

EFFECT OF HEALTH SYSTEM FACTORS ON UPTAKE AND UTILIZATION OF LINDA MAMA INITIATIVE IN KAJIADO NORTH SUB-COUNTY, KENYA

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Abstract: *Maternal mortality continues to pose a significant public health challenge, with over 300,000 women losing their lives annually during childbirth. In response, policymakers have implemented free maternal healthcare services as a crucial policy intervention. In June 2013, the Kenyan Government introduced the Linda Mama healthcare service, exempting maternal services from user fees across all public health facilities. The primary objective was to encourage skilled delivery and ultimately reduce pregnancy-related mortality. Despite these efforts only 26 percent of mothers in Kajiado North Sub-county aged 19 to 40 had enrolled for the Linda Mama service, falling below both the national average of 61.5 percent and the government's target of 100 percent. We conducted a study to investigate the barriers to uptake of the Linda Mama initiative and utilization of services offered under the initiative. The proportion of uptake of Linda Mama Programme, how socio-demographic, knowledge & perceptions and health system factors affect the uptake of the Linda Mama Initiative were the specific objectives. This paper presents findings from a cross-sectional study conducted between 2018 and 2020 in Kajiado North Sub-County, involving 551 participants. Descriptive statistics were employed, alongside the Chi-Square test for inferential statistics. Correlation analysis was used to explore how health system factors have influenced the uptake and utilization of the Linda Mama service. The results reveal that respondents were generally aware of the government's policy on free maternal healthcare. However, significant gaps persist in terms of infrastructure development, the ratio of health workers to patients, timely provision of essential supplies, and the long distances to health facilities. These findings underscore the urgent need for increased investment in infrastructure, as well as financial and human resource allocation to the healthcare sector within County Governments.*

Keywords: *health system factors, linda mama initiative, neonatal*

1. INTRODUCTION

Maternal mortality remains a pressing global public health issue. The World Health Organization (WHO) estimates that annually, 300,000 women lose their lives due to maternal causes, with over 90 percent of these deaths occurring in low- to middle-income countries. These tragic deaths, largely preventable, are attributed to various factors that impede women's access to and utilization of maternal healthcare services. Additionally, beyond fatalities, many women suffer from short and long-term disabilities and illnesses associated with childbirth.

According to WHO, the primary causes of maternal mortality include hemorrhage (excessive blood loss), hypertensive disorders, and sepsis/infections, which collectively account for more than half of maternal deaths. The majority of these deaths could be prevented through improved access to care during pregnancy and delivery. Therefore, access to and utilization of antenatal care, skilled birth attendance, and postnatal care play pivotal roles in reducing maternal mortality rates.

In Kenya, between 2000 and 2015, progress towards achieving Millennium Development Goal 5, which aimed to reduce maternal mortality, was minimal. Maternal mortality rates remained high at 362 deaths per 100,000 live births, falling short of the targeted 147/100,000. In response, the Kenyan Government launched the "Linda Mama" free maternal healthcare service in 2013 to incentivize women to seek antenatal, delivery, and postnatal healthcare services. The program, which translates to "Protect Women," reimburses health facilities based on their ability to manage pregnancy and delivery complications.

Despite efforts to improve access, the 2018 Kenya Demographic Health Survey revealed that only over 90 percent of women attended at least one antenatal care clinic, with a mere 58% completing the recommended four visits. Furthermore, only 62 percent of women deliver with a skilled healthcare provider. Studies have identified various health system factors that influence healthcare service utilization, including infrastructure, service provision, healthcare personnel, information, finance, and commodities.

However, studies conducted in Kenya post-implementation of free maternal healthcare services have primarily focused on policy implementation and service utilization, overlooking the critical role of health system factors in influencing utilization. Additionally, disparities in utilization exist within the country, underscoring the need for a nuanced understanding at the local level to inform decision-making by newly established County Governments as mandated by the 2010 Constitution. Understanding these determinants is vital for planning and delivering maternal healthcare services that are accessible to local communities, ultimately improving health outcomes.

