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Baseline findings from a quasi-experimental study on educational interventions for high-risk obstetric clients in Nairobi County

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Abstract

Background/Aim: Maternal healthcare utilization among high-risk obstetric patients in dense urban settings, such as Nairobi, remains inconsistent despite ongoing national programs. This baseline study characterized knowledge, service utilization, cultural influences, and use of the Maternal and Child Health (MCH) handbook among high-risk women prior to an educational intervention.

Methods: A cross-sectional baseline survey was conducted as the first phase of a larger quasi-experimental study (pre–post with intervention and control groups). A total of 205 high-risk pregnant patients (intervention, n = 145; control, n = 60) attending two Level 5 hospitals in Nairobi County participated in the survey. Structured interviewer-administered questionnaires were used to collect data on demographic characteristics, obstetric knowledge, antenatal care (ANC) and postnatal care service utilization, cultural beliefs, and acceptance of the MCH handbook. Descriptive statistics were applied to summarize the baseline status.

Results: The participants were predominantly aged 25–34 years and had attained secondary or higher levels of education. Baseline knowledge scores were moderate (intervention: 53.18%; control: 51.77%), whereas adequate ANC attendance (≥4 visits) was notably low (intervention: 2.54%; control: 2.27%). Prenatal education was limited, with many respondents reporting minimal discussion of birth plans or postpartum support. Cultural factors, including fear of judgment, perceived disrespect, and reliance on traditional healers, were strongly associated with low service utilization. Although the MCH handbook was generally well received, routine use remained <50% in both groups. These patterns align with evidence from other urban and low- and middle-income country studies that link structural, informational, and cultural barriers to suboptimal maternal service uptake.

Conclusion: Baseline data reveal significant gaps in knowledge, service utilization, and integration of the MCH handbook among high-risk obstetric patients in Nairobi County. The forthcoming educational intervention should be culturally tailored, strengthen provider–client communication, and incorporate practical MCH handbook training to improve service utilization and maternal outcomes.

Keywords: maternal healthcare, high-risk pregnancy, antenatal care, MCH handbook, cultural barriers, Nairobi County, cross-sectional baseline survey

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Introduction

Reducing maternal morbidity and mortality remains an important public health priority in Kenya and other low- and middle-income countries (LMICs), where urban density and inequitable access to healthcare often exacerbate the risk. Nairobi's informal settlements and periurban catchments present unique challenges, including overloaded facilities, variable service quality, and sociocultural barriers, which limit the effective utilization of antenatal (ANC), delivery, and postnatal (PNC) care [4]. Even when national policies expand financial access, for example, through free maternity programs, gaps persist in coverage and quality, resulting in disparities in outcomes [5, 6].

High-risk obstetric patients (those with conditions such as preeclampsia, gestational diabetes, or prior obstetric complications) are particularly vulnerable to poor outcomes when care is fragmented or underutilized [7]. Although educational interventions can improve knowledge and behavior, real-world evaluations often require quasi-experimental designs to accommodate ethical and operational constraints in busy clinical settings [1]. In Nairobi, facility-level variations in client education, counseling, and the integration of tools such as the Maternal and Child Health (MCH) handbook shape readiness and care-seeking. Evidence suggests that possession of the handbook alone does not guarantee effective use without reinforcement from the provider and contextual adaptation.

Previous studies across sub-Saharan Africa and other LMICs highlight recurrent determinants of suboptimal maternal service use, including physical access, perceived and actual quality of care, socioeconomic gradients, and culturally mediated health beliefs [3]. In urban Kenyan contexts, findings from qualitative studies indicate that fear of disrespect, long waiting times, and weak provider–client communication are barriers that blunt the effect of structural strategies [2]. Moreover, external shocks (healthcare worker strikes and pandemics) can rapidly reverse gains unless resilience and targeted community engagement are in place [8, 9].

