her and she isn't listening to us we call the next of kin, we explain to the next of kin and we also give the next of kin a chance to reassure the mother and tell her what is expected. Some of the mothers tend to listen and then they just become cooperative and end up delivering safely." IDI healthcare provider.

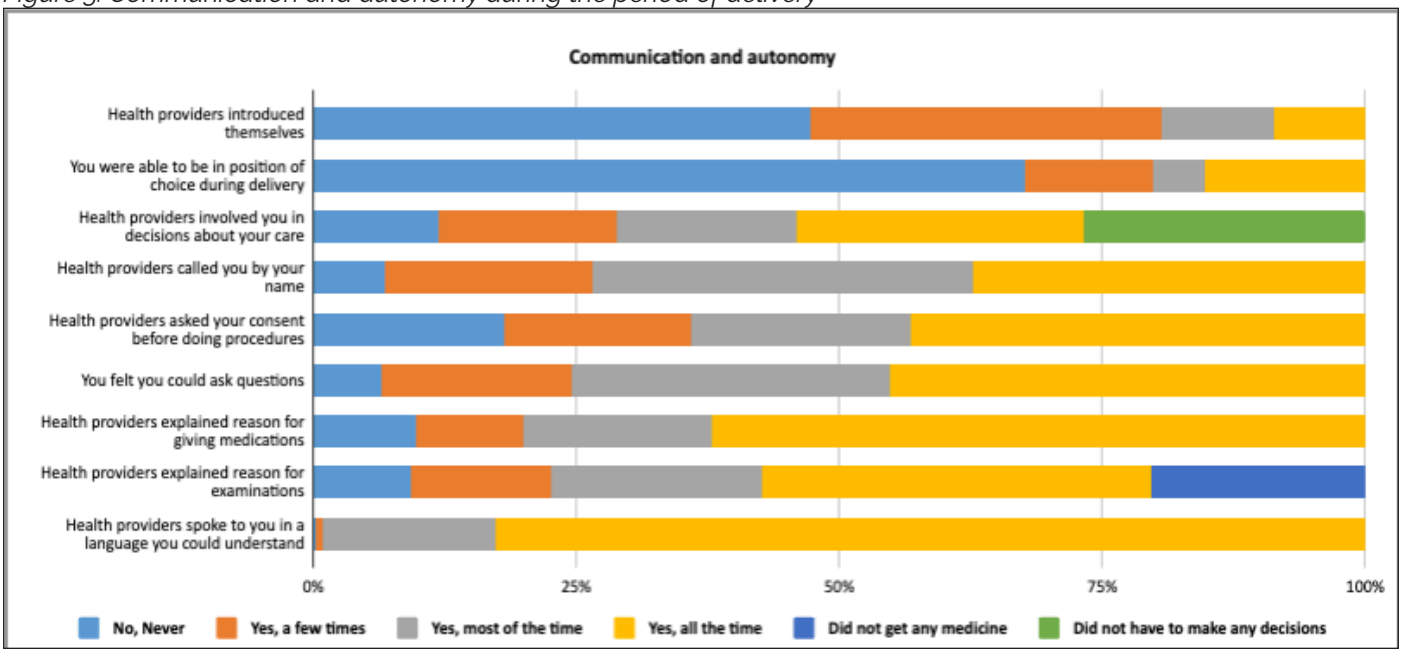
Nonetheless, there were few cases where the healthcare providers were seen to use harsh tone or employ physical contact through hitting/slapping a client as a safety measure to ensure good childcare outcomes especially for women who were uncooperative. In their practice however, they acknowledge the importance of prevention of disrespectful and abusive care as vital to respectful maternity care and according to dignity to women.

"We had a lady patient who was in labor, and it was time for her to push. Imagine she pushed, and the head came out. I was pressing her perineum and telling her to push so that the child comes out, but she will press her legs. I had to shout or slap her thighs once and then she would push. When I finish, I will tell her that I hit her so that we can save her child. If I don't do that the child will come out dead and that will be on you as the nurse because the woman came when she was okay until the last minute so how comes the child came out dead and yet she was okay? When you finish you will become friends. The aim is to save the life of the child because the woman is pressing her legs so what will I do, and she does not want to open her legs." IDI healthcare provider

4.2.3.2. Communication and autonomy

Regarding communication and autonomy, A paltry 10% of clients said health providers introduced themselves most of the times. Three quarters of the providers called their clients by name and clients felt they could ask questions most of the times. All providers spoke to their clients in a language they could understand. Less than half (44.4%) of the clients felt the health care providers involved them in decisions about their care. One in five clients (20.2%) mentioned they had the freedom to be in a position of their choice most of the time during delivery. Two thirds of the clients said health providers asked for their consent before doing any procedure and explained the purpose of conducting examination. Six out of ten clients received an explanation why they were receiving specific medication.

Figure 3: Communication and autonomy during the period of delivery



The county officials were well informed on the importance of communication and autonomy between them and their clients as part of respectful maternity care. The medium of information was through pre-service training and mentorship.

"We try that...it is good for the patient to understand whatever you are doing to them. There is communication. You just don't do it. That is what respective maternity care entails. You just don't do it. You explain. You communicate and they were taught even in ANC. You find that in the maternity...they also have a mother-child booklet, which, for those who know how to read, read so that they can understand some of those things. We also know about...the procedures that are supposed to be done. If they don't do it, they will say, in a calm way, that they were supposed to do it, just to be respectful and so that she understands why we are doing that..." KII Sub-County official.

Despite the healthcare providers having the knowledge of the principle of dignity and respect in providing maternity care, some healthcare providers ' behaviour toward their clients did not depict respect for their rights or dignity. Some of the health providers were reported not to communicate with their clients on processes or procedures while some had a bad attitude towards their clients which impacted the quality of care their clients received.

"You can interact with someone when talking and they see you are rude, or you are not friendly. A maternity patient is in pain so when you are harsh you won't understand each other. It is the way you will start with her... When I welcome her harshly or I have an attitude we will go to the labour ward and because of pain some of them will be harsh, and some of them won't answer you. They will just have an urge and they will be pushing but you don't know the reason, but you have already shown them an attitude. Being friendly is what we try." IDI Healthcare provider.

There was fairly good communication between the health care providers and their clients and family members where they sought to create rapport to improve their birth preparedness in a respectful, encouraging, and reassuring manner.

"When this patient comes, the first thing we'll welcome this patient because at our maternity, most of the clients we get either from [name area] or within our catchment. There is that our casuals are doing orientation that is being done to them, but the orientation most of the time, like here is our toilet, this is how we use it, these are our bins, this is where you discard your documents and water view. For the nurse, you'll welcome this patient, what you'll do, you'll check at her mama pack, those are the basics, you'll ask about the companion, if they've come with someone you welcome if they're comfortable, not all will be comfortable. But generally, it's just to create rapport and sort it like an emergency." IDI Health Care provider

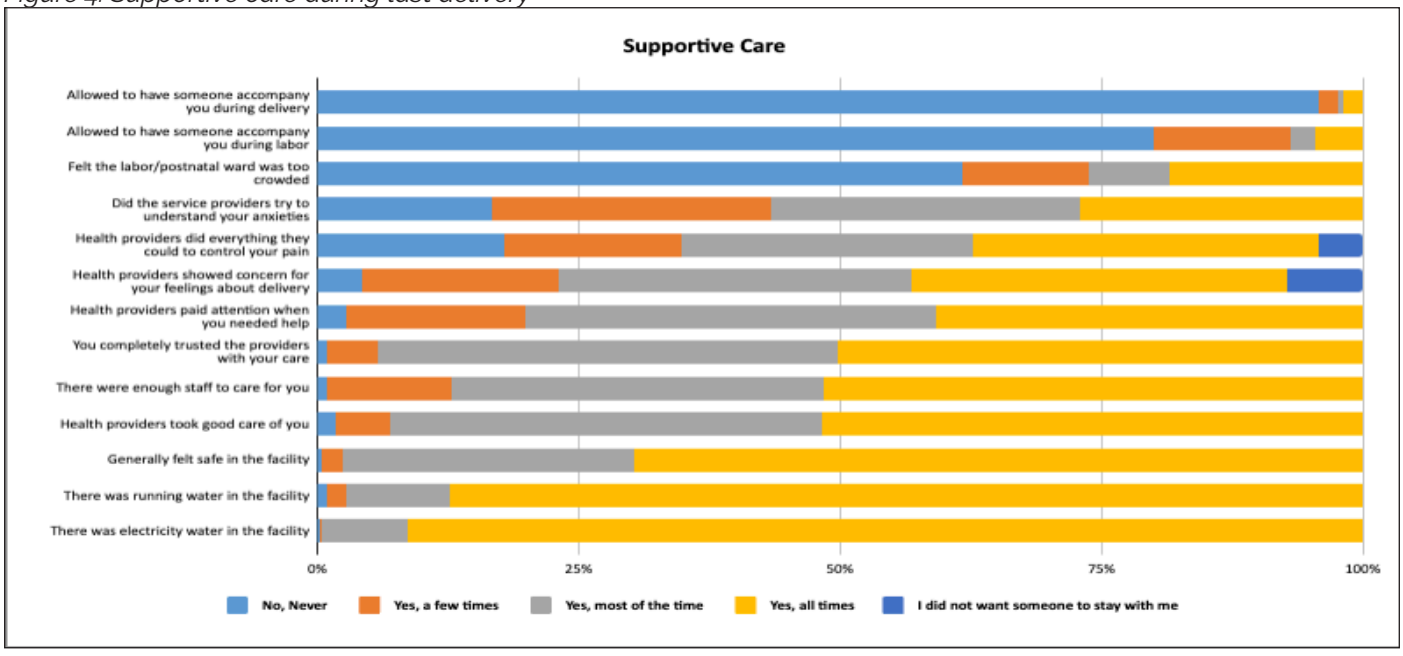
"I welcome her when she comes. I tell her to give me her antenatal card, I read her history and after reading, her history I take her to the examination room and then I tell her what is wrong with her. I ask her about the person who has brought her, if it is her husband, I will get him and talk to both about her due date, and what is needed when she is giving birth, and he will check on her four hours after delivery. If she is in a condition where she cannot talk, he will go back and after she has given birth, he will come back. I address her with her name. As for me if it is [her name] I will call her namesake when welcoming her so that she does not feel bad." IDI Healthcare provider.

4.2.3.3. Supportive care

Figure 4 provides a comprehensive summary of clients' experiences with supportive care in a healthcare facility during labor and delivery. The results indicate that waiting times for care varied, with 40.5% never experiencing long waiting times, while 5.8% faced constant delays. Health providers' concern for patients' feelings during delivery was positively perceived, with 38.7% reporting consistent concern, and 4.6% never experiencing it. Almost half (49.3%) of the clients confirmed that health providers tried to understand their anxieties. Health providers were attentive to patients' needs, with 40.8% paying attention all the time, and 2.7% never experiencing such attention.

Efforts to control pain were generally satisfactory, as 34.5% reported full efforts all the time, and 18.7% never experienced full efforts. The majority (88.4%) of clients were never allowed to have someone accompany them during delivery. Similarly, most clients (51.7%) felt health providers took good care of them all the time. Trust in providers was high, with 50.2% completely trusting them all the time and a further 44% trusting most of the time. Additionally, 91.3% of the facilities had electricity connection, while 87.4% had running water in the facility all the time. Clients generally felt safe in the facility, with 69.7% reporting feeling safe all the time. However, there were concerns about facility cleanliness, with 49.5% feeling it was clean all the time.

Figure 4: Supportive care during last delivery



Birth companions were highlighted as crucial to providing supportive care to clients and is part of the standard care practice requirements as mentioned by the healthcare providers. Most birth companions being either relatives or a friend who accompanied the women for delivery at the health facility. Men or husbands were observed to rarely accompany their women /wives. Yet, men's involvement during

pregnancy and childbirth plays a vital role in terms of psychological and emotional support to women and guarantying safety of women's access to reproductive health services. There is need to develop strategies towards having men accompany women to health facilities as essential elements of safe pregnancy and birth taking into considerations practical and cultural contexts. The importance of having a birth companion was shown when the healthcare providers went an extra mile to inquire for women who were not accompanied by someone, and took it upon themselves to in touch with someone to provide supportive care on their behalf. This is contrary to the findings from the client exit. Almost 80 % of the clients mentioned that they were not allowed to have a birth companion.