Linda Mama Initiative

The Linda Mama (LM) Programme in Kenya offered pregnant women and their babies an extended package of benefits for one year, commencing from the day the mother activates the benefits at a healthcare institution partnered with NHIF. This initiative, aiming to assist approximately 80% of pregnant women and their babies, collaborates with both public and private healthcare providers in Kenya to deliver services. These services, in line with national standards, include prenatal care (ANC), maternity delivery, postnatal care (PNC), and therapy for newborns throughout the program's duration. Moreover, the package covers both inpatient and outpatient management for complications during pregnancy, delivery, and the postnatal period, which are crucial interventions for addressing maternal mortality and child survival.

In Kenya, Article 43 of the 2010 constitution establishes the legal foundation for a rights-based approach to health service provision, ensuring everyone's right to the highest attainable standard of health care services, including reproductive health care. The constitution also mandates appropriate social security payments from the state for those unable to support themselves and their dependents.

The Free Maternal Care program commenced on June 1st, 2013, when the President of Kenya announced the elimination of maternity fees in public health facilities nationwide. The government allocated significant funds to compensate for lost revenue to health institutions due to waived fees, aiming to improve pregnancy outcomes by encouraging women to deliver in medical facilities with qualified professionals. This initiative not only

enhances maternal and neonatal health but also provides economic benefits to impoverished households by freeing up household income for other pursuits. Consequently, public health facilities offering maternity care under the program have seen a substantial increase in the number of births, indicating improved access to essential healthcare services.

Health System Factors

Tanahashi (1978) defined a service as having to be located within a reasonable distance of the people who are supposed to profit from it, even in the event that it is available. Tanahashi (1978) defined accessibility as having two fundamental dimensions: financial access, or affordability, and physical access. In terms of the physical realm, resources that are available but inconvenient to access may make access difficult.

A variety of barriers were found in the Republic of Moldova between 2009 and 2011, according to studies conducted by the World Health Organization Regional Office for Europe on factors that facilitate or impede access to health services (WHO, 2011). These factors included a lack of uniformity in the country's health infrastructure, with some facilities exceeding national standards for surface area, some being too old and in need of renovation (Ministry of Health, Republic of Moldova, 2007), a shortage of vehicles and equipment, a shortage of human resources, and a shortage of pharmaceutical supplies in primary health care facilities. One of the main challenges in accessing primary healthcare facilities was their geographic location; some required travelling long distances and faced transportation issues. According to the WHO (2012) Regional Office for Europe, patients' perceptions of accessibility are positively correlated with the time it takes to get to a health facility, receive services, and wait for a medical professional.

Regrettably, Sub-Saharan Africa continues to have a high rate of avoidable early deaths among children under five due to inadequate access to timely and high-quality human services interventions. In Tanzania, it was believed that physical barriers to accessing healthcare facilities determined the mortality rate of children (Webber, 2018). 40% of women give birth in Tanzania's rural areas without the assistance of medical professionals in clinics or hospitals (Webber, 2012). They give birth by themselves, however occasionally traditional birth attendants help them.

Research on the factors related to home deliveries conducted in Kilifi County, Kenya by Moindi et al. (2015) found that the number of rooms accessible for use and the distance to the health facility were important factors that led to a high number of home deliveries. Only those who were able to give birth in medical facilities under the guidance of a trained birth attendant were able to do so in a hospital.

A closer examination of Kilifi County's use of Linda Mama services was likely to reveal very poor uptake because most of the factors mentioned above also affected the Linda Mama programme, which required health facilities to have a delivery room equipped with delivery sets. The study also revealed that the majority of the county's facilities lacked delivery rooms and were spread out more than five kilometers apart.

Poor infrastructure, such as the poor road network leading to the majority of rural health facilities, a lack of delivery rooms in the majority of rural health facilities, and a lack of delivery equipment, were some of the factors contributing to the majority of home deliveries, according to a case study conducted in Wareng Sub County of Uasin Gishu county and published in 2014 by Mokua.

Contrary to Wareng sub county in Uasin Gishu County, where studies conducted by Mokua (2014) found that inadequate road networks, a lack of delivery rooms, and a shortage of delivery equipment were among the

factors contributing to home deliveries, Trans Nzoia County, according to this study, has both, even though some of the roads leading to rural health facilities are also problematic during the rainy season.