Given this background, a cross-sectional baseline survey was conducted among high-risk obstetric women at two Level 5 hospitals in Nairobi for the following purposes: 1) to quantify baseline knowledge; 2) to assess service utilization levels; 3) to document cultural and provider-related barriers; and 4) to evaluate MCH handbook acceptance and actual usage. The findings are expected to inform the development of a culturally tailored educational intervention and to establish preintervention benchmarks for subsequent evaluation. While the overall study is quasi-experimental, this paper focuses on the cross-sectional baseline findings.

Materials and methods

Study Design and Setting

The overall study was designed as a quasi-experimental pre–post evaluation involving intervention and control groups. The baseline phase, as reported here, employed a cross-sectional survey to establish preintervention measures of knowledge, service utilization, cultural beliefs, and MCH handbook use. This component employed a cross-sectional baseline pretest design in two Level 5 hospitals in Nairobi: Mama Lucy Kibaki Hospital (the intervention site) and Mbagathi Hospital (the control site). A cross-sectional baseline approach is appropriate when a controlled comparison is required to evaluate program impacts despite random allocation being infeasible or unethical [1]. Baseline data were collected one month prior to the planned intervention.

Participants and Sampling

The participants were pregnant women identified to be of high risk by clinicians (for example, those with hypertensive disorders of pregnancy, gestational diabetes, or prior obstetric complications). A total of 205 participants were enrolled (intervention, n = 145; control, n = 60) using stratified and consecutive sampling from ANC clinics and high-risk registries. Furthermore, purposive interviews were conducted with four administrators and two healthcare providers to contextualize the quantitative findings.

Data Collection Instruments and Procedures

A structured, interviewer-administered questionnaire was used to capture demographics, obstetric health knowledge (importance of ANC, danger signs, and birth planning), service utilization (ANC visits, ultrasound use, immunizations, and screening tests), cultural beliefs (perceptions of discrimination and traditional healer use), and MCH handbook possession/use. The instrument combined Likert-type items and closed-ended responses; it was pilot-tested and reviewed by content experts to ensure clarity and face validity in the local context.

Key Measures

The primary outcomes were overall knowledge score (summative index), percentage of women attending ≥4 ANC visits, PNC within 48 h, and reported use of the MCH handbook. Secondary measures included ultrasound utilization, content and source of prenatal education, birth plan discussions, and indicators of cultural influence (for example, seeking traditional healers and perceived disrespect).

Ethics

Approval was obtained from the Kenya Methodist University Institutional Scientific and Ethics Review Committee (KeMU ISERC) and the National Commission for Science, Technology, and Innovation. Written informed consent was acquired from all participants; confidentiality and data security procedures were strictly adhered to.

Statistical analysis

Descriptive statistics, including means, standard deviations, frequencies, and percentages, were used to summarize the participant characteristics and primary measures. The baseline findings were presented in the form of tables, which were interpreted in relation to the study objectives and used to draw actionable conclusions. Analyses were performed using IBM SPSS Statistics version 27.

Results

Demographic Characteristics

Of the 205 participants, the largest age group was 25–34 years (intervention: 65.6%; control: 61.7%), with most women having attained secondary education or higher. Notably, 55.9% of participants in the intervention group held college or university education credentials, compared with 35.0% in the control group. The majority were married (intervention: 71.7%; control: 73.3%). Employment patterns showed that the unemployment rate was

higher in the control group (55.0%) than in the intervention group (31.0%). Hospital attendance mirrored site allocation, with 58.6% of intervention participants receiving care at Mama Lucy Kibaki Hospital, whereas all control participants attended Mbagathi Hospital (Table 1).