"They (women) don't come with the companion as husband but most of them or all they'll have somebody who has escorted this patient. So, for those who have been escorted, some will tell you it's my mum, it's my aunt or, it's my friend. For some, you need to inquire about details of a friend or relative then if they are comfortable permission is sought to call their relative or friend. They say yes or no, it's part of the consent. Unless given permission what I'll put to account, is you (client) personally first." IDI Healthcare Worker

"You see most of these mothers do not come alone, they come with their birth companion. It is mostly written in the antenatal booklet so we can ask the next of kin to help us with the consent and, you find that girls below 18 years have their guardians or maybe their parents, the parents' consent us in every step we do." IDI healthcare provider

"This is the problem within this locality, rarely do men company them, few men accompany their wives to the hospital, but the majority are accompanied by a birth accompaniment that is mainly indicated in that Ante-Natal Care Booklet that she should arrange for a partner, a relative or a friend to accompany her to the clinic." IDI health care provider

4.2.3.4. Overall scores for person-centered maternity care

Table 5 summarizes person-centered maternity cares scores for the three domains (dignity and respect, communication and autonomy and supportive care) and overall. The overall scores for PCMC for the two informal settlements are similar, with Korogocho scoring slightly higher at 68.9% compared to Viwandani 67.8%. For dignity and respect both Korogocho and Viwandani scored equally high in this domain, with a median score of 83.3%. For communication and autonomy both areas scored lower, with Korogocho scoring slightly higher at 61.1% compared to Viwandani's 59.3%. And lastly under supportive care both sites scored similarly, with Korogocho scoring slightly lower at 62.2% compared to Viwandani's 64.4%.

Table 5: Experience of person-centered maternity care by domain

Domain	Korogocho Median score% [IQR%]	Viwandani Median score% [IQR%]	Total Median score % [IQR%]
Dignity and Respect	83.3 [16.7]	83.3 [19.4]	83.3 [16.7]
Communication and autonomy	63.0 [25.9]	61.1 [24.1]	63.0 [22.2]
Supportive Care	62.2 [17.8]	64.4 [17.8]	62.2 [17.8]
Overall score	69.4 [18.9]	68.9 [15.5]	68.9 [16.7]
N	**184**	**228**	**412**

4..2.4 Satisfaction of maternity care and care seeking decisions

The table presents data on the satisfaction of care and care-seeking decisions for facilities in the study areas. Most clients reported being generally satisfied with the care received during childbirth with satisfaction rates of 95.7% and 94.7% in Korogocho and Viwandani respectively, contributing to an overall satisfaction rate of 95.2%. A significant percentage of clients indicated that they would recommend the facility to friends or family.

The main aspects of dissatisfaction varied, but the top three reasons reported were lack of assistance during childbirth, inadequate newborn care, or postpartum counseling, and reception services. These areas were the most common sources of dissatisfaction among clients from both study areas.

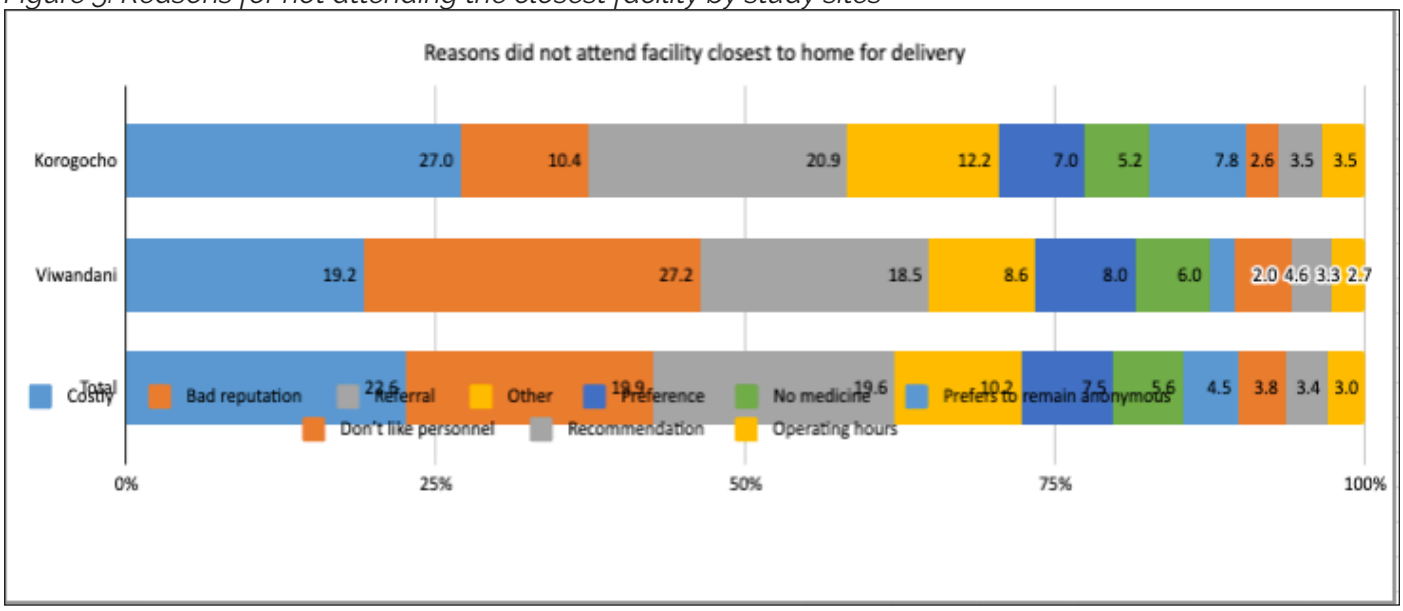
Most of the clients (85%) were involved in the decision to the choice to deliver at the health facility. A smaller proportion attributed the decision to their partner or family (14.6%).

Table 6: Overall satisfaction of maternity care and care seeking decisions

	Koch % [95%CI]	Viwa % [95%CI]	Total % [95%CI]
Satisfaction of care/ Care seeking Decisions			
Generally satisfied with care received during childbirth	95.7 [91.5,97.8]	94.7 [91.0,97.0]	95.2 [92.6,96.9]
Would recommend facility to friends/family	95.7 [91.5,97.8]	96.1 [92.6,97.9]	95.9 [93.5,97.4]
Decision to deliver in a health facility was:			
Own decision	37.0 [30.3,44.2]	34.2 [28.3,40.6]	35.4 [31.0,40.2]
Partner's/family's decision	16.3 [11.6,22.4]	13.2 [9.4,18.2]	14.6 [11.5,18.3]
Joint decision	46.7 [39.6,54.0]	52.6 [46.1,59.1]	50.0 [45.2,54.8]
Attended facility closest to home for delivery (yes)	37.5 [30.8,44.7]	33.8 [27.9,40.2]	35.4 [31.0,40.2]
N	**184**	**228**	**412**
Main aspect of dissatisfaction:			
Reception	25.0 [5.6,65.1]	10.0 [1.2,50.7]	16.7 [5.0,43.2]
Assistance during childbirth	25.0 [5.6,65.1]	40.0 [14.6,72.2]	33.3 [14.8,59.0]
Newborn care or postpartum counselling	25.0 [5.6,65.1]	20.0 [4.5,57.0]	22.2 [8.0,48.6]
Facility cleanliness	0.0 [0.0,0.0]	20.0 [12.7,4.5]	11.1 [2.5,37.8]
Other	25.0 [5.6,65.1]	10.0 [1.2,50.7]	16.7 [5.0,43.2]
N	**8**	**10**	**18**
Main reasons did not attend facility closest to home for delivery			
Operating hours	2.1 [0.8,5.5]	5.3 [2.0,13.3]	3.0 [1.5,5.9]
Bad reputation	19.0 [14.0,25.2]	22.4 [14.4,33.1]	19.9 [15.5,25.2]
Don't like personnel	4.7 [2.5,8.9]	1.3 [0.2,8.8]	3.8 [2.0,6.9]
No medicine	5.3 [2.9,9.5]	6.6 [2.8,14.9]	5.6 [3.4,9.2]
Prefers to remain anonymous	4.7 [2.5,8.9]	4.0 [1.3,11.6]	4.5 [2.6,7.8]
Costly	23.2 [17.7,29.7]	21.1 [13.3,31.7]	22.6 [17.9,28.0]
Referral	18.4 [13.5,24.6]	22.4 [14.4,33.1]	19.6 [15.2,24.8]
Preference	7.9 [4.8,12.7]	6.6 [2.8,14.9]	7.5 [4.9,11.4]
Recommendation	3.7 [1.8,7.6]	2.6 [0.7,10.0]	3.4 [1.8,6.4]
Other	11.1 [7.3,16.4]	7.9 [3.6,16.5]	10.2 [7.0,14.4]
N	**115**	**151**	**266**

Only a third of clients (35.4%) delivered at a facility closest to their home. Among the reasons for not attending the closest facility were high costs (22.6%), bad reputation (19.9%) and referral to other facilities (19.6%).

Figure 5: Reasons for not attending the closest facility by study sites



4.2..5. Patient-provider interactions in the provision of patient-centered care

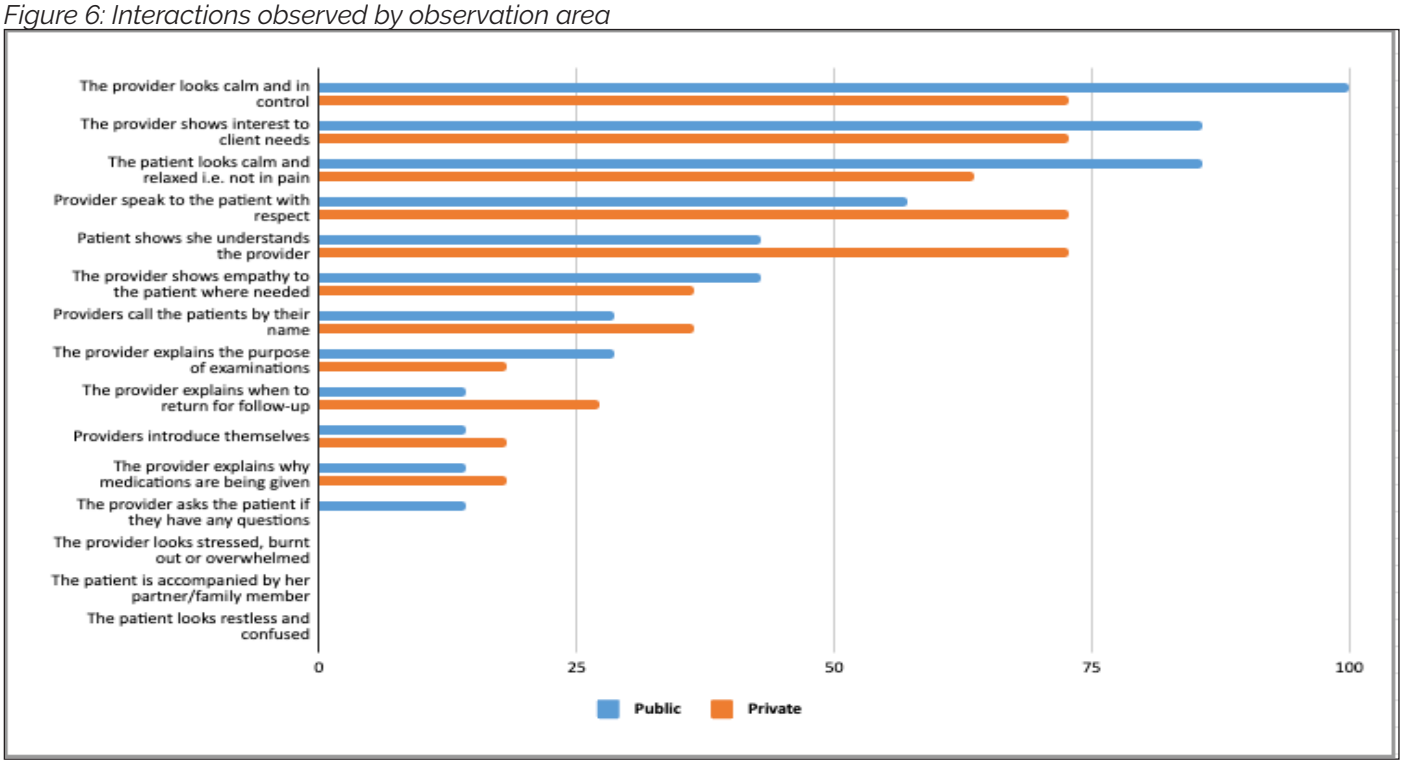
4.2 5.1. Reception or triage area

The figure below summarizes the interactions between clients and healthcare providers observed at the reception or triage area in both public and private facility settings. All providers exhibited a calm and composed demeanor. All providers in private facilities demonstrated interest in the clients' needs compared with public facilities (85.7%). Approximately 86.7% of clients observed across both public and private facilities appeared calm and relaxed without showing signs of pain.