In contrast to Kilifi County, where studies conducted by Moindi et al. (2015) revealed that health facilities were located more than 5 km apart, lacked delivery rooms and equipment, were only open for 12 hours, and the majority of deliveries took place at night, Trans Nzoia County still has health facilities located less than 5 km apart, most of which are open 24 hours a day, and have utility vehicles available for emergency transfers to better-equipped health facilities.

Similar to this, Moindi et al., (2015) state that for the Linda Mama programme to be successful, there must be enough staff to support the health facility's 24-hour operation because some deliveries take place at night. "Staff shortage and health facility operating hours were some of the main reasons why many women in Kilifi County deliver at home," add Moindi et al., (2015).

Research on the implementation of Linda Mama insurance in Bungoma County conducted by Maternal and Newborn Improvement (MANI) revealed, among other things, that long client lines and wait times had a negative impact on the program's implementation because some clients chose to leave before receiving care (Fulton et al., 2018).

Attitude of Medical Staff Towards Linda Mama The majority of the medical staff at the Embu level five MCH/FP Clinic had a negative attitude towards NHIF, which prevented them from encouraging expectant mothers to enroll in NHIF Super-cover, according to Kithuka et al. (2016)'s Insurance Studies on factors affecting uptake of NHIF by women of reproductive age. In other words, staff attitude at the MCH/FP was one of the factors impacting usage of NHIF Supa cover, along from other factors contributing to poor utilization of NHIF. In a similar vein, it's possible that Linda Mama is not liked by the majority of healthcare professionals.

Problem statement

To address poor uptake and utilization of maternal care services, the government of Kenya subsidized all maternal care services such that pregnant women do not have to pay to access antenatal, delivery, neonatal or postnatal care through the Linda mama program. Despite these efforts, uptake of Linda mama initiative and utilization of services offered under the initiative are still low in Kajiado County at 43% and 37% respectively which is lower than the national average (58%) and (62%) in the year 2019 (KBS, 2019).

Study objectives

The objective of the study is to investigate the barriers to uptake of the Linda Mama initiative and utilization of services offered under the initiative with special focus on pregnant women of reproductive age (15-49 years) in Kajiado North Sub-County, Kenya.

Scope of the study

The target population for this study was women of child bearing age in Kajiado North sub-county, Kajiado County. Kajiado North was purposefully selected as it represented the area with the highest average number of mothers with babies from 0-6 months in Kajiado County (RoK, 2019). Kajiado North population is approximately 310,696. Study population were women visiting health facilities in the sub-county for maternal health services.

2. METHODS

This study looked at how aspects of the health system affect women's use and adoption of the Linda Mama service through a cross-sectional study. The study was conducted in Kajiado-north Sub County, which is a part of the larger Kajiado County, between 2018 and 2020. This region borders Tanzania and is a part of Kenya. Most of its residents are members of the Masaai ethnic group.

The road system is inadequate, making it nearly hard to access some places with a motorized vehicle. The most popular modes of transportation are motorbikes and donkey carts. The study's main sample consisted of 551 mothers who had given birth within the previous 12 months. The study covered a sample of 232 people using the Role (2013) formulae. Respondents were selected using a basic random sample technique from a list of 551 that was taken from the community-based health information system (CBHIS).

Community health volunteers, or CHVs, led research assistants to the homes of chosen women, conducted the preliminary introductions, and then gave the go-ahead for the research assistants to conduct the semi-structured questionnaire in a private setting. Pretesting the semi-structured questionnaire and FGD tools in a nearby sub-county with comparable features to the research area allowed for revisions based on input obtained. Health system parameters were the independent variable, while Linda Mama service uptake and utilization were the dependent variables.

Version 18 of the Social Package for Social Sciences was utilized to analyze quantitative data and produce descriptive statistics, such as means, frequencies, and percentages. Chi square was employed to ascertain the correlation between the independent and dependent variables. Significant was defined as $P < 0.05$ within a 95% confidence range.