Table 1: Demographic Characteristics of the Respondents

Variables	Category	Control Pre (n, %)	Intervention Pre (n, %)
Age Group (Years)	20–24	(14, 23.3)	(22, 15.2)
	25–29	(16, 26.7)	(42, 29.0)
	30–34	(21, 35.0)	(53, 36.6)
	35–39	(8, 13.3)	(21, 14.5)
	≥40	(1, 1.7)	(7, 4.8)
Education Level	Primary	(11, 18.3)	(16, 11.0)
	Secondary	(28, 46.7)	(48, 33.1)
	College	(15, 25.0)	(61, 42.1)
	University	(6, 10.0)	(20, 13.8)
Marital Status	Never Married	(13, 21.7)	(35, 24.1)
	Married	(44, 73.3)	(104, 71.7)
	Separated/Divorced	(3, 5.0)	(6, 4.1)
Employment Status	Unemployed	(33, 55.0)	(45, 31.0)
	Employed Part-time	(6, 10.0)	(26, 17.9)
	Employed Full-time	(6, 10.0)	(27, 18.6)
	Businessperson	(15, 25.0)	(47, 32.4)
Hospital Visited	Mama Lucy Kibaki	(0, 0.0)	(85, 58.6)
	Mbagathi	(60, 100.0)	(60, 41.4)

This demographic profile reflected a relatively young maternal population, with most respondents aged 25–34 years, a group often more receptive to structured maternal education and facility-based services than older age groups [4]. The higher proportion of college and university graduates in the intervention group suggests a potential advantage in baseline health literacy and a capacity to engage effectively with educational interventions [8].

Furthermore, socioeconomic disparities were evident. The higher unemployment rate observed in the control group may limit financial access to care, influencing service utilization and engagement with healthcare programs [10, 6]. In addition, the high proportion of married women in both groups aligns with evidence showing that spousal support enhances maternal healthcare access and adherence [8].

Finally, the distribution of hospital attendance suggests that Mama Lucy Kibaki Hospital provided more structured engagement services, potentially augmenting baseline knowledge and service utilization among the intervention group [11]. Collectively, these demographic distinctions underscore the importance of tailoring maternal interventions to educational background, socioeconomic conditions, and facility-specific contexts to enhance the outcomes.

Maternal Knowledge

Overall, baseline knowledge scores were moderate, with the intervention and control groups recording mean scores of 53.18% and 51.77%, respectively. A large proportion of respondents (>80%) agreed or strongly agreed on the importance of maternal care, breastfeeding, immunization, and routine pregnancy checkups. However, neutral responses to items on available service options and birth plan alternatives reached 9.7%, signaling prominent informational gaps [1].

These findings indicate relatively high baseline awareness of general maternal health concepts but highlight areas of incomplete understanding. Specifically, limited knowledge of service options and birth planning suggests that respondents were not consistently exposed to comprehensive maternal care frameworks.

The slightly higher knowledge scores observed in the intervention group suggest prior exposure to structured maternal health information, possibly due to facility-level differences in counseling and education practices. These results reinforce the need for targeted educational interventions that focus on areas of uncertainty while adopting practical, decision-oriented approaches to enhance maternal knowledge and service uptake (Table 2) [10].