In private facilities, all observed providers were speaking to clients with respect compared to two-thirds of observed interactions (66.7%) in public facilities. All clients demonstrated understanding of the provider in private facilities compared to less than half (42.9%) in public facilities, resulting in an overall average of 73.3% positive interactions. In both public and private facilities, approximately half of providers showed empathy to patients when needed. A quarter (28.6%) of providers in public facilities called patients by their name compared to half in private facilities, and an overall average of 40%.

About 40% of providers explained to patients on when they should return for follow-up appointments. Approximately a third of providers explained the purpose of examinations to patients. In public facilities, one in four providers explained the reasons for medications compared to a fifth of providers in private facilities. Only a fifth of observed providers in public and a third in private facilities introduced themselves to patients.

Figure 6: Interactions observed by observation area



**Facility-level observations are only reported at facility level (% of facilities), not for each area*

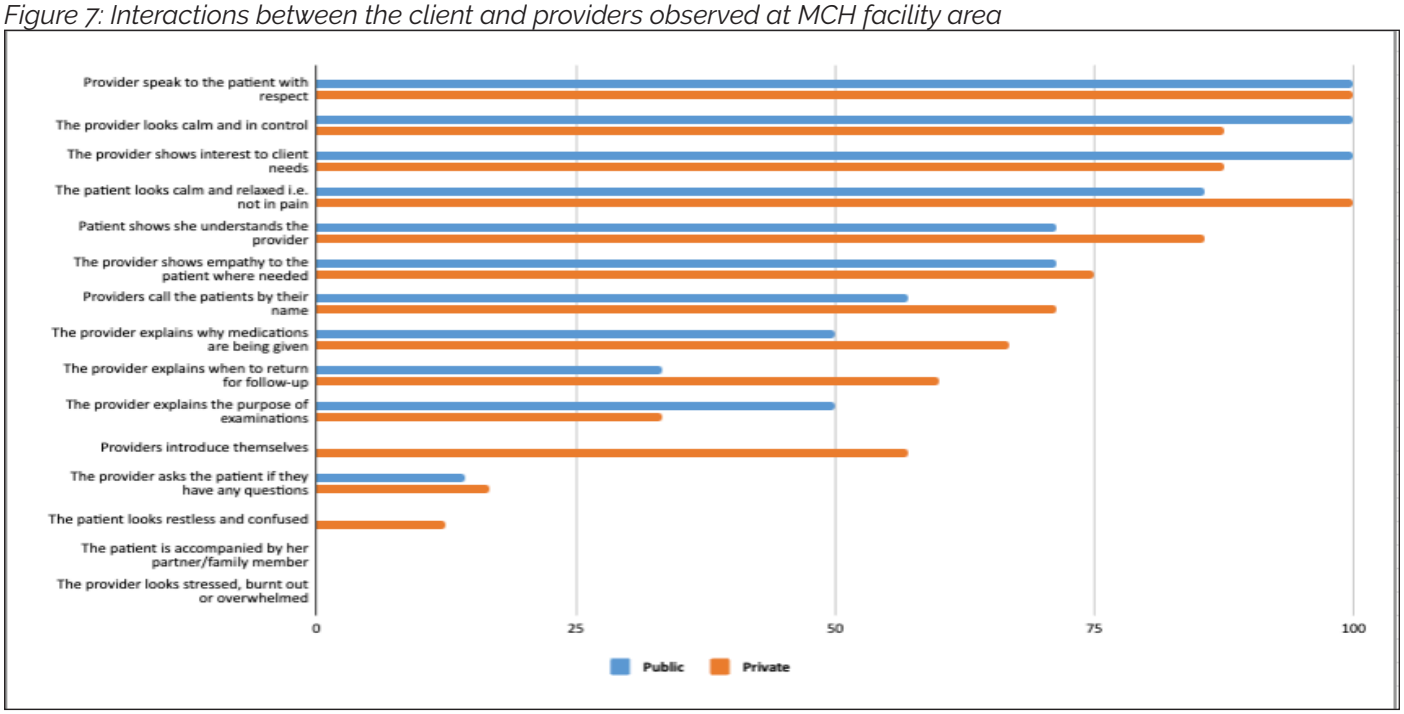
4. 2. 5.2. Maternal and Child Health facility area

Figure 7 presents interactions between clients and providers observed at a Maternal and Child Health facility in both public and private facilities. Overall, the results indicate positive provider-client interactions. Respectful communication was consistently observed across both public and private facilities, with all providers (100%) speaking to patients with respect. Providers' calm and controlled demeanor was also prevalent, with 100% observed in public facilities and 87.5% in private facilities, resulting in an overall average of 93.3%. Similarly, showing interest in client needs was observed in 100% of providers in both public and private facilities, contributing to an overall average of 93.3%. Patients' calm and relaxed state was evident in both facilities, with 85.7% in public and 100% in private facilities, resulting in an overall average of 93.3%. However, there are areas for improvement, such as explaining the purpose of examinations, with only 41.7% observed, and introducing themselves, with no observations in public facilities but 57.1% in private facilities.

The results also indicate that certain aspects of positive interactions were more prevalent in private facilities than in public facilities. Providers calling patients by their names and explaining the reasons for medications were observed in 71.4% and 66.7% of private facilities, respectively, compared to 57.1% and 50% in public facilities. Additionally, patient understanding of the provider's explanations was higher in private facilities (85.7%) compared to 71.4% in public facilities. However, both public and private facilities showed similar levels of provider empathy, with 71.4% and 75%, respectively, leading to an overall average of 73.3%. Nevertheless, a small percentage of patients appeared restless and confused, with 12.5% in private facilities and no observations in public facilities, resulting in an overall average of 6.7%. Overall,

the data suggests that while positive provider-client interactions are generally present in both public and private facilities, addressing the areas that require improvement, particularly in public facilities, can contribute to further enhancing the overall quality of care and patient experience.

Figure 7: Interactions between the client and providers observed at MCH facility area

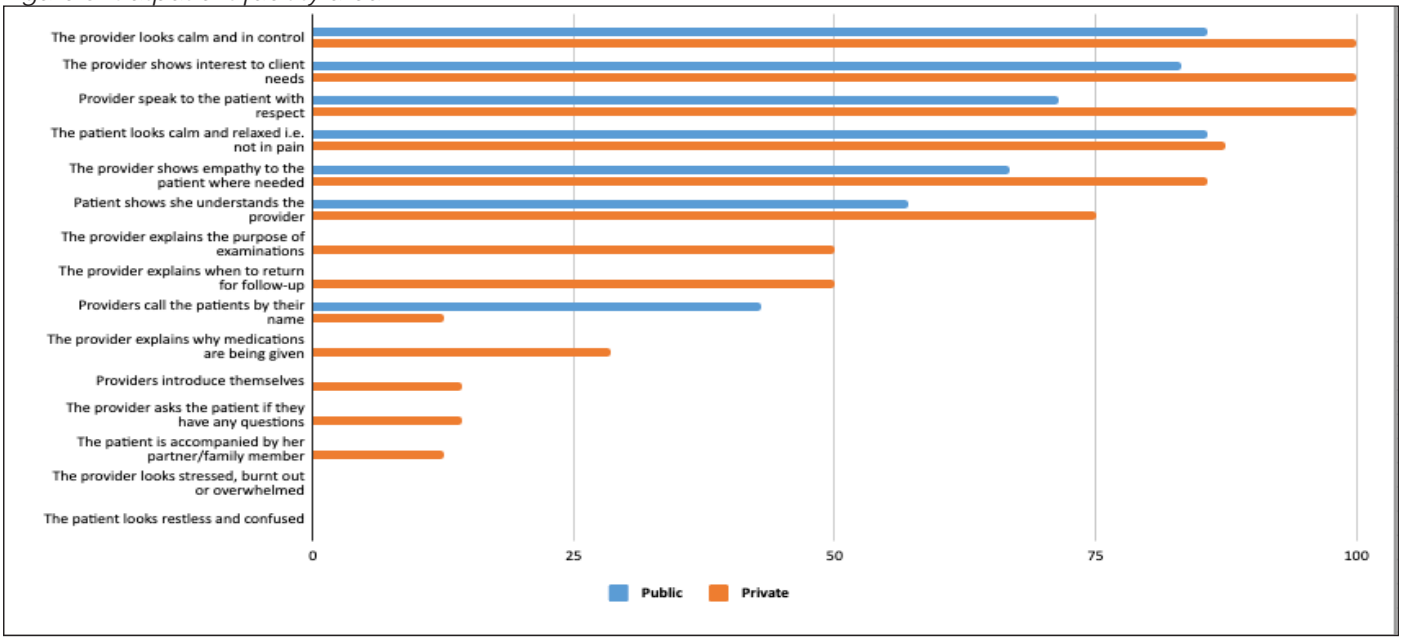


4.2 5.3. Outpatient area

Figure 8 presents data on the interactions between clients and healthcare providers observed at an outpatient facility in both public and private settings. Overall, the results indicate reasonably positive provider-client interactions, with some variations between the two settings. In public settings, providers displayed a calm and composed demeanor in 85.7% of cases, while in private settings, 100% of providers exhibited this behavior, leading to an overall average of 93.3%. Similarly, the interest shown by providers in addressing client needs was relatively high in both settings, with 83.3% in public and 100% in private settings, resulting in an overall average of 92.9%. However, there is room for improvement in respectful communication, with 71.4% of providers displaying this behavior in public settings, compared to 100% in private settings, contributing to an overall average of 86.7%.

While several aspects of positive interactions were relatively consistent between public and private settings, some discrepancies were observed. For instance, providers' display of empathy towards patients when needed was observed in 66.7% of public settings and 85.7% of private settings, leading to an overall average of 76.9%. However, areas such as explaining the purpose of examinations and follow-up instructions need attention, as these interactions were not observed in public settings but were displayed by 50% of providers in private settings, resulting in an overall average of 27.3%. Similarly, providers introducing themselves and asking patients if they had any questions were not observed in public settings, whereas 14.3% of private settings displayed these behaviors. The calling of patients by their names was observed in 42.9% of public settings and 12.5% of private settings, leading to an overall average of 26.7%. Additionally, explaining the reasons for medications was observed in 28.6% of private settings but not in public settings, contributing to an overall average of 18.2%. Overall, the data highlights the need for consistent efforts in both public and private settings to enhance patient-centered and empathetic care and improve communication between healthcare providers and clients.

