Global Journal of
Health Science
(GJHS)

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IPRJB
INTERNATIONAL PEER REVIEWED JOURNAL AND BOOK PUBLISHING

Global Journal of Health Sciences
ISSN 2519-0210 (Online)
Vol 4, Issue 2, No.3, pp 23 - 40, 2019

www.iprjb.org

DETERMINANTS OF MATERNAL AND CHILD HEALTH CARE SERVICE UTILIZATION AMONG MOTHERS OF MOUNT ELGON CONSTITUENCY BUNGOMA, KENYA

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Abstract

Purpose: To investigating the determinants of maternal and child health care service utilization among mothers of Mt. Elgon Constituency in Bungoma County. Specifically, to determine client characteristics and examine health facility factors in the study area..

Methodology: A descriptive-analytical cross-sectional study design was adopted using mixed methods for data collection. A total of 510 respondents in a population 36,200 women within childbearing age, were randomly selected using multistage cluster sampling were interviewed between January to March 2019. Data entry and analysis was done using SPSS Version 25 software. Descriptive and inferential statistical analyses were used. Bivariate and multivariate logistic regressions were applied and odds ratio used to determine the strength of association. A p-value of ≤ 0.05 was considered as statistically significant.

Findings: Unemployment (OR: 0.6; 95% CI: 0.4 – 0.9; p = 0.02); lack of mobile clinic (OR: 0.7; 95% CI: 0.4 – 1.0; p = 0.06); use of interpreter (OR: 0.2; 95% CI: 0.01 – 0.81; p = 0.02); service provided in public facilities (OR: 0.5; 95% CI: 0.3 – 0.8; p = 0.004); being too busy (OR: 0.5; 95% CI: 0.3 – 0.9; p = 0.02); consulting health care workers (OR: 0.5; 95% CI: 0.2 – 0.9; p = 0.03); not consulting elders (OR: 0.7; 95% CI: 0.4 – 1.0; p = 0.08) and time taken to hospital (OR: 0.5; 95% CI: 0.3 – 0.8; p = 0.007) were significantly associated with utilization of maternal and child health services. The determinants of maternal and child health care service utilization in Mt. Elgon Sub-County are women who are employed (OR: 2.8; 95% CI: 1.1 – 7.3; p=0.03) and having visited facility as a patient (OR: 0.5; 95% CI: 0.3 – 0.9; p=0.03).

Unique Contribution to Theory, Practice, and Policy: The study findings have identified key factors that are unique to a marginalized community of Mt. Elgon on predisposing, enabling and the need characteristics. These results contribute to both maternal and child health care practice and policy change that could directly meet the cultural needs of the marginalized community.

Keywords: *Mt. Elgon, Health services utilization, Mother and child.*

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1.0 INTRODUCTION

Globally, every minute at least one woman dies from complications due to preventable causes related to pregnancy and childbirth i.e. 529,000 women in a year. Every woman dying during childbirth, around 30 more women suffer injury, infection or disease, which are approximately 10 million women each year. The more remote or marginalized a woman is the higher the risk (WHO, 2011).Globally, half of all maternal deaths occur in Sub-Saharan Africa where the risk of a woman dying during pregnancy or childbirth is 1 in 39 compared to 1 in 3,800 in developed countries (Tey, 2013). Leading causes of maternal deaths are related to obstetric complications around the time of childbirth. Three-quarters of these deaths can be prevented by utilizing skilled birth attendants (Kinney, 2010)Maternal mortality rates in Kenya were at 488 per 100, 000 live births in 2011 against a target of 147 while deliveries by skilled health personnel were 43.8% against a target of 90% in 2015 (KDHS, 2008/9). A most recent report shows a further decline from 488/100,000 *(*KDHS, *2008/9)* to 362/100,000 live births *(*KDHS, 2014*)*. However, the situation could be worse in counties with marginalized vulnerable communities (Wachira & Martin, 2011: Saad-Haddad et al., 2016). The more economically challenged and marginalized a mother is, the higher the risk of death. The rates of maternal mortality also reflect economic challenges between counties, nationally (WHO, 2018).

The Tadesse's model (Tadesse, Mulat, & Gashaw, 2014) is a behavioral model modified from Andersen model. It provides a picture to analyze a number of individual, environmental and health care worker related variables associated with client decision to seek health care. It is purported that the use of services in health is determined by three players. These include: the predisposing, enabling and the need characteristics. The predisposing characteristics mainly explain the association of client characteristics which in the study were the independent variables namely: Age ,Marital status ,Educational level ,Occupation ,Religion ,Village ,Parity (Obstetric data) ,Knowledge ,Gestation age at 1st ANC ,Cultural values, Attitude towards MCH/FP Provider on Maternal and child health care services utilization. Enabling characteristics also referred to as intervening variables in this study, explain health facility, health care workers, and family and community resources or factors that support clients to access and afford services. Need characteristics explore the perceptions for the need for health services and the benefits expected from the health facility treatments. These factors included acceptability and use of services based on a health facility and cultural competence of health care providers like language, traditions, customs, and client priorities. The assumption was that the availability of maternal and child health services was a guarantee that the services will be utilized.