Table 2: Level of Knowledge on Obstetric Signs

Variables	Response	Control Pre (n, %)	Intervention Pre (n, %)
Importance of Maternal Care	Strongly Disagree	(0, 0.0)	(1, 0.7)
	Disagree	(2, 3.3)	(2, 1.4)
	Neutral	(5, 8.3)	(14, 9.7)
	Agree	(8, 13.3)	(9, 6.2)
	Strongly Agree	(45, 75.0)	119 (82.1)
Common Complications	Strongly Disagree	(2, 3.3)	(3, 2.1)
	Disagree	(3, 5.0)	(3, 2.1)
	Neutral	(4, 6.7)	(6, 4.1)
	Agree	(11, 18.3)	(11, 7.6)
	Strongly Agree	(40, 66.7)	(122, 84.1)
Different Healthcare Services Available	Strongly Disagree	(1, 1.7)	(2, 1.4)
	Disagree	(1, 1.7)	(2, 1.4)
	Neutral	(1, 1.7)	(6, 4.1)
	Agree	(14, 23.3)	(14, 9.7)
	Strongly Agree	(43, 71.7)	(121, 83.4)
Where to Access Maternal Health Services	Strongly Disagree	(1, 1.7)	(3, 2.1)
	Disagree	(0, 0.0)	(1, 0.7)
	Neutral	(0, 0.0)	(1, 0.7)
	Agree	(12, 20.0)	(11, 7.6)
	Strongly Agree	(47, 78.3)	(129, 89.0)
Different Birth Plans Available	Strongly Disagree	(1, 1.7)	(2, 1.4)
	Disagree	(1, 1.7)	(1, 0.7)
	Neutral	(0, 0.0)	(2, 1.4)
	Agree	(8, 13.3)	(11, 7.6)
	Strongly Agree	(50, 83.3)	(129, 89.0)
Signs and Symptoms of Labor	Strongly Disagree	(1, 1.7)	(1, 0.7)
	Disagree	(1, 1.7)	(1, 0.7)
	Neutral	(1, 1.7)	(1, 0.7)
	Agree	(8, 13.3)	(11, 7.6)
	Strongly Agree	(49, 81.7)	(131, 90.3)
Importance of Breastfeeding	Strongly Disagree	(0, 0.0)	(0, 0.0)
	Disagree	(0, 0.0)	(0, 0.0)
	Neutral	(0, 0.0)	(1, 0.7)
	Agree	(9, 15.0)	(12, 8.3)
	Strongly Agree	(51, 85.0)	(132, 91.0)
Importance of Immunization	Strongly Disagree	(0, 0.0)	(0, 0.0)
	Disagree	(0, 0.0)	(0, 0.0)
	Neutral	(0, 0.0)	(0, 0.0)
	Agree	(10, 16.7)	(8, 5.5)
	Strongly Agree	(50, 83.3)	(137, 94.5)
Importance of Regular Checkups During Pregnancy	Strongly Disagree	(0, 0.0)	(0, 0.0)
	Disagree	(0, 0.0)	(0, 0.0)
	Neutral	(0, 0.0)	(1, 0.7)
	Agree	(10, 16.7)	(10, 6.9)
	Strongly Agree	(50, 83.3)	(134, 92.4)
Importance of Proper Nutrition	Strongly Disagree	(0, 0.0)	(0, 0.0)
	Disagree	(0, 0.0)	(0, 0.0)
	Neutral	(0, 0.0)	(0, 0.0)
	Agree	(14, 23.3)	(8, 5.5)
	Strongly Agree	(46, 76.7)	(137, 94.5)
Common Myths	Strongly Disagree	(1, 1.7)	(1, 0.7)
	Disagree	(1, 1.7)	1 (0.7)
	Neutral	(0, 0.0)	(0, 0.0)
	Agree	(12, 20.0)	(12, 8.3)
	Strongly Agree	(46, 76.7)	131 (90.3)

Utilization of Maternal Integrated Services

ANC visit distribution indicated substantial underutilization of recommended services. Over half of the respondents reported attending <4 ANC visits (control: 65.0% combined none/1–3 visits; intervention: 50.4% combined none/1–3 visits), and only a small minority achieved the recommended threshold of ≥4 visits (intervention: 49.6%; control: 35%). Furthermore, only 1.7% of control participants and 0.7% of