Ethical clearance for the study was acquired from KEMU's ethics committee. After obtaining a Kajiado County health license, another permit (NACOSTI/P/21/10670) was issued. As a result, the researcher went above and above to ensure that everyone involved was treated with respect, decency, and thoughtfulness. Sensitive information was kept private, respondent identities were kept a secret,

3. RESULTS

Health System Factors Effect on the Uptake and Utilization of the Linda Mama Initiative

Table 1 below shows the results of the study under the significant variables.

Table 1: Health System Factors

Health system factors		With card		Without card	
		Out of 52	% of total	Out of 145	% of total
Health personnel	Every time I visit my local health center, the staff members always treat me with a smile.	5	9.6	22	15.2
	Women's access to free maternal health care services is hampered by the public hospitals' inadequate emergency obstetrical treatment.	7	13.5	38	26.2

	The medical staff at my neighborhood hospital consistently praises the Linda Mama Initiative.	7	13.5	38	26.2
	The medical staff at my neighborhood hospital pushed me to sign up for the Linda Mama Initiative Scheme.	30	57.7	76	52.4
	Every time I visit my neighborhood health institution, the staff members are always welcoming.	32	61.5	58	40
	The inability of public hospitals to provide expert birth attendance prevents women from receiving free maternal health care services.	25	48.1	60	41.4
	Abuse and mistreatment cases in public hospitals prevent women from receiving free treatments related to maternal health care.	18	34.6	53	36.6
	Incidents of patient carelessness by public hospital workers prevent women from receiving free services related to maternal health.	16	30.8	45	31.0
	The medical staff at my neighborhood hospital recommended that I use my Linda Mama insurance card should I become pregnant.	19	36.5	49	33.7
Health service provision	At my local health center, I receive service in less than an hour.	21	40.4	43	29.6
	The local medical center is open seven days a week, twenty-four hours a day.	15	28.8	46	31.7
	The post-natal clinic at my neighborhood hospital is open from 8:00 am to 5:00 pm. Five days a week	15	28.8	52	35.9
	It is not necessary to make an appointment in order to see a first ANC physician in my area.	16	30.8	50	34.5
	The hours of operation for ANC and CWC at my local health center are 8 a.m. to 5 p.m. Five days a week	18	34.6	47	32.4

Infrastructure	The closest medical facility is less than five kilometers away.	0	0	2	1.4
	There are adequate clean bathrooms and toilets at my neighborhood health center.	18	34.6	55	37.9
	There is a maternity wing with a delivery space as well as a healing space in my local hospital.	20	38.5	37	25.5
	There is enough medical equipment, including X-rays, in my neighborhood hospital.	10	19.2	27	18.6
	There is a functioning utility truck at my local health institution for emergency	11	21.2	22	15.2
Finance	In my local health institution, I pay nothing to use the services related to childbirth.	15	28.8	61	42.1
	I registered for my PNC checkup using cash.	23	44.2	75	51.7
	I purchased my child welfare clinic with cash.	23	44.2	83	57.2
	For my most recent delivery, I paid cash.	21	40.4	64	44.1
Information	Prior to becoming pregnant, I was aware of the Linda Mama Initiative Scheme Prior to becoming pregnant, I was aware of the Linda Mama Initiative Scheme.	36	69.2	94	64.8
	You may easily find information on Linda Mama insurance on radio, television, and even Chief's Baraza.	10	19.2	41	28.3
	Social media networks provide me with access to information about the Linda Mama Initiative.	38	73.1	119	82.1
	Linda Mama has embraced the use of technology, interacting with clients and customers via emails and cell phones, among other means.	10	19.2	60	41.4
	blood pressure measurements	17	32.7	60	41.4

Commodities (drugs, lab tests, and other inputs)	Tetanus injection	23	44.2	61	42.1
	Iron/Folic tablets or syrup	22	42.3	72	49.7
	anti-malarial drugs	18	34.6	59	40.7
	counseled or given information on VCT for HIV/AIDS?	18	34.6	59	40.7
	counseled on PMTCT for HIV/AIDS?	11	21.2	43	29.7
	assisted to calculate the expected date of delivery	11	21.2	47	32.4
	Urine testing	25	48.1	52	35.8
	Asked history of previous delivery, complications and health conditions	25	48.1	68	46.9
	Blood tests for ANC (blood grouping, VDRL, HIV)	31	59.6	60	41.4

Health Personnel

As per table 1 above, under the health personnel indicator, reception of client and cordial discussion with the health officers received a rating at less than 12.5% (I.e. 9.6% for mothers with card and 15% for mothers without card). Lack of quality emergency obstetrical care at the public hospitals did not hinder women from accessing free maternal health care services, with an overall rating of 19% (I.e. 13.5% for mothers with card and 26.2% for mothers without card).