Figure 8: Outpatient facility area

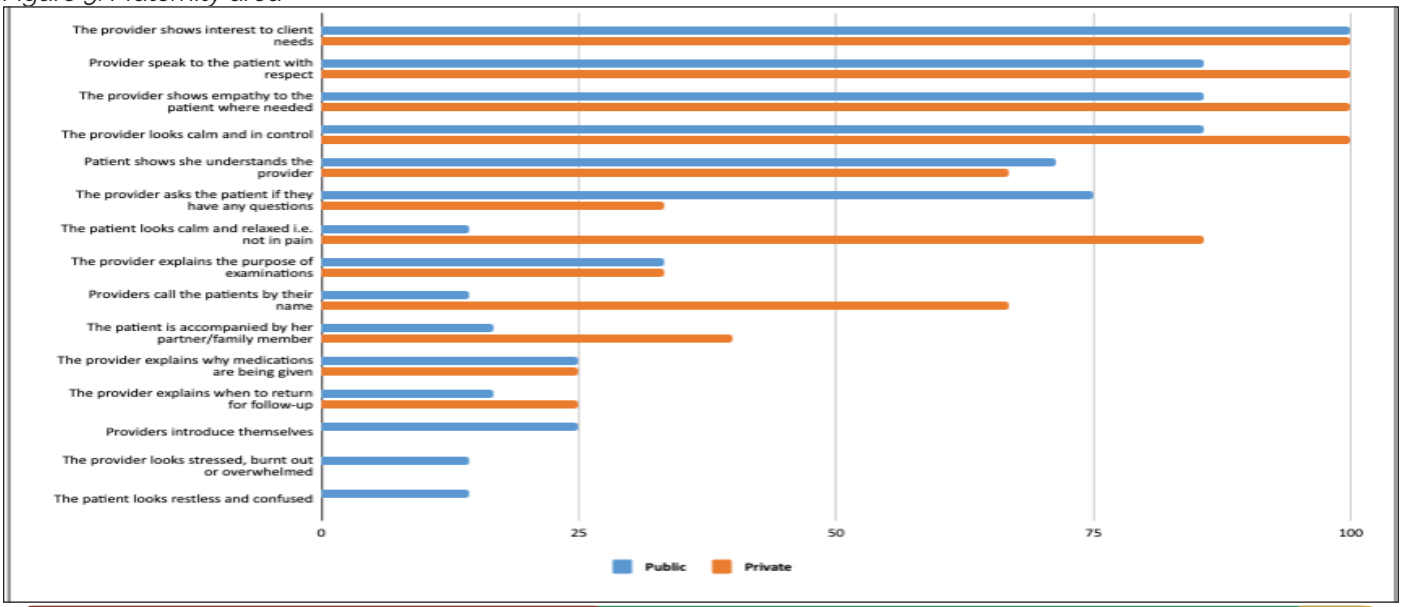


4.2 5.4. Maternity area

Figure 9 provides valuable insights into the interactions between clients and healthcare providers in the maternity area, examining both public and private settings. Notably, most providers, in both public and private settings, demonstrated a high level of interest in addressing client needs, speaking to patients with respect, and displaying empathy when needed, all contributing to an overall average of 100% positive interactions in these aspects. Moreover, providers' composure and control were evident in 85.7% of public settings and 100% of private settings, indicating a reassuring and professional demeanor. It is encouraging to observe these positive trends, as they underscore the commitment of healthcare providers to delivering compassionate and patient-centric care during the maternity experience.

However, the data also reveals areas that require attention and improvement. Patients appearing calm and relaxed, not in pain, were observed in only 14.3% of public settings, significantly lower than the 85.7% observed in private settings, leading to an overall average of 50%. This discrepancy suggests the need for interventions aimed at alleviating patients' discomfort and enhancing their sense of ease during the maternity process, particularly in public healthcare facilities. Additionally, certain aspects of communication need improvement, such as providers introducing themselves, which was observed in 25% of public settings and not at all in private settings, leading to an overall average of 16.7%. To create a more welcoming and patient-centered environment, healthcare facilities should focus on implementing practices that promote effective communication, foster trust, and instill confidence in patients during their maternity journey in both public and private settings.

Figure 9: Maternity area

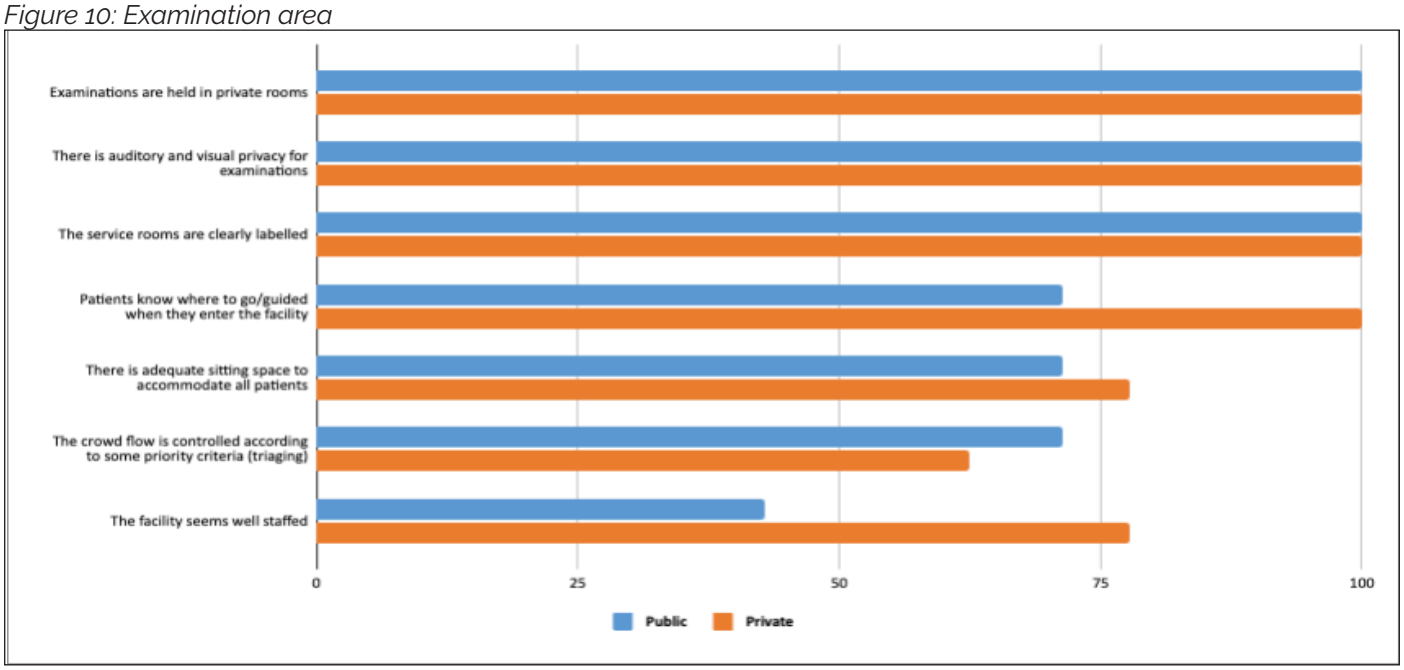


4.2 5.5. Examination area

The figure below provides insights into the interactions between clients and healthcare providers specifically observed at the examination area, comparing experiences in public and private settings. The data indicates consistently positive aspects in both sectors. Examinations are held in private rooms (100% in both public and private settings), ensuring patient privacy and confidentiality. Additionally, auditory, and visual privacy for examinations is maintained at 100% in both settings, promoting a respectful and secure environment for patients. Furthermore, the examination area is clearly labeled, attaining a perfect score of 100% in both public and private settings, facilitating ease of navigation for patients and efficient access to appropriate services.

While the overall experiences are commendable, there are areas that warrant attention for improvement, particularly in public healthcare facilities. Patient guidance upon entering the facility is observed in 71.4% of public settings compared to 100% in private settings, resulting in an overall average of 86.7%. Similarly, ensuring adequate sitting space to accommodate all patients is reported in 71.4% of public settings and 77.8% of private settings, contributing to an overall average of 75%. The crowd flow control with triaging is observed in 71.4% of public settings and 62.5% of private settings, leading to an overall average of 66.7%. Additionally, the facility appearing well staffed was reported in 42.9% of public settings and 77.8% of private settings, resulting in an overall average of 62.5%. These areas of improvement underscore the importance of optimizing patient flow, providing enough staffing, and offering comprehensive guidance for patients in public healthcare facilities to further enhance the overall patient experience and ensure smooth operations in the examination area.

Figure 10: Examination area



4.2 6. Availability of maternal and newborn health services

4.2. 6.1. Facility characteristics

Table 7 below provides an overview of sampled facility characteristics, comparing public and private facilities and presenting data for all sampled facilities combined. Public facilities are predominantly Level 2 (60.5%) and Level 3 (31.6%), whereas private facilities are largely Level 2 (81.5%) with a smaller proportion of Level 3 (18.5%). For level 4 facilities, the sample only included public facilities, whereas both public and private level 5 facilities were included. Health centers are the most common facility type in both public (63.6%) and private facilities (40.7%), contributing to 47.4% of all sampled facilities. Dispensaries and maternity facilities each make up 5.3% of all facilities. Clinics were mainly privately owned (51.9%).

All facilities reported continuous power supply and most of the facilities (68.4%) mentioned piped water into the facility as the main source of water. Public tap/standpipe (21.1%) and tube well/borehole (5.3%) were less common sources of water. Functional 24-hour ambulance was available in all public facilities but slightly above half (55.6%) in private facilities. Almost all facilities have an available laboratory for diagnostic testing (94.6%) and a pharmacy for the storage of pharmaceuticals (97.4%)..

Table 7: Sample facility characteristics

Facility level			
Level 2	9.1 [1.2,45.6]	81.5 [61.7,92.3]	60.5 [43.9,75.0]
Level 3	63.6 [33.0,86.2]	18.5 [7.7,38.3]	31.6 [18.5,48.4]
Level 4	9.1 [1.2,45.6]	0.0 [0.0,0.0]	2.6 [0.4,17.4]
Level 5	18.2 [4.4,52.0]	0.0 [0.0,0.0]	5.3 [1.3,19.5]
Facility type			
Dispensary	9.1 [1.2,45.6]	3.7 [0.5,23.3]	5.3 [1.3,19.5]
Health center	63.6 [33.0,86.2]	40.7 [23.7,60.3]	47.4 [31.8,63.5]
Maternity	9.1 [1.2,45.6]	3.7 [0.5,23.3]	5.3 [1.3,19.5]
Hospital	18.2 [4.4,52.0]	0.0 [0.0,0.0]	5.3 [1.3,19.5]
Clinic	0.0 [0.0,0.0]	51.9 [33.0,70.2]	36.8 [22.8,53.6]
Staffing	**Median IQR**	**Median IQR**	**Median IQR**
(# health providers by facility type)	37.0 [41.0]	5.0 [8.0]	9.0 [13.0]
Resources			
Continuous power supply	100.0 [0.0,0.0]	100.0 [0.0,0.0]	100.0 [0.0,0.0]
most commonly used source of water			
Piped into facility	72.7 [40.4,91.3]	66.7 [46.7,82.1]	68.4 [51.7,81.5]
Piped to facility grounds	9.1 [1.2,45.6]	3.7 [0.5,23.3]	5.3 [1.3,19.5]
Public tap/standpipe	0.0 [0.0,0.0]	29.6 [15.2,49.7]	21.1 [10.6,37.4]
Tubewell/borehole	18.2 [4.4,52.0]	0.0 [0.0,0.0]	5.3 [1.3,19.5]
Total bed			
No beds	9.1 [1.2,45.6]	22.2 [10.1,42.2]	18.4 [8.8,34.5]
1-5 beds	27.3 [8.7,59.7]	29.6 [15.2,49.7]	29.0 [16.5,45.7]
6-10 beds	18.2 [4.4,52.0]	11.1 [3.5,30.2]	13.2 [5.4,28.6]
11-15 beds	0.0 [0.0,0.0]	18.5 [3.5,30.2]	13.2 [5.4,28.6]
16-20 beds	0.0 [0.0,0.0]	3.7 [0.5,23.3]	2.6 [0.4,17.4]
More than 20 beds	45.5 [19.6,74.0]	14.8 [5.5,34.3]	23.7 [12.5,40.2]
Emergency transport			
Functional 24h ambulance	100.0 [0.0,0.0]	55.6 [36.3,73.3]	68.4 [51.7,81.5]
Laboratory & Pharmacy			
Availability of laboratory for diagnostic testing (%)	100.0 [0.0,0.0]	92.6 [73.8,98.2]	94.6 [80.0,98.7]
Availability of pharmacy for storage of pharmaceuticals (%)	100.0 [0.0,0.0]	96.3 [76.7,99.5]	97.4 [82.6,99.7]
N	**11**	**27**	**38**

4.2.6.2. Availability of essential maternal and newborn health services

Table 8 presents the availability of essential MNH services in both public and private health facilities. Overall, the availability of these services is relatively high for both types of facilities. In terms of antenatal care, iron/folic acid supplementation and tetanus toxoid immunization are universally available, with 100% coverage in both public and private facilities. However, there are some variations in the availability of other antenatal services. For instance, intermittent preventive treatment in pregnancy (IPTp) for malaria is relatively low, with only 16.7% coverage in all facilities, and even lower in private facilities at 21.1%. Calcium supplementation and low dose aspirin for women at risk of pre-eclampsia are also not widely available, with only around 45-47% coverage in both public and private facilities.