Studies have shown that the more economically challenged and marginalized a mother is, the higher the risk of death (WHO, 2018). Therefore, the rates of maternal mortality also reflect economic challenges between countries more than other measures of survival or health (UNFPA, 2010). UNFPA, (2010) report shows a comparison, the United States of America had a maternal death rate of 9.1 per 100000 live births while Kenya was at 14% in 2010.

According to Bharti, *et al.*, (2016) some of the client's socio-demographic factors that play a major role in determining maternal and child health care services utilization include: age, marital status, level of education, parity, religion, occupational status, and even residence. In the South east of Nigeria, younger mothers were found to be more likely not to seek medical help compared to older mothers due to fear of being called promiscuous (Emelumadu, et al., 2014) .Worldwide, research shows that the education status of a mother was highly

associated with utilization of health services (Pandey, Pandey & Singh, 2015). In families with many dependents where regular income was from a household head, utilization of services was lower compared to families with few dependents or where both partners were employed/ were earning some income (WHO, 2017).In Bangladesh, contraceptive use was higher among employed women of every level of education (Islam, et al.,2015).Transport is identified as a key constraint on achieving the child and maternal goals in many developing countries in Africa (Zelalem, A. D., Belayihun, B., Teji, K., & Admassu, A. D., 2014). In Tanzania, the delay was caused by a distance of over five kilometers away from mother/child resident area (Kassile, T., Lokina, R., Mujinja, P., & Mmbando, B. P., 2014). According to Yerramilli & Fonseca, (2014) the distance between people`s geographical region and health facilities and the travel period to arrive at those health facilities is a key factor. This is the reason why in developing countries, most clients have to pay a fee to enable them to reach the facility (Cleland, et al., 2015).

1.2 Statement of the problem

Kenya has twelve marginalized communities that have been identified using the criteria set by World Bank Operational Policy (OP) 4:10 and the Kenya Constitution 2010 article 260 definitions. The Ogiek community of Mt. Elgon in Bungoma County is among the twelve marginalized communities (Fanslow, 2017). The government of Kenya and Non-Governmental Organizations (NGOs) has struggled to improve access to maternal and child health services to Ogiek community through medical camps and integrated outreaches with little success. For example, according to (DHIS, 2015), while skilled birth deliveries at the national level were 60% and 41% at the county level, the proportion of such deliveries was 28% in Mt. Elgon Constituency. Bungoma County quarterly Maternal Perinatal Death Surveillance and Response (MPDSR) review meetings of 2017/2018 fourth quarter showed that 50% to 80% of maternal deaths were referrals from Mt. Elgon constituency. The Ogiek community has experienced a number of conflicts that resulted in Internally Displaced Persons (IDPs), the majority being women and children(Chelimo, 2016).

There is a dearth of information on determinants of maternal and child care service utilization that could guide decision-makers on specific interventions that would help improve utilization of such services which are vital in the prevention of maternal and child morbidity and mortality. Therefore, this study sought to investigate the determinants of maternal and child health service utilization among women of Mt. Elgon constituency, Bungoma County in Kenya.

Objectives

1.2.1 Broad Objective

To evaluate the determinants of maternal and child health care service utilization among mothers of Mt. Elgon constituency in Bungoma County.

1.2.2 Specific Objectives

1. To determine client characteristics influencing utilization of maternal and child health care services among mothers of Mt. Elgon constituency in Bungoma County.
2. To examine health facility factors that affect maternal and child health care service utilization among mothers of Mt. Elgon constituency in Bungoma County.
3. To assess the cultural competence of health care workers on maternal and child health care service utilization among mothers of Mt. Elgon constituency in Bungoma County.

2.0 METHODOLOGY

Study Design. A descriptive-analytical cross-sectional study where a quantitative method of data collection was used. *Study Setting.* The study was carried out in Mt. Elgon Constituency. The indigenous community living in the forested Mt. Elgon Constituency is the Ogiek which is globally and nationally categorized as a vulnerable and marginalized community (MOH, 2016). The Constituency covers approximately 944 square kilometers (km^2). It is bordered by Uganda to the West and North, Trans Nzoia County to the East and Kimilili, Kabuchai and Sirisia Sub Counties to the South (MOH, 2016). The Ogiek community being hunter-gatherer was displaced to the forest and beyond the forest where they graze their animals in government-owned land. Mt. Elgon constituency has thirty-two health facilities that offer maternal and child health care services (DHIS, 2015).