Health workers significantly encouraged mothers to join Linda mama initiative receiving a rating of 55.5% (I.e. 57.7% for mothers with card and 52.4% for mothers without card). Friendly discussion with the client by the health workers received rating of 51% (i.e. 61.5% for mothers with card and 40% for mothers without card), availability of skilled personnel received a rating of 44% (I.e. 48.1% for mothers with card and 41.4% for mothers without card). Cases of abuse and mistreatment received a rating of 35% (I.e. 34.6% for mothers with card and 36.6% for mothers without card) whereas negligence received a rating of 30.9% (I.e. 30.8% for mothers with card and 31% for mothers without card). Further direction of using Linda mama initiative by client from the health workers received a rating of 30.9% (i.e. 36.5% for mothers with card and 33.7% for mothers without card).

In general, very few mothers reported not well treated by the health personnel, 50/50 of mothers were not encouraged to join the Linda Linda mama with a third of the women reporting abuse and mistreatment. 38.5% of mothers with card perceived that the health workers were not friendly and 61.5% of them perceived friendly.

Mothers without Linda mama cards, 60% perceived that the health workers were not friendly and 40% of them perceived that the health workers were friendly.

Health Service Provision

As far as waiting time at the health is concerned, 40.4% of mothers with card noted that they took less than one hour to get attended to while 29.6% of the mothers without the card noted the same. The service charter is that clients should be attended to within an hour.

On the health service provision variables, it appears that one in every three mothers agreed that the health facility was operational 24/7 i.e. 28.8% of mothers with card noted that health care facilities operated 24 hours while 31.7% of mothers without card acknowledged the same. Also, one in three mothers seeking PNC services agreed that the facility was operational from 8 to 5, 5 days a week i.e. 28.8% of mothers with card noted that health facilities were operational 8am to 5pm for PNC a day (5 days a week) while mothers without card rated this at 35.9%. This same result applies for operational service for ANC and CWC. 30.8% of Mothers with card said that they needed an appointment for their first ANC visit while 34.5% of mothers without card acknowledged the same

Infrastructure

Infrastructure wise, mothers with card acknowledged that health facilities were more than 5km away from them with only 1.4% of mothers without card acknowledging that their health facilities were within 5km. 35% of mothers with card noted that their health facilities had enough toilets and bath rooms as compared to 38% of mothers without card. 39% of mothers with card noted that the local health facility had maternity wing which has a delivery room and a recovery room as compared to 26% of the mothers without card. 19% of mothers with card noted that local health facility had enough medical equipment like X-ray and others which was the same percentage for mothers without card. 21% of mothers with card noted that local health facility had a functional utility vehicle for emergency as compared to 15% of the mothers without the card.

Finance

As per the finance parameter in table 4.6, 28.8% of the mothers with card paid zero-dollar amount for child related birth expenses while 42.1% of mothers without card paid zero shillings. 44.2% of mothers with card paid cash for registration during PNC checkup while mothers without card were 51.7%. 44.7% of mothers with card paid cash for their child welfare clinic while 57.2% of mothers without card paid. 40.4% of mothers with card paid cash for their last delivery while 44.1% of mothers without card did pay for their last delivery in cash.

Information

According to the data, 69% of women who had cards and 65% of mothers who didn't knew about the Linda Mama Initiative Scheme were aware of it before becoming pregnant. It was mentioned by 28% of mothers without a card and 19% of mothers with one that information on Linda Mama insurance is easily accessible on TV, radio, and even Chief's Baraza. Social media channels were cited by 73% of mothers who had cards and 82% of mothers who did not as a means of finding out about the Linda Mama Initiative. 41% of mothers without a card and 19% of mothers with one said that Linda Mama has embraced technology, using email and cell phones to connect with clients and customers. Mothers who have cards and those who don't note that very little paperwork is needed to enroll in the Linda Mama Initiative program (42% of mothers with cards and 42%

of mothers without cards). 39% of mothers with card and 46% of mothers without card acknowledged that Linda mama initiative does not cover the entire family but only expectant mother and the baby up to 11 months.