In the labor and delivery domain, most facilities have 100% availability of critical services such as parenteral administration of antibiotics, anticonvulsants, and uterotonic agents. However, there are differences in the availability of other services. Assisted vaginal delivery using manual vacuum extraction (MVE) or forceps is less common in private facilities (36.4%) compared to public facilities (71.4%). Similarly, oxygen administration is less available in private facilities (72.7%) compared to public facilities (100%). In terms of postpartum care, family planning services and newborn vaccines (BCG and OPV) are widely available with 100% coverage in both public and private facilities. However, there is a notable difference in the availability of Kangaroo Mother Care, which is present in all public facilities but only in 33.3% of private facilities.

Table 8: Availability of essential maternal and newborn health services in facilities

Antenatal Care	100 [0.0,0.0]	70.4 [50.3,84.4]	79.0 [62.6,89.4]
Iron/ folic acid supplementation	72.7 [40.0,91.4]	94.7 [68.8,99.3]	86.7 [68.4,95.1]
Intermittent preventive treatment in pregnancy (IPTp) for malaria	9.1 [1.2,46.1]	21.1 [7.8,45.7]	16.7 [6.8,35.3]
Tetanus toxoid immunization	100.0 [0.0,0.0]	84.2 [59.6,95.1]	90.0 [72.2,96.9]
Monitoring for hypertensive disorder of pregnancy (measure blood pressure)	100.0 [0.0,0.0]	100.0 [0.0,0.0]	100.0 [0.0,0.0]
Urine protein testing	90.9 [53.9,98.8]	100.0 [0.0,0.0]	96.7 [78.4,99.6]
Calcium supplementation for women at risk of pre-eclampsia	45.5 [19.5,74.2]	47.4 [26.0,69.7]	46.7 [29.3,64.9]
Low-dose aspirin for women at risk of pre-eclampsia	36.4 [13.7,67.3]	36.8 [18.1,60.7]	36.7 [21.1,55.7]
HIV test for pregnant women	100.0 [0.0,0.0]	100.0 [0.0,0.0]	100.0 [0.0,0.0]
Syphilis testing	90.9 [53.9,98.8]	100.0 [0.0,0.0]	96.7 [78.4,99.6]
Syphilis treatment	100.0 [0.0,0.0]	100.0 [0.0,0.0]	100.0 [0.0,0.0]
N	**11**	**19**	**30**
Labor & Delivery	63.6 [33.0,86.2]	40.7 [23.7,60.3]	47.4 [31.8,63.5]
Parenteral administration of antibiotics (IV or IM) for mothers	100.0 [0.0,0.0]	100.0 [0.0,0.0]	100.0 [0.0,0.0]
administration of parenteral anticonvulsant	100.0 [0.0,0.0]	81.8 [46.4,95.9]	88.9 [62.2,97.5]
administration of parenteral uterotonic agents	100.0 [0.0,0.0]	81.8 [46.4,95.9]	88.9 [62.2,97.5]
Assisted vaginal delivery using manual vacuum extraction (MVE) or forceps	71.4 [30.0,93.6]	36.4 [13.2,68.2]	50.0 [27.0,73.0]
Manual removal of placenta	100.0 [0.0,0.0]	100.0 [0.0,0.0]	100.0 [0.0,0.0]
Removal of retained products of conception using D&C or manual vacuum aspiration	42.9 [13.0,79.0]	81.8 [46.4,95.9]	66.7 [41.1,85.2]
Neonatal resuscitation with bag and mask	100.0 [0.0,0.0]	90.9 [52.2,98.9]	94.4 [66.0,99.3]
Blood transfusion	28.6 [6.4,70.0]	0.0 [0.0,0.0]	11.1 [2.5,37.8]
Oxygen administration	100.0 [0.0,0.0]	72.7 [39.0,91.8]	83.3 [56.8,95.0]
N	**7**	**11**	**18**
Maternal and well infant postpartum/ postnatal care	100.0 [0.0,0.0]	100.0 [0.0,0.0]	100.0 [0.0,0.0]
Family planning services	100.0 [0.0,0.0]	100.0 [0.0,0.0]	100.0 [0.0,0.0]
Provision of newborn vaccines: BCG	100.0 [0.0,0.0]	83.3 [31.0,98.2]	91.7 [52.5,99.1]
Provision of newborn vaccines: OPV	100.0 [0.0,0.0]	83.3 [31.0,98.2]	91.7 [52.5,99.1]
N	**6**	**6**	**12**
Care for small or sick newborn			42.9 [10.4,82.9]
Kangaroo Mother Care			42.9 [10.4,82.9]
Services or referral for cases of neonatal sepsis			100.0 [0.0,0.0]
Alternative feeding for newborns who cannot breastfeed			85.7 [29.9,98.8]
N			**7**

The healthcare providers were cognizant of the provision of MNH services as a key priority in primary healthcare at the county, sub-county, and ward levels in Nairobi. The public facilities reported offering free health services while private facilities do not offer free health services. Importantly, the health facilities were run by qualified/certified health professionals, with midwifery skills, to provide the MNH care services. These professionals reported to receive regular in-service trainings as needed.

"I think it is good because in the sub-county, especially in the study area that you are interested in, in every ward, there is a public facility that offers services for free, and where mothers and babies can access the services. In the facilities, there are trained healthcare workers, from the highest institutions in the country and they are certified by the key bodies that certify health workers so for example, nurses are certified by the Nursing Council of Kenya and clinicians are certified by the Clinician Council of Kenya. To add on to that, the health care workers are frequently trained on skills necessary for newborn and maternal health, so every year there is essential training that we do just to make sure they are empowered, and they renew their skills, to be able to handle maternal and newborn babies." KII sub-County official

These health facilities offer various free and skilled services, including MNH care, notably family planning, ANC, delivery/maternity services, PNC, immunization, and referral services.

"So, for prenatal care facilities, let me speak for the public facilities, it is readily available and the patients there can access skilled assessment by a midwife or clinical officer. They also access immunization such as Tetanus and for the baby; mother, and child services such as antenatal care, postnatal care; and access quality skilled workforce for free in the public facility. Family planning is also given free. So, they don't pay anything and are easily accessible." KII County official

ANC services are widely available in public health facilities, while maternity services are offered in only a limited number of such facilities, mostly located outside the informal settlement areas, with many of them being at level 3 (healthcare centers and maternity and nursing homes) facilities that only provide

basic maternity services. In case of complications, these facilities refer to the next level of care, which is level 4 (sub-county or medium-sized private hospitals). Due to the large population, they serve, these facilities face challenges with workload as many mothers seeking delivery services put pressure on staff and impact the quality of care. To address this, there is a pressing need for more public health facilities with maternity services, particularly in informal settlements, to cater to urban poor women and reduce health inequities.

"... when they get to the facilities in terms of staffing, yes, they can get the services. However, there are some services that we might not provide at a certain level if you go to level three, they can only provide basic maternity services and probably antenatal care and now that will, in case of any complication they must refer to another level. So, of these levels, we are very few like those who can give comprehensive care. We only have five facilities so again that leads to a workload for the five in terms of handling complicated cases, it leads to a lot of delays sometimes and we end up having a high number of death cases. So, it kind of compromises the quality of care that they receive because there are very few comprehensive services and very many, not many but quite a number, I think 27 of them are providing basic maternity services." KII County Official

County health personnel had an overall positive perception of the quality of maternity services in health facilities due to competent staff, well-equipped facilities, training opportunities, and the delivery of high-quality services. "In my opinion, I think our patients are getting the best... Not very optimal like up to 100% but they are getting, I will give it like 80%, they are given optimal care." KII County Official

"I would say that nowadays we are more quality. So, mothers ...they know that when they walk in, they are assured. Because we (the government) are always calling people for updates, and we have also taken them through what is called respective maternity care which involves the way you talk to them even in ANC., so they know that there is quality. And nowadays people know a lot about their rights so they would know. Like, if you don't talk to them, they will ask why they are not being told about this or that" KII Sub- County Official

Despite the high-quality maternity services, it was found to differ based on the level of health facility one accessed. For example, level 3 facilities (healthcare centers and maternity and nursing homes) were established to only provide antenatal care and basic maternity services while in case of complications, they would refer to level 4 (sub-county or medium-sized private hospitals). As a result, women tended to prefer level 4 and 5 hospitals for maternity services due to their comprehensive offerings. However, the limited number of level 4 facilities leads to staff struggling to cope with the workload, ultimately affecting the quality of care provided.

"..... *when they get to the facilities in terms of staffing, yes, they can get the services. However, there are some services that we might not provide at a certain level if you go to level three, they can only provide basic maternity services and probably antenatal care and now that will, in case of any complication they must refer to another level. Of these levels, there are very few which can give comprehensive care. We* have *only five facilities, so again that leads to workload for the five in terms of handling complicated cases. It leads to a lot of delays sometimes and we end up having a high number of death cases. So, it kind of compromises the quality of care that they receive." KII County official.*

County and sub-county officials reported an enhanced referral system in public health facilities, including ambulatory services managed centrally by qualified personnel to ensure effective emergency care. These ambulatory services were provided free of charge and were accessible to both communities and the general population through the emergency operations center (EOC).

"There was a challenge some time about the referral system which had some hiccups but now it's just straightforward. For the public facilities we have the emergency operation center where there are ambulances and qualified staff that can come to the facility and pick the client and take them to the referred facility. So, we have 3 regional county referral facilities that we refer to and then these facilities now can refer to the national referral hospital. So, we have a link between us, and we have operation numbers that are necessary for referral. So, we can call the referral facility and they prepare to receive the client." KII Sub County official.

".....the ambulances are managed from one central place, the Emergency Response Unit. There are facilities which have ambulances, but they are still coordinated from the emergency operations center (EOC). If a

health facility wants to refer to an ambulance or any other facility that is near, they will use the ambulance, but it is still operated from the EOC where you need to get approval so that you can use the ambulance. It is completely free even the community can request, so EOC picks clients from the roadside, from their houses, from an accident and it is completely free." KII County official.

However, county officials acknowledged that the improvement of the referral system, particularly ambulatory services, faced some challenges in urban informal settlements as these areas relied on facilities outside the settlement to access ambulances during emergencies.

"……That is where we have issues, referral systems. We have a very big problem particularly in the informal settlements. We don't have any facility there that has a standby ambulance. So, referral becomes an issue because they must depend on ambulances from outside the area which by the time, they get there…getting into the area and coming out of it takes a lot of time." KII County official.

4.2 6.3. Women seeking health care outside their area of settlement

Private facilities take the lion's share in terms of health facilities in Nairobi with public facilities found to be few with a majority not found within urban informal settlements where the urban poor reside. This forces them to seek delivery services outside their locality and or are contended with parting with finances to seek the necessary services from the private facilities within their locality. The report indicated that financial inaccessibility was a key barrier to access to health care, especially among the urban poor who live below the poverty line.

"I think speaking for Nairobi currently I would say that we have provided maternal and child health services in basically all the 17 sub-counties… I know we have primary healthcare being the leading in terms of antenatal care compared to the number of maternity services that we have. So, for Nairobi, we have 195 maternity facilities of which 33 are public facilities with 2 of the public health facilities being national. This is not adequate considering that we are serving a population that is around something…. 1,648 to be precise in terms of women expected to deliver, of which the majority are in the informal settlements and most of the facilities are not really located in those informal settlements. Somehow these women must make some travel to get access to the maternity units. So, in my opinion, the numbers are still not adequate to be able to cover this population that is in need, and as I have just said out of the 195 only 33 are public meaning the rest are private hospitals that will mean they have to pay for services, right? And living below a dollar they might not be able to afford the services. So yes, we need to have more public facilities in the areas to be able to provide quality services." KII County Official

4.2. 7. Facilitators of access and use of MNCH services

The following factors were reported to facilitate access to and utilization of MNCH services by county health officials.

a. Availability of free services and trusted healthcare workforce: Women preferred utilizing public health facilities because of free services and greater trust in their service delivery compared to private facilities. Despite long queues at these public facilities, women showed patience and waited to receive the services they needed.