Table 3: Utilization of Maternal Integrated Services

Variable	Response	Control Pre (n, %)	Intervention Pre (n, %)
Prenatal Visits	None	(7, 11.7)	(3, 2.1)
	1–3 visits	(32, 53.3)	(70, 48.3)
	4–6 visits	(20, 33.3)	(65, 44.8)
	7–9 visits		(6, 4.1)
	≥10 visits	(1, 1.7)	(1, 0.7)
Prenatal Education or Counseling	No	(20, 33.3)	(24, 16.6)
	Yes, from a healthcare provider	(0, 0.0)	(121, 83.4)
	Yes, from a childbirth education class	(39, 65.0)	(0, 0.0)
	Yes, from online resources or apps	(1, 1.7)	(0, 0.0)
	Yes, from other sources	(0, 0.0)	(0, 0.0)
Utilization of Ultrasound Services	No	(26, 43.3)	(27, 18.6)
	Yes, one ultrasound	(23, 38.3)	(66, 45.5)
	Yes, two ultrasounds	(10, 16.7)	(49, 33.8)
	Yes, three or more ultrasounds	(1, 1.7)	(3, 2.1)
Immunizations Received	No	(21, 35.0)	(31, 21.4)
	Yes, the flu vaccine only	(8, 13.3)	(0, 0.0)
	Yes, the Tdap vaccine only	(30, 50.0)	(112, 77.2)
	Yes, both the flu and the Tdap vaccine	(1, 1.7)	(2, 1.4)
Screening Tests Received	No	(47, 78.3)	(74, 51.0)
	Yes, for gestational diabetes only	(9, 15.0)	(45, 31.0)
	Yes, for Group B Streptococcus (GBS) only	(1, 1.7)	(12, 8.3)
	Yes, for both gestational diabetes and GBS	(3, 5.0)	(14, 9.7)
Conversations about Childbirth Plans	No	(38, 63.3)	(62, 42.8)
	Yes, but only briefly	(20, 33.3)	(54, 37.2)
	Yes, in some detail	(0, 0.0)	(7, 4.8)
	Yes, in great detail	(2, 3.3)	(22, 15.2)
Formulating Birth Plans with Healthcare Providers	No	(25, 41.7)	(55, 37.9)
	Yes, but only a basic plan	(16, 26.7)	(0, 0.0)
	Yes, a detailed plan that I discussed with my healthcare	(2, 3.3)	(1, 0.7)
	Yes, a detailed plan that I created on my own	(17, 28.3)	(53, 36.6)
Conversation about Postpartum Care Support	No	(43, 71.7)	(63, 43.4)
	Yes, but only briefly	(13, 21.7)	(47, 32.4)
	Yes, in some detail	(1, 1.7)	(10, 6.9)
	Yes, in great detail	(3, 5.0)	(25, 17.2)
Conversation about Skilled Birth Attendance	No	(48, 80.0)	88(60.7%)
	Yes, but only briefly	(12, 20.0)	(33, 22.8)
	Yes, in some detail	(0, 0.0)	(9, 6.2)
	Yes, in great detail	(0, 0.0)	(15, 10.3)
Conversation about Family Planning	No	(32, 53.3)	(67, 46.2)
	Yes, but only briefly	(25, 41.7)	(50, 34.5)
	Yes, in some detail	(3, 5.0)	(7, 4.8)
	Yes, in great detail	(0, 0.0)	(21, 14.5)

intervention participants reported attending ≥10 visits, underscoring a significant service gap compared with World Health Organization standards.

Prenatal education was inconsistent across sites. While 83.4% of respondents in the intervention group reported receiving provider-based education, none in the control group stated such engagement, signifying potential differences in facility-level health education approaches [5]. Similarly, discussions about birth planning and postpartum care were absent for more than 60% of control participants, and 42.8% of intervention participants mentioned no dialogue on childbirth preparation, which may compromise their readiness for delivery and postnatal care [8].

Additional service gaps were noted in ultrasound access, screening coverage (e.g., gestational diabetes and Group B Streptococcus), and immunization uptake (e.g., Tdap and flu vaccines), with the intervention group reporting marginally better access to multiple services than the control group [12, 9]. These findings suggest that structural and informational barriers hinder optimal utilization of maternal care despite moderate baseline knowledge levels (Table 3).

Cultural Influences

Cultural factors strongly influenced maternal healthcare behaviors in both study groups. Over 90% of respondents agreed that cultural beliefs played a key role in shaping care-seeking decisions. Feelings of discrimination and fear of judgment were commonly reported, with strong agreement particularly high in the intervention group (99.3%) compared with the control group (90.0%) [12, 9].

Reliance on traditional healers, although reported at varying levels, remained a significant factor influencing service utilization. Of those who acknowledged traditional practices, 13.3% of control participants and 4.1% of intervention participants reported actively seeking advice from traditional healers [3]. These findings underscore the importance of developing culturally sensitive educational interventions that bridge traditional and biomedical perspectives, promote mutual trust, and encourage consistent use of facility-based maternal healthcare services (Table 4).