Commodities

As per the parameter concerning commodities, tests and the rest, 32.7% of mothers with card and 41.4% of women without card noted that blood pressure measurements were taken. 44.2% of women with card and 42.1% of women without card noted that tetanus injection was administered to them. 42.3 % of mothers with card and 49.7% of mothers without card were administered Iron/Folic tablets or syrup. 34.6 of mothers with card and 40.7% of mothers without card were given anti-malarial drugs. 34.6 of mothers with card and 40.7% of mothers without card were counseled or given information on VCT for HIV/AIDS. 21.2% of mothers with card and 34.2% of mothers without card were assisted to calculate the expected date of delivery. 48.1% of mothers with card and 35.8% of mothers without card were subjected to urine testing. 48.1% of mothers with card and 46.9% of mothers without card were asked history of previous delivery, complications and health conditions. 59.6% of mothers with card and 41.4% of mothers without card noted that Blood tests for ANC (blood grouping, VDRL, HIV) were administered to them.

The variable of commodities could be related to other factors. Lack of commodities, financial challenges affects the anticipated coverage or utilization of services. Below 50 (1 in 3 almost 1 in 2 mothers) is able to access any of the services. This is the trend except for blood tests. Barriers compounded by various factors like hours of operation, responsiveness and competence of the personnel, infrastructure, availability of the services when required.

In general, health system factors appear to hinder the uptake of ANC, CWC, PNC, and delivery services and this cut across whether the mother had Linda mama card or not.

Table 2: Health System chi-square Tests

Health system factors	x ²	df	p-value
Health personnel	0.999	1	0.397
Health service provision	0.7	1	0.403
infrastructure	0.725	1	0.395
Finance	0.22	1	0.639
information	2.21	1	0.32
Commodities (drugs, lab tests, and other inputs)	5.535	2	0.006
t-Test: Two-Sample Assuming Equal Variances			
	% of total	% of total	
Mean	35.34054	37.24054	
Variance	266.8364	204.8441	
Observations	37	37	
Pooled Variance	235.8403		
Hypothesized Mean Difference	0		

df	72
t Stat	-0.53215
P(T<=t) one-tail	0.298132
t Critical one-tail	1.666294
P(T<=t) two-tail	0.596263
t Critical two-tail	1.993464

As per table 2, Commodities parameter had a p-value of less than 0.05 that is **0.006**, meaning that we cannot reject the null hypothesis of stating that there is no association between commodities variable with uptake and utilization of Linda mama service for maternal mothers at Kajiado-north subcounty. A p-value of 0.006 suggests that the observed findings are unlikely to have occurred by random chance alone, and there is evidence to support the existence of association between commodities and the uptake of Linda mama services by expectant mothers.

Health personnel, health service provision, infrastructure, finance and information had P-values of more than 0.05 hence rejecting the null hypothesis. This indicates a statistically significant association between the categorical variables being studied at the 0.05 significance level.

P(T<=t) two-tail result was 0.596 which is greater than 0.05 to indicate that whether the mother had a Linda mama card or not, there were no barriers for the categories to enjoy access to the service.

4. CONCLUSION

Linda Mama Initiative's utilization in Kajiado North Sub-County is influenced by health system-related factors. Specifically, the study found that some local health facilities lacked a sufficient maternity wing that included recovery and delivery rooms, and that the local health facilities were not open twenty-four hours a day. Not to mention, the survey found that several local health facilities lacked a functional utility vehicle for emergencies and that the closest medical facilities were more than five kilometers away. The study concluded that health workers in their local health facilities encouraged them to join and use the Linda Mama Initiative Scheme and that they treated patients well whenever they visited the health facility. These characteristics of health workers influence the utilization of Linda Mama Initiative services in Kajiado North Sub-County. Health workers in their local health facilities always talked well of Linda Mama Initiative and explained to clients how Linda Mama Initiative worked.

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