"Of course, queues are longer because of course most people prefer free services and it is not only free public facilities that are most trusted by mothers than private facilities, yes the queues are longer and by the end of the day they are able to get the service." KII sub-county official.

b. Availability and access to health facilities and quality services: Availability and access to better quality of the required services was identified as one of the facilitating factors.

"….in terms of facilities to population ratio, the facilities are more. So regardless of whether the staffing is not there the people, or the population is able to get a service nearer and the facilities are more. So regardless of the staffing being a challenge it will not hinder a client from getting a quality service in the entire area. KII Sub- County official

"We have 26 facilities in my sub-county which are offering maternal, neonatal, and child health services with 8 maternity facilities which are spread across. In Viwandani, we have 3 maternity facilities and 1 yet to open but the building is ready. We also have 3 private health facilities with maternity services. Those

are maternity facilities where we are assured, they have qualified people." KII County official

c. Comprehensive services offered: The women appreciated facilities where they could access all services at one-stop for maternity services, including specialized care.

"The reason why we are having a high number in our five comprehensive facilities is the mothers prefer to be in a place where all the services are given. They don't want to be told they can't deliver and must be taken to the next level. The issue is why don't I just go to that level and finish it up there (deliver)? So, we are having clients' preference being the comprehensive care facilities and the primary level not so much. For antenatal care, they will go for the primary facility level but now for maternity, they will prefer going to level four or five for the deliveries." KII County official

d. Convenient operating hours of health facilities: In public facilities, the maternity services were always accessible to the general population and all days of the week while other healthcare services such as outpatient were offered within the 8 working hours every weekday in public facilities, while private facilities operated both during the day and night even on weekends.

"So, the facilities in that area, the public facilities, for the maternity they are 24 hours, but the maternal and child health (MCH) clinics and the Outpatient they are 8 am-5 pm, Monday to Friday. The private facilities in that area operate 24 hours, for both MCH and Out-Patient, so the services are accessible." KII sub-County official

e. Client-healthcare provider relationship: The interaction between the clients and healthcare providers during pregnancy through the antenatal clinics and delivery provides avenue for creating confidence, safety, and trust among women. The women feel well cared for and their concerns considered hence improves their access to seek these care services.

"Client-healthcare provider relationship that they established like when I come to you, and I am treated well I will feel good to come back for another service. If you treat me wrongly then I will not come and I will tell others not to come. So that client healthcare worker relationship is important, how do you treat the clients when they come to you and what do you tell them or how do you advise them in terms of their care." KII County Official.

f. Infrastructure and amenities: Health facilities that are well-resourced in terms of infrastructure where there were several rooms to offer services, had medical equipment, availability of drugs cleanliness of facility, and a proper referral system were important contributors to women seeking MNH services.

"First of all, it is the cleanliness of the place. The places are clean, and they also have room for a referral. They are also sure that in case of any complications, they will be referred on time. So, this one gives them a lot of hope. And the type of equipment these people have. Nowadays we have scans. All the *facilities have Doppler ultrasound, mothers really enjoy when they hear the baby go 'dup dup' …. the heartbeat. So, the mothers enjoy and feel like this is a place to be. They also find so many people going there and you see when so many people are going to a place, then you know that it is a good place. "KII Sub- County official*

4.2. 8. Barriers to access and use of MNCH services

Various barriers to accessing MNCH services were reported by the county health officials:

a. Inadequate staffing: County officials and healthcare providers recognized the imbalance between the population seeking healthcare services and the number of facility staff available to cater to their needs.

"The staffing is quite a challenge; if you look at the WHO the patient ratio to nurse ratio of course, it does not match we still have a gap there. We acknowledge that staffing is still a challenge, and it is not only in that area, but I also think it's the whole country".

b. Unqualified healthcare service: The lack of adequate public health facilities in the urban informal settlements has led to the spurring of many clinics which were not formalized into the health care systems and had staff who did not meet the required qualifications. These facilities were reported to

offer unsatisfactory services and were challenged in terms of referral of clients during emergencies as they are not recognized in the health care system of operations. This has led to patients being referred too late when complications have set in.

"*Poor quality, as I had told you, we have so many mushrooming facilities which don't have qualified people and because of the hard times, you find that they don't want to make referrals. When a client walks in, they see that as 'unga' that has come. So, when they refer…they fear making referrals and when they do refer, they do it when it's too late. They keep saying that it will be well hence refer the patient when it is too late… [M: And the mother has already developed complications], the mother has already developed complications. Referral system as well the government might have ambulances. All our three facilities don't have ambulances…the ones in Viwandani. So, they depend on…they will hire from a particular place. So, when they call us, we also must get an ambulance from somewhere else, and this causes delays. This is not good because they are serving people of Viwandani. It is my wish that they could identify one place and have one ambulance there.*"

c. Limited facilities offering emergency care in the informal settlements: Many of the health facilities found within the informal settlements offer basic MNH services and are unable to handle complicated cases in which they refer to a higher-level facility often outside their jurisdiction.

"Okay, so when they get to the facilities in terms of staffing yes, they can get the services. However, there are some services that we might not provide at a certain level if you go to level three, they can only provide basic maternity services and probably antenatal care and now that will, in case of any complication they must refer to another level. So, of these levels, we have very few like those who are able to give emergency care. We only have five facilities so again that leads to a workload for the five in terms of handling complicated cases, it leads to a lot of delays sometimes and we end up having a high number of death cases. So, it's kind of compromises the quality of care." KII sub-county official

d. Commodity stockouts and inadequate/nonfunctioning equipment: There has been reported disruption in the commodity chain, particularly drugs. Stock out of drugs such as the iron-folic acid supplement provided for pregnant women in public health facilities was stated to have persist for a long period.

"Sometimes there are challenges supply because for quite some time we have not had Iron folic acid supplements (IFAS) which is an essential commodity for pregnant women. So sometimes they really must wait for a very long time to get some services, so that is a challenge." KII Sub- County official

4.2.9. Availability of maternal and newborn health services during the COVID-19 pandemic

The COVID-19 pandemic affected greatly access to MNH services. The healthcare providers and county health officials observed most women were kept away from seeking healthcare services in health facilities due to the messaging by the government that emphasized staying at home and only visiting a healthcare facility if one was sick to minimize transmission of infection. This directive disrupted the maternal and newborn services especially antenatal and postnatal care where women less frequented the health facilities which affected the routine monitoring and care services resulting in a slight increase in the cases of maternal, perinatal, and neonatal mortality rates during this period.

"…. COVID-19 played a very big role, in the disruption of services. The health facility was the last place anyone could have wanted to be in the COVID-19 era, … . This included pregnant mothers and women who delivered because they did not come for ANC and PNC as expected, and it is understandable because the messaging during Covid-19 was that if you have no issues stay home. So, the preventive measures that we were doing, we were not able to do them adequately, …. . There was not much damage but of course, looking at obstetric indicators, we had a rise in newborn mortalities." KII Sub-County official

With the advent of the post-Covid-19 era the county and sub-county officials observed measures to return to normalcy in the provision of MNH services has picked up and the records show a decline in mortality rates and few dropouts in the immunization program among children although a few of the children have been lost to follow-up especially in the informal settlements where people lost employment opportunities during the Covid-19 pandemic and had to re-locate.

"I would say we have improved, because one thing, when you look at our dropouts, the numbers are low.

Fewer people dropping out of immunization. For the last two years, we have only had two maternal deaths of which 1 was very much unavoidable. It was beyond us because of the condition of the mother and the other one was postpartum haemorrhage (PPH). They were trained to manage but she got a cardiac arrest. Because of the training, we have reduced the numbers compared to before when you could find that in a year, we could have like 6 deaths." KII Sub- County official

"There is a very great improvement and that is why I am telling you that we are getting at least children...I know we lost quite a good number when COVID-19 came in because most of the people were working in the factories and the factories had to close." KII Sub County official

4.2. 10. Facilities readiness for maternal and newborn health services

4.2.10.1. Antenatal care

Table 9 and Appendix 1 presents overall and domain-specific facility readiness median scores for antenatal care in public and private facilities. Overall, the ANC readiness median score was 80% for all facilities, indicating a good level of preparedness in providing antenatal care services. There was a high ANC readiness in terms of equipment's both public and private facilities at median score of 90%. Diagnostics readiness median score was 80%. However, private facilities scored higher in medicines and commodities readiness (80%) compared to a median score of 60% in public facilities. All the facilities in the study area were ready in terms of basic amenities. The human resources readiness median score was estimated at 70% for both types of facilities, though there were differences in specific items. Appendix table 1 includes the availability of each list of item within each domain, depicting important public versus private differences in medicines/commodities such as iron and folic acid supplements, calcium supplements which were more readily available in the private sector, whereas human resources items were more readily available in public facilities.

Table 9: Facility readiness for antenatal care by facility ownership

	Public (MOH) Median IQR	Private Median IQR	Total Median IQR
Equipment readiness score	0.9 [0.4]	0.9 [0.3]	0.9 [0.3]
Diagnostics readiness score	0.8 [0.6]	0.8 [0.2]	0.8 [0.2]
Medicines & commodities readiness score	0.6 [0.4]	0.8 [0.6]	0.7 [0.6]
Basic amenities readiness score	1.0 [0.0]	1.0 [0.0]	1.0 [0.0]
HR readiness score	0.7 [0.3]	0.7 [0.3]	0.7 [0.3]
ANC READINESS SCORE	0.8 [0.3]	0.8 [0.2]	0.8 [0.2]
N	**11**	**19**	**30**

4.2.10.2 Labor and delivery care: BeMONC

Table 10 and Appendix 2 shows the median scores for facility readiness for labor and delivery (BeMONC) in public facilities, private facilities, and all facilities combined. Overall, public facilities had higher readiness for labor and delivery services at 80% compared to 50% in private facilities. Readiness median scores were higher in public compared to private health facilities for the equipment and supplies and medicines and commodities. Human resources and guidelines median score were similar for both public and private facilities at 70%;

Table 10: Facility readiness for labor and delivery (BeMONC) by facility ownership

	Public (MOH) Median IQR	Private Median IQR	Total Median IQR
Equiment and supplies score	0.8 [0.3]	0.5 [0.6]	0.6 [0.5]
Medicines & commodities score	0.9 [0.1]	0.7 [0.4]	0.9 [0.3]
Human resources and guidelines score	0.7 [0.2]	0.7 [0.2]	0.7 [0.3]
BeMONC READINESS SCORE	0.8 [0.2]	0.5 [0.5]	0.6 [0.3]
N	**7**	**11**	**18**

4.2.10.3. Care for the small or sick newborn

Less than one in five health facilities in the study area offered healthcare services to small or sick newborns (SSN). Table 11 presents the facility readiness for SSN care in the study area. The overall readiness median score for care of SSN was estimated at 60%, pointing to key gaps in these facilities' preparedness to care for SSN. For equipment, most facilities had a medication delivery mechanism for infusion and IV fluids, as well as a resuscitation table with a heat source and an infant weighing scale with 100g gradation. However, the availability of other equipment, such as caps/hats, infant incubators, and a register to record KMC services, is relatively lower. In terms of medicines and commodities, injectable antibiotics for neonatal

infection, including ceftriaxone and amoxicillin, are available in all facilities. However, the availability of beta or dexamethasone was limited. For human resources and guidelines, all facilities had guidelines, protocols, or job aids for KMC and staff trained in KMC within the last two years. However, the availability of guidelines for neonatal sepsis and the percentage of staff trained in neonatal sepsis are lower.