Table 4: Cultural Factors and Influence on Maternal Healthcare Services

Variables	Response	Control Pre (n, %)	Intervention Pre (n, %)
Comfort Level while Discussing Maternal Health Issues	Strongly Disagree	(1, 1.7)	(1, 0.7)
	Disagree	(0, 0.0)	(0, 0.0)
	Neutral	(1, 1.7)	(0, 0.0)
	Agree	(15, 25.0)	(13, 9.0)
	Strongly Agree	(43, 71.7)	(131, 90.3)
Incidents of Declined Medical Treatment	Strongly Disagree	(0, 0.0)	(0, 0.0)
	Disagree	(0, 0.0)	(0, 0.0)
	Neutral	(0, 0.0)	(0, 0.0)
	Agree	(6, 10.0)	(4, 2.8)
	Strongly Agree	(54, 90.0)	(141, 97.2)
Lack of Respect for Cultural Beliefs	Strongly Disagree	(53, 88.3)	(140, 96.6)
	Disagree	(5, 8.3)	(0, 0.0)
	Neutral	(0, 0.0)	(0, 0.0)
	Agree	(2, 3.3)	(5, 3.4)
	Strongly Agree	(0, 0.0)	(0, 0.0)
Feelings of Discrimination	Strongly Disagree	(0, 0.0)	(0, 0.0)
	Disagree	(0, 0.0)	(0, 0.0)
	Neutral	(0, 0.0)	(0, 0.0)
	Agree	(6, 2.1)	(1, 0.7)
	Strongly Agree	(54, 90.0)	(144, 99.3)
Seeking Advice and Treatment from Traditional Healers	Strongly Disagree	(0, 0.0)	(0, 0.0)
	Disagree	(0, 0.0)	(0, 0.0)
	Neutral	(0, 0.0)	(0, 0.0)
	Agree	(8, 13.3)	(6, 4.1)
	Strongly Agree	(52, 86.7)	(139, 95.9)
Feelings of Disregard for Cultural Beliefs	Strongly Disagree	(52, 86.7)	(140, 96.6)
	Disagree	(6, 10.0)	
	Neutral	(2, 3.3)	(5, 3.4)
	Agree	(0, 0.0)	(0, 0.0)
	Strongly Agree	(0, 0.0)	(0, 0.0)
Influence from Family	Strongly Disagree	(52, 86.7)	(139, 95.9)
	Disagree	(6, 10.0)	(0, 0.0)
	Neutral	(2, 3.3)	(6, 4.1)
	Agree	(0, 0.0)	(0, 0.0)
	Strongly Agree	(0, 0.0)	(0, 0.0)
Fear of Judgment	Strongly Disagree	(0, 0.0)	(0, 0.0)
	Disagree	(0, 0.0)	(0, 0.0)
	Neutral	(2, 3.3)	(3, 2.1)
	Agree	(7, 11.7)	(0, 0.0)
	Strongly Agree	(51, 85.0)	(142, 97.9)
Disclosure of Cultural Background to Providers	Strongly Disagree	(49, 81.7)	(138, 95.2)
	Disagree	(7, 11.7)	
	Neutral	(2, 3.3)	(3, 2.1)
	Agree	(1, 1.7)	(2, 1.4)
	Strongly Agree	(1, 1.7)	(2, 1.4)
Trainers Need Some Training in Cultural Beliefs	Strongly Disagree	(1, 1.7)	(1, 0.7)
	Disagree	(0, 0.0)	(0, 0.0)
	Neutral	(5, 8.3)	(8, 5.5)
	Agree	(6, 10.0)	(0, 0.0)
	Strongly Agree	(48, 80.0)	(136, 93.8)

MCH Handbook Utilization

The MCH handbook demonstrated high acceptance, with >85% of respondents strongly agreeing that it improved communication, facilitated timely care, and augmented knowledge of maternal health practices. However, routine use remained low, reported by only 49.02% of intervention participants and 47.43% of control participants, indicating a gap between a positive perception and consistent utilization.