Table 11: Facility readiness for the care of small or sick newborns

	Total % [95%CI]
Equipment	
Caps/hats	0.0 [0.0,0.0]
bed/location for caregiver to stay overnight to provide KMC	28.6 [4.9,75.6]
Register to record KMC services	14.3 [1.2,70.1]
Medication delivery mechanism: infusion kit + IV fluid + single use	85.7 [29.9,98.8]
infant incubator	28.6 [4.9,75.6]
resuscitation table with heat source	85.7 [29.9,98.8]
infant weighing scale (100g gradation)	85.7 [1.2,70.1]
Thermometer	100.0 [0.0,0.0]
Medicines & commodities	
Oxygen and administration equipment	71.4 [24.4,95.1]
Beta or dexamethasone	42.9 [10.4,82.9]
Injectable antibiotics for neonatal infection	100.0 [0.0,0.0]
Ceftriaxone	100.0 [0.0,0.0]
Amoxicillin	100.0 [0.0,0.0]
Human resources and guidelines	
Guidelines, protocols or job aids for KMC	42.9 [10.4,82.9]
Guidelines, protocols or job aids for neonatal sepsis	57.1 [17.1,89.6]
Guidelines for breastfeeding and promotion of breastfeeding	71.4 [24.4,95.1]
Staff trained in KMC in last 2 years	42.9 [10.4,82.9]
Staff trained in neonatal sepsis in last 2 years	71.4 [24.4,95.1]
Staff trained in breastfeeding in last 2 years	85.7 [29.9,98.8]
Care for SSN READINESS SCORE	**Median IQR**
	0.6 [0.2]
N	7

5. DISCUSSION

Urban informal settlements present complex challenges and opportunities for maternal and newborn healthcare. This study delved into the multifaceted dimensions of this healthcare landscape, including birth history, care-seeking behaviors during pregnancy, content of care during delivery and immediate newborn care, person-centered maternity care, overall satisfaction with maternity care and care-seeking decisions, and readiness for MNH services. These findings shed light on the complexities of healthcare delivery in these poor urban settings.

5.1 Client Satisfaction with Maternal and Newborn Health Services

5.1.1 Birth history and care-seeking during pregnancy

Information on birth history and care seeking during pregnancy revealed the complexity of pregnancy-related challenges such as miscarriages, C-sections, and complications faced by expectant mothers within informal settlements. This underscores the multifaceted nature of the maternal journey in these settings and suggests an urgent need for tailored interventions that address the unique risks and vulnerabilities faced by pregnant women residing in informal settlements.

Interestingly, the preference for public facilities for antenatal care services highlights a reliance on the government healthcare system in informal settlement areas. However, the significant proportion opting for private facilities showcases the diverse healthcare options available, presenting both challenges

and opportunities. The interview with the county official highlighted that there may be sufficient public facilities offering delivery services in Nairobi informal settlements. The varying frequency of antenatal care visits underscores the necessity of standardized prenatal care protocols, with the aim of ensuring consistent and comprehensive health monitoring for pregnant women. The dynamics for choice of delivery place between public government facilities and others underscores the importance of individual and joint decision-making processes, although it is subject to financial accessibility of the services 14. The utilization of the Linda Mama program for delivery payment underscores its role in ensuring financial access to maternal healthcare 9. The study finding is consistent with the findings with a cross-sectional study conducted in Nigeria comparing antenatal and delivery services in public and private health facilities. The study findings revealed that while private facilities had more ANC visits and skilled birth attendance, the overall provision of ANC services was better in the public facilities 15.

Gaps were identified in counselling regarding pregnancy danger signs, nutrition, iron and folic acid supplementation, and intermittent preventive treatment for malaria and indicate potential deficiencies in the comprehensiveness of care in these settings. Addressing these gaps is crucial to providing expectant mothers with the knowledge and tools they need to navigate the challenges of pregnancy effectively. The finding is inconsistent with other study conducted in Kenya on maternal knowledge on iron and folic acid supplementation and associated factors among pregnant women in a rural urban setting that two-third of pregnant women had knowledge on IFAS16.

5.1.2. Content of Care: Delivery and immediate newborn care

The quality of care provided during labor and delivery, as well as immediate newborn care, is an important aspect of MNH. The different ways that different health care professionals contribute to the health of both mothers and babies show how well they work together. The prevalence of positive practices like early breastfeeding initiation and skin-to-skin contact shows a holistic approach that prioritizes mother and child health and comfort.

However, the variations in labor-related complications between the two study sites point to potential difficulties in ensuring uniform and secure deliveries. To address these differences and guarantee that all women, regardless of their background, have equitable access to healthcare, uniform care standards must be established.

The differences in care methods used by various healthcare facilities highlight the complex nature of healthcare delivery. This emphasizes the value of flexible strategies that can meet the various requirements of expectant mothers and their newborns. Exploring these nuanced practices should inform policy decisions to standardize care across healthcare settings. These findings are consistent with the findings from the study conducted in Tehran, the study used evidence-based practice during labor and childbirth in four public hospitals to evaluate the quality of care for women with low-risk pregnancy. The study recorded beneficial and lifesaving practices such as assessing mother's well-being, removal of placenta in third stage of labor and early initiating of breast-feeding 17.

5.1.3. Overall satisfaction of maternity care and care-seeking decisions

Clients' positive experiences with maternity care services led to high levels of satisfaction. These positive perceptions not only contribute to the development of trust and confidence in healthcare facilities but may also influence future healthcare-seeking behavior via word-of-mouth recommendations. The commendable recommendation rates further demonstrate the positive impressions that patients have. However, the recognition of areas of dissatisfaction, particularly regarding childbirth assistance and postpartum counseling, highlights the need for a holistic approach to maternal care that addresses all phases of the maternal journey. It is crucial that healthcare facilities consider these issues and work toward a comprehensive care model that ensures a positive experience in all aspects of maternal and newborn care. The finding is similar to the findings of the study conducted to evaluate the determinants of women's satisfaction with maternal health care in developing countries. The study revealed that positive perception, access, cost socio-economic status and reproductive history influence perceived maternal satisfaction 18.

5.1.4. Availability and readiness for maternal and newborn health services

The assessment of facility readiness for MNH services is an essential indicator of healthcare infrastructure. The study revealed availability of essential MNH services such as ANC, labor and delivery, maternal,

infant postpartum care, and care for small or sick newborn, based on the assessment of key domains: equipment, diagnostics, medicine, and commodities, basic amenities, and human resource. In the two informal settlements, most of the level 2 facilities were privately-owned and classified as level 2 and reported having continuous power supply. A stable power supply is crucial for running essential medical equipment, ensuring adequate lighting during childbirth and surgeries, and maintaining a safe environment for both mothers and newborns, and suggests a higher level of readiness. However, there were significant gaps in water availability and reliability and a significant percentage of facilities did not have piped water. In contrast, the availability of piped water can greatly contribute to the readiness of a healthcare facility, as it ensures a steady and clean water supply for medical procedures, handwashing, and sanitation. Access to clean water, in turn, is essential for infection control and maintaining a safe and hygienic environment for maternal and newborn care. Facilities without a reliable water source may face challenges in providing quality MNH care services

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The results show significant disparities in facilities readiness to offer maternal services in urban informal settlement. Smaller facilities with fewer beds often struggled with limited resources and infrastructures leading to low readiness level. On the other hand, high-level facilities with many beds generally had better readiness compared to large facilities with a small number of beds. Moreover, a considerable number of facilities did not always have a functional 24-hour ambulance service available, posing a challenge to provide prompt and life-saving care to women and newborn during emergencies. The overall readiness of healthcare facilities to conduct diagnostic testing was high in urban informal settlements, although some families may face limitations in terms of laboratory equipment or lack of laboratory personnel, which could potentially affect the quality, and efficiency of diagnostic services. Interestingly, the readiness of healthcare facilities to store and dispense pharmaceuticals appeared to be high. This suggests that most facilities had the capability to provide timely medications to pregnant women, new mothers, and newborns, contributing to improved health outcomes.

On average, healthcare facilities in urban informal settlements have a relatively high level of equipment readiness for providing MNH services, including ANC, with an optimal diagnostics readiness score. This is a positive finding as it reflects the facilities' preparedness to support pregnant women and ensure their health and well-being during pregnancy. For instance, most facilities had access to essential diagnostic equipment, laboratory tests, and imaging services for early detection and management of health conditions during pregnancy, childbirth, and the postnatal period. Moreover, healthcare facilities in urban informal settlements were moderately prepared in terms of having essential medicines and commodities readily available despite a considerable variation among facilities. That is, some facilities may have higher readiness levels, ensuring an adequate supply of medicines and commodities, while others may struggle with limitations in access to these critical commodities. Basic amenities readiness score is also another critical indicator of facility readiness to offer MNH services in urban informal settlements. Interestingly, all healthcare facilities in urban informal settlements had consistent and uniform access to the essential basic amenities necessary for MNH care. This may mean that almost all the health facilities in urban informal settlements are equally well prepared in providing basic amenities.

Healthcare facilities in urban informal settlements showed a moderate level of human resource readiness. This suggests that while some skilled personnel may be present, there were still potential gaps or shortages in specific areas that could impact the capacity to provide comprehensive MNH care services. The study findings are consistent with the findings of the study conducted on health facility readiness to care for high-risk newborn in low income setting in eastern Uganda. The findings revealed that there was a limited number of skilled personnel especially the neonatal nurses. Hospitals and healthcare centers scored least in terms of staffing 19..

The study also assessed facilities readiness to provide labor and delivery care services, including equipment and supplies, medicine, and commodities, human resource, and guidelines. The overall readiness score indicated a moderate level of readiness in providing basic emergency obstetric and newborn care in these facilities. Indeed, some facilities may have higher BeMONC readiness scores, while others may face challenges in meeting basic emergency obstetric and newborn care standards. Lastly, the care for SSN readiness score was also another important indicator of facility readiness to offer MNH services in urban informal settlements, particularly focusing on the ability to provide specialized care offered to SSN as per the above domains. The healthcare facilities had a moderate level of readiness in providing specialized care for SSN, as some of these facilities were equipped with some resources and

trained staff to manage SSN effectively, which in turn, affected their survival and overall health outcomes. These study findings are similar to the findings of the study conducted on health facilities service availability and readiness to provide basic emergency obstetric and newborn care in a low-resource setting in Tanzania. The study revealed that most of the facilities had available essential equipment and supplies, medicine and commodities to provide timely BEmONC services 20.

Most of the informal settlements in Nairobi receive their MNH services from both public and private facilities. The findings from KII indicates that public facilities offer free MNH services and are staffed by qualified healthcare professionals with specialized training in midwifery and maternal and newborn care. These facilities adhere to government-set standards and guidelines, ensuring standardized care and an emphasis on individualized patient needs. The interview with the Sub County MoH further revealed that over the past few years, there has been a notable improvement in the quality of MNH services, reflected in declining maternal and perinatal mortality rates. These services encompass antenatal care, delivery, postnatal care, family planning, immunization, and referrals.

However, challenges persist, particularly in the provision of antenatal care, where stock outs of laboratory reagents and limited access to ultrasound equipment can compromise the quality of care and potentially lead to complications during childbirth. There is also a discrepancy in care levels between different healthcare facilities, with level 4 facilities offering comprehensive services but being limited in number, leading to a heavy workload and potential compromises in care quality. The improvement of the referral system has been acknowledged but remains challenging in informal settlements due to a lack of facilities with standby ambulances. Additionally, postnatal care tends to prioritize the newborn over the mother in some cases, highlighting an area for improvement in the overall quality of MNH services in Nairobi.

5.1.5. Experience of patient centered maternity care PCMC and satisfaction of care

Person-centered maternity care is critical to providing a positive experience for both mothers and newborns. Clients' reports of being treated respectfully and approached with courtesy highlight the critical importance of dignity and respect in healthcare interactions. However, there is a clear need for improvement in communication and autonomy, as evidenced by the low percentage of health providers who introduce themselves and involve clients in care decisions. This emphasizes the importance of creating an environment in which patients can actively participate in their care journey.

Clients cited pain management and attentive provider behavior as examples of supportive care as a positive aspect of person-centered maternity care. While there has been progress, addressing issues such as overcrowding will improve the overall supportive environment for expectant mothers. The study finding is consistent with the findings on studies conducted on person-centered maternity care in low-income and middle-income countries in Kenya, Ghana, and India. The findings revealed a score of 60 % in communication and autonomy high compared to Ghana and India, having 46 % and 27 % respectively 21.