Provider support for handbook use was also uneven, suggesting missed opportunities to reinforce key messages and integrate the tool effectively into routine maternal care. These findings highlight the need for structured provider-led guidance and continuous follow-up to enhance the role of the handbook in improving maternal outcomes (Table 5) [13].

Table 5: Utilization of MCH

Variables	Response	Control Pre (n, %)	Intervention Pre (n, %)
Use of the MCH Handbook for Health Information	Strongly Disagree	(2, 3.3)	(2, 1.4)
	Disagree	(1, 1.7)	(2, 1.4)
	Neutral	(0, 0.0)	(0, 0.0)
	Agree	(6, 10.0)	(0, 0.0)
	Strongly Agree	(51, 85.0)	(141, 97.2)
Use of the MCH Handbook for Health Monitoring	Strongly Disagree	(2, 3.3)	(2, 1.4)
	Disagree	(1, 1.7)	(2, 1.4)
	Neutral	(0, 0.0)	(0, 0.0)
	Agree	(3, 5.0)	(0, 0.0)
	Strongly Agree	(54, 90.0)	(141, 97.2)
Faster Access to Services via MCH Handbook Use	Strongly Disagree	(2, 3.3)	(2, 1.4)
	Disagree	(1, 1.7)	(2, 1.4)
	Neutral	(0, 0.0)	(0, 0.0)
	Agree	(5, 8.3)	(0, 0.0)
	Strongly Agree	(52, 86.7)	(141, 97.2)
Improved Communication with Providers via the MCH Handbook	Strongly Disagree	(2, 3.3)	(2, 1.4)
	Disagree	(1, 1.7)	(2, 1.4)
	Neutral	(0, 0.0)	(0, 0.0)
	Agree	(3, 5.0)	(0, 0.0)
	Strongly Agree	(54, 90.0)	(141, 97.2)
Ease of Understanding the MCH Handbook Content	Strongly Disagree	(2, 3.3)	(3, 2.1)
	Disagree	(1, 1.7)	(1, 0.7)
	Neutral	(0, 0.0)	(0, 0.0)
	Agree	(4, 6.7)	(0, 0.0)
	Strongly Agree	(52, 86.7)	(141, 97.2)
Knowledge Gained from Using the MCH Handbook	Strongly Disagree	(2, 3.3)	(2, 1.4)
	Disagree	(1, 1.7)	(2, 1.4)
	Neutral	(0, 0.0)	(0, 0.0)
	Agree	(4, 6.7)	(0, 0.0)
	Strongly Agree	(53, 88.3)	(141, 97.2)
Provider Support on MCH Handbook Usage	Strongly Disagree	(2, 3.3)	(2, 1.4)
	Disagree	(1, 1.7)	(2, 1.4)
	Neutral	(0, 0.0)	(0, 0.0)
	Agree	(6, 10.0)	(0, 0.0)
	Strongly Agree	(51, 85.0)	(141, 97.2)
The MCH Handbook Encouraging Timely Care-Seeking	Strongly Disagree	(2, 3.3)	(2, 1.4)
	Disagree	(1, 1.7)	(2, 1.4)
	Neutral	(0, 0.0)	(0, 0.0)
	Agree	(3, 5.0)	(0, 0.0)
	Strongly Agree	(54, 90.0)	(141, 97.2)
Willingness to Recommend the MCH Handbook	Strongly Disagree	(2, 3.3)	(3, 2.1)
	Disagree	(1, 1.7)	(1, 0.7)
	Neutral	(0, 0.0)	(0, 0.0)
	Agree	(6, 10.0)	(0, 0.0)
	Strongly Agree	(51, 85.0)	(141, 97.2)
Support for Wider Promotion of the MCH Handbook	Strongly Disagree	(2, 3.3)	(2, 1.4)
	Disagree	(1, 1.7)	(2, 1.4)
	Neutral	(0, 0.0)	(0, 0.0)
	Agree	(3, 5.0)	(0, 0.0)
	Strongly Agree	(54, 90.0)	(141, 97.2)

Key Indicators and Implications

The baseline scores for key maternal health indicators were moderate, with knowledge levels of 51.77% for the control group and 53.18% for the intervention group. Attending the recommended ≥ANC visits was particularly low, at 2.27% and 2.54% for the control and the intervention group, respectively. These findings reveal critical gaps that highlight the need for structured educational interventions, enhanced provider engagement, and culturally responsive strategies to improve maternal healthcare utilization (Table 6) [8].

Table 6: Summary of Pre-Scores in Key Maternal Health Indicators

Indicator	Group	Pre %
Knowledge Score	Intervention	53.18%
	Control	51.77%
≥4 ANC Visits (%)	Intervention	2.54%
	Control	2.27%
PNC within 48 h (%)	Intervention	25%
Cultural Factors: Declined Medical Treatment (% Agreeing)	Intervention	91.45%
	Control	90.0%
MCH Handbook Usage (%)	Intervention	49.02%
	Control	47.43%

Discussion

Key Findings

This baseline assessment revealed a complex mix of reasonably high awareness of several maternal health concepts but persistently low engagement with recommended preventive services (mainly achieving ≥4 ANC visits). Cultural norms, perceived discrimination, and inconsistent provider support for practical tools, such as the MCH handbook, contributed to this gap.

Interpretation with Reference to Existing Literature

Low ANC utilization despite awareness parallels multi-country analyses showing that knowledge alone does not guarantee service uptake without accessible, respectful, and high-quality care [3]. In Nairobi's informal settlements, qualitative studies have identified similar deterrents—fear of judgment, long waits, informal costs, and poor provider communication—all of which can undermine health seeking [4, 2].

MCH handbook acceptance but underuse mirrors findings in other contexts where booklets improved knowledge only when actively integrated into care pathways and reinforced by providers. Hence, simple distribution is insufficient; practical demonstrations, provider training, and integration into routine consultations are needed to achieve behavioral impact.

The higher provider-delivered prenatal education at the intervention site suggests that facility-level practices matter, consistent with the literature indicating that strengthening the healthcare system (via provider training and continuity of care) is critical to turning awareness into action [14]. External shocks and workforce disruptions can further erode utilization. Therefore, implementing resilient, community-engaged educational strategies remains essential [8, 9].

Strengths and Limitations

The strengths of this study include its targeted focus on high-risk patients, the use of mixed data sources (self-reported and record verification), and site comparison, which provide contextual insights. Its limitations include the nonrandom allocation inherent to the cross-sectional baseline survey [1], potential self-reporting bias, and limited generalizability beyond urban Level 5 facilities.

Implications for Practice and Policy

The findings support the need for a multipronged approach, including culturally sensitive education codesigned with community ambassadors and traditional healers, focused provider training on respectful care, and integration of the MCH handbook, as well as systems adjustments to increase access to and continuity of ANC. National and county programs (e.g., RMNCAH frameworks) should prioritize both quality and coverage to bridge the gap between knowledge and its effective utilization.

Implications for the Upcoming Intervention Phase

The forthcoming educational package should 1) target specific knowledge gaps (birth planning and available services); 2) include hands-on MCH handbook sessions for both patients and providers; 3) deploy community cultural ambassadors to mediate between biomedical and traditional perspectives; and 4) embed monitoring indicators (≥4 ANC visits, PNC within 48 h, and handbook use) for clear evaluation.

Conclusion

The baseline data from two Nairobi Level 5 hospitals indicate moderate maternal health awareness among high-risk patients but persistently low uptake of preventive services and limited practical use of the MCH handbook. Cultural factors and provider practices are critical modifiable drivers. A culturally tailored educational intervention that strengthens provider engagement and handbook integration is recommended to improve maternal service utilization and outcomes.

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