5.2 Study Limitations

A limitation to the study was the low numbers of health facilities offering delivery services to the two study areas. Only half of the facilities included in the health facility assessment offered delivery services and were considered for the client exit survey; similarly, only 7 facilities offered care for the small and sick newborns.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusion

This study explores the various aspects of care provided to mothers and newborn in urban informal settlements. The results highlight the need for increased knowledge and counselling during pregnancy, particularly regarding danger signs, nutrition, and supplementation. While routine antenatal care visits are common, there is still room for a more comprehensive care experience. Accessible healthcare financing, as exemplified by the Linda Mama program, emphasizes its significance. Collaborative efforts involving a variety of healthcare professionals ensure safe deliveries. There is an increase in the prevalence of beneficial practices such as skin-to-skin contact and the initiation of breastfeeding at the appropriate time. However, difficulties in the labour process and study site disparities call for customized interventions. The study highlights potential enhancements, such as family participation.

Examining PCMC reveals that clients have diverse experiences. Privacy, communication, and autonomy

continue to present obstacles even though many reports feeling respected. Supporting the patient during labour and delivery is a significant area of focus. Appropriate waiting times, empathetic care, and pain management are commendable; however, concerns regarding overcrowding and cleanliness must be addressed. The interactions that take place between clients and healthcare providers in a variety of settings reflect a mixture of positive and negative behaviours that could use some improvement. The availability and readiness of MNH services are generally positive, but there are disparities between public and private facilities. Although most facilities are ready for antenatal care, medicines and commodities in public facilities need to be improved. The care readiness of small or sick newborn varies, necessitating specialized training and resources.

Overall, this study highlights the significance of increasing awareness, improving communication, promoting patient-centeredness, and improving access to essential MNH services within urban informal settlements. These efforts have the potential to lead to improved health outcomes for mothers and infants, ultimately leading to healthier communities overall.

6.2 Recommendations

These recommendations aim to enhance the quality of maternal and newborn healthcare in urban informal settlements.

1. Enhance comprehensive information to antenatal and prenatal mothers to empower them with knowledge about danger signs, nutrition, and preventive measures. This will address the critical need for accessibility of relevant information.
2. Promoting empowered decision-making among expectant mothers in the informal settlement by providing clear and accessible information about healthcare options through awareness campaigns, educational materials, and counseling sessions. This will foster a patient-centric approach where pregnant women actively participate in their care decisions.
3. Effective communication between healthcare providers and the patients is vital in informal settlements where trust and confidence may be minimal. Improving communication and autonomy training healthcare staff in effective communication strategies and promoting shared decision-making throughout the maternal and newborn care journey.
4. Enhanced facility readiness for labor and delivery care, particularly in private healthcare settings is a necessity in informal settlement. There is a need for ensuring the availability of essential equipment, medications, and commodities to provide consistent and high-quality care for both normal and complicated deliveries.
5. Provide training programs for healthcare providers that emphasize empathy and understanding. Create a nurturing and supportive healthcare environment to build trust and ensure that care is responsive to the specific needs of the population.
6. Foster collaboration, partnership, and linkage between public and private healthcare sectors to address disparities in informal settlements. This approach ensures that MNH services are accessible and affordable, bridging the gap in care quality across different facility types.
7. The Ministry of Health addresses the shortage of skilled healthcare professionals in urban informal settlement and provide incentive programs, support for healthcare training and education to attract and retain qualified personnel in these informal areas.
8. Regular monitoring and evaluation of healthcare services are essential to identify areas for improvement in the informal settlement. Quality improvement initiatives should be implemented based on feedback from patients and healthcare providers, focusing on enhancing the overall experience of PCMC.
9. Ministry of Health should reorganize the unique needs of adolescent mothers in informal settlements. Offering youth-friendly services can create a more comfortable and supportive environment for young mothers, addressing their specific concerns and challenges.

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8. APPENDICES

Appendix 1: Facility readiness for antenatal care

	Public (MOH) %	Private % [95%C	Total % [95%CI]
Equipment			
Blood pressure apparatus	90.9 [53.9,98.8]	100.0 [0.0,0.0]	96.7 [78.4,99.6]
Stethoscope	81.8 [47.6,95.7]	100.0 [0.0,0.0]	93.3 [75.8,98.4]
Examination bed	100.0 [0.0,0.0]	100.0 [0.0,0.0]	100.0 [0.0,0.0]
Latex gloves	81.8 [47.6,95.7]	84.2 [59.6,95.1]	83.3 [64.7,93.2]
Single use syringe	81.8 [47.6,95.7]	79.0 [54.3,92.2]	80.0 [61.1,91.1]
Soap and water or alcohol rub	100.0 [0.0,0.0]	89.5 [64.8,97.5]	93.3 [75.8,98.4]
Environmental disinfectant	72.7 [40.0,91.4]	57.9 [34.7,78.1]	63.3 [44.3,78.9]
Adult weighing scale	100.0 [0.0,0.0]	84.2 [59.6,95.1]	90.0 [72.2,96.9]
Foetal stethoscope	81.8 [47.6,95.7]	89.5 [64.8,97.5]	86.7 [68.4,95.1]
Diagnostics			
Hemoglobin testing	63.6 [32.7,86.3]	68.4 [44.1,85.6]	66.7 [47.5,81.5]
Urine dipstick: protein	72.7 [40.0,91.4]	94.7 [68.7,99.3]	86.7 [68.4,95.1]
Urine dipstick: glucose	63.6 [32.7,86.3]	94.7 [68.7,99.3]	83.3 [64.7,93.2]
Syphilis testing	90.9 [53.9,98.8]	89.5 [64.8,97.5]	90.0 [72.2,96.9]
HIV testing	72.7 [40.0,91.4]	73.7 [49.1,89.1]	73.3 [54.2,86.5]
Medicines & commodities			
Iron/folic acid tablets	54.6 [25.8,80.6]	73.7 [49.1,89.0]	66.7 [47.5,81.5]
Calcium tablets	18.2 [4.3,52.4]	42.1 [22.0,65.3]	33.3 [18.5,52.5]
Tetanus toxoid vaccine	81.8 [47.6,95.7]	73.7 [49.1,89.0]	76.7 [57.6,88.8]
Syphilis treatment	90.9 [53.9,98.8]	84.2 [59.6,95.1]	86.7 [68.4,95.1]
Basic amenities			
Improved water source	100.0 [0.0,0.0]	94.7 [68.8,99.3]	96.7 [78.4,99.6]
Room with auditory and visual privacy	81.8 [47.6,95.7]	100.0 [0.0,0.0]	93.3 [75.8,98.4]
Improved sanitation facility	100.0 [0.0,0.0]	94.7 [68.8,99.3]	96.7 [78.4,99.6]
Human resources and guidelines			
Staff trained in service area in last 2 years	90.9 [53.9,98.8]	79.0 [54.3,92.2]	83.3 [64.7,93.2]
National ANC guidelines	27.3 [8.6,60.0]	26.3 [11.0,50.9]	26.7 [13.5,45.8]
ANC checklists/job aids	90.9 [53.9,98.8]	52.6 [30.3,74.0]	66.7 [47.5,81.5]
N	**11**	**19**	**30**

Appendix 2: Facility readiness for labor and delivery (BeMONC)

	Public (MOH) %	Private % [95%CI]	Total % [95%CI]
Equipment			
Blank partograph	85.7 [38.1,98.3]	54.6 [25.1,81.2]	66.7 [41.1,85.2]
Examination light	85.7 [38.1,98.3]	54.6 [25.1,81.2]	66.7 [41.1,85.2]
Blood pressure apparatus	57.1 [21.0,87.0]	45.5 [18.9,74.9]	50.0 [27.0,73.0]
Fetal stethoscope	100.0 [0.0,0.0]	81.8 [46.4,95.9]	88.9 [62.2,97.5]
Delivery pack	100.0 [0.0,0.0]	72.7 [39.0,91.8]	83.3 [56.8,95.0]
Vacuum aspirator/D&C kit with speculum	57.1 [21.0,87.0]	18.2 [4.1,53.6]	33.3 [14.8,59.0]
Manual vacuum extractor or forceps	42.9 [13.0,79.0]	54.6 [25.1,81.2]	50.0 [27.0,73.0]
Delivery bed	85.7 [38.1,98.3]	100.0 [0.0,0.0]	94.4 [66.0,99.3]
Sterilization material	100.0 [0.0,0.0]	81.8 [46.4,95.9]	88.9 [62.2,97.5]
Resuscitation table with heat source	100.0 [0.0,0.0]	63.6 [31.8,86.8]	77.8 [51.4,92.1]
Infant incubator	28.6 [6.4,70.0]	9.1 [1.1,47.8]	16.7 [5.0,43.2]
Suction pump and catheter	71.4 [30.0,93.6]	18.2 [4.1,53.6]	38.9 [18.7,63.8]
Resuscitation bag and mask (size 0/1)	57.1 [21.0,87.0]	18.2 [4.1,53.6]	33.3 [14.8,59.0]
Resuscitation bag and mask (adult)	71.4 [30.0,93.6]	36.4 [13.2,68.2]	50.0 [27.0,73.0]
Infant scale (100g gradation)	85.7 [38.1,98.3]	54.6 [25.1,81.2]	66.7 [41.1,85.2]
Pulse Oximeter	57.1 [21.0,87.0]	36.4 [13.2,68.2]	44.4 [22.7,68.5]
Thermometer	71.4 [30.0,93.6]	36.4 [13.2,68.2]	50.0 [13.2,68.2]
Latex gloves	100.0 [0.0,0.0]	72.7 [39.0,91.8]	83.3 [56.8,95.0]
Emergency transport	71.4 [30.0,93.6]	27.3 [8.3,61.0]	44.4 [22.7,68.5]
Clean towel for drying newborn	42.9 [13.0,79.0]	36.4 [13.2,68.2]	38.9 [18.7,63.8]
Medicines & commodities			
Oxytocin inj.	100.0 [0.0,0.0]	63.6 [31.8,86.8]	77.8 [51.4,92.1]
Magnesium sulphate inj.	100.0 [0.0,0.0]	54.6 [25.1,81.2]	72.2 [25.1,81.2]
IV solution	100.0 [0.0,0.0]	72.7 [39.0,91.8]	83.3 [56.8,95.0]
Beta or dexamethasone	42.9 [13.0,79.0]	27.3 [8.3,61.0]	33.3 [14.8,59.0]
Oxygen and administration equipment	57.1 [21.0,87.0]	54.6 [25.1,81.2]	55.6 [31.5,77.3]
Misoprostol tablet	85.7 [38.1,98.3]	54.6 [25.1,81.2]	66.7 [41.1,85.2]
Injectable antibiotic for neonatal infection	100.0 [0.0,0.0]	100.0 [0.0,0.0]	100.0 [0.0,0.0]
Eye ointment	100.0 [0.0,0.0]	81.8 [46.4,95.9]	88.9 [62.2,97.5]
Skin disinfectant	100.0 [0.0,0.0]	72.7 [39.0,91.8]	83.3 [56.8,95.0]
Human resources and guidelines			
Guidelines for essential childbirth care	28.6 [6.4,70.0]	9.1 [1.1,47.8]	16.7 [5.0,43.2]
Checklists/job aids for essential childbirth care	57.1 [21.0,87.0]	54.6 [25.1,81.2]	55.6 [31.5,77.3]
Guidelines for essential newborn care	42.9 [12.9,79.1]	10.0 [1.2,50.9]	23.5 [8.4,50.8]
Staff trained in essential childbirth care in last 2 years	100.0 [0.0,0.0]	100.0 [0.0,0.0]	100.0 [0.0,0.0]
Staff trained in newborn resuscitation using bag and mask in last 2 years	100.0 [0.0,0.0]	100.0 [0.0,0.0]	100.0 [0.0,0.0]
Staff trained in essential newborn care in last 2 years	100.0 [0.0,0.0]	90.9 [52.2,98.9]	94.4 [66.0,99.3]
	Median IQR	**Median IQR**	**Median IQR**
Equiment and supplies score	0.8 [0.3]	0.5 [0.6]	0.6 [0.5]
Medicines & commodities score	0.9 [0.1]	0.7 [0.4]	0.9 [0.3]
Human resources and guidelines score	0.7 [0.2]	0.7 [0.2]	0.7 [0.3]
BeMONC READINESS SCORE	0.8 [0.2]	0.5 [0.5]	0.6 [0.3]
N	**7**	**11**	**18**