Study of Population: The population was mothers who are residents of Mt. Elgon Constituency who delivered in the last year preceding the study. *Sampling technique.* A multistage sampling method was used. First, the two sub-counties in the constituency were purposively selected. Four wards were randomly selected where the ten sub-locations were drawn using a simple random sampling method. Thirteen villages were randomly selected and 38 households with mothers who met the inclusion criteria systematically selected. *Sample size.* The desired sample size was arrived at using "Modified EPI" formula MOH, (2016). The final sample size being 510 after adding a 10% loading population to cater for non-response.

Inclusion criteria. Mothers with children who delivered in the last twelve months prior to the study and who were residents of Mt. Elgon Constituency. *Exclusion Criteria.* Mothers who were mentally ill or who had stayed for less than 6 months in the study area.

Research Instruments. The researcher adopted and modified structured questionnaires used in similar study settings(Achia & Mageto, 2015) in the North-Eastern part of Kenya and (Mason, 1995) in Portland's State University, respectively. *Quantitative data collection tool.* Structured questionnaires which captured client characteristic and health facility factors were used. The questionnaires were divided into three sections: section 1 captured the client characteristics data that included gender, age, marital status, level of education, religion, occupational status, employment, residence, among others; section 2 covered community health needs identification while section 3 assessed the health facility factors. Data collection instruments were in English and translation did in two languages, Swahili and Sabaot which are commonly used in the study area. Back translation was done to detect discrepancies and mistranslations and to show the inevitable differences between the source and a "well translated" target text. The instruments were pre-tested in Kimilili Sub County neighboring the study area.

Data collection procedures: The survey teams comprise four nurses who were selected from a vigorous and highly competitive interview. Experience, skills and geographical representation from the study area were among the qualities considered during the interview process. The survey team which included the researcher managed the overall survey. The team was trained on collection methodologies. The training took 4 days. The training had a standardization of the tool exercise which was used to establish the accuracy and precision of the enumerators with respect to the researcher's values. After the training, a pre-test was conducted in the neighboring Kimili Sub-County to facilitate deeper understanding of the structure and outlook of the questionnaire. The exercise was carried out to ensure the enumerators were sufficiently confident to take the survey. Enumerators identified the

households with a target population with the help of community health volunteers who regularly collect household data on health issues from the assigned community units. The data collection process lasted for three months from January to March 2019.

Data Analysis. All collected data were checked for quality, completeness, cleaned, coded and analyzed using the SPSS statistics version 25. The bivariate analysis was done followed by logistic regression. The relationship between independent and dependent variables was tested using the odds ratio and a p-value of <0.05 used to reject the null hypothesis.

3.0 FINDINGS AND DISCUSSIONS

3.1 Characteristics of Respondents

Table 1 illustrates the background characteristics of respondents by the sub-county of residence. A total of 510 respondents took part in the study with the majority (n=372; 72.9%) being from Mt. Elgon sub-county while 27% (n=138) were from Cheptais Sub-county due to curfew which obstructed movement in the large part of Cheptais and Chepyuk/Kopsiro wards. The mean age of respondents from Mt. Elgon Sub County (25.8±7.3) was comparable with that of respondents from Cheptais Sub County (26.3±7.2) through the youngest respondent aged 10 years was from Mt. Elgon Sub County. The difference in mean age between the two sub-counties was not statistically significant (t=0.6; df=508; p = 0.6). Likewise, there was no significant difference in the respondents' age groups (p= 0.7). This shows that the populations in both sub-counties have similar attributes.

Table 1: Background characteristics of respondents by sub-county of residence

Variable	Response	Mt. Elgon		Cheptais		p-value
		N	%	n	%	
Age group in years	10 – 19	86	23.12	36	26.1	0.7
	20 – 29	191	51.34	67	48.6	
	30 – 39	79	21.24	27	19.6	
	≥40	16	4.30	8	5.8	
	Total	372	100.0	138	100.0	
Mean age±SD (Range) in years		25.8±7.3 (10.0 – 47.0)		26.3±7.2 (16.0 – 47.0)		0.5
Marital status	Single	67	18.0	25	18.1	0.4
	Married	279	75.0	102	73.9	
	Divorced	0	0.0	1	0.2	
	Widowed	26	7.0	10	7.3	
	Total	372	100.0	138	100.0	
Level of education	None	73	19.7	29	21.0	0.6
	Primary	205	55.4	81	58.7	
	Secondary	92	24.9	28	20.3	
	Total	370	100.0	138	100.0	
Religion	Christians	348	93.6	134	97.1	0.1
	Traditional	24	6.5	4	2.9	
	Total	372	100.0	138	100.0	
Occupation	Housewife	229	61.6	91	65.9	0.5
	Farmer	2	0.5	0	0.0	
	Pastoralist	24	6.5	4	2.9	
	Teacher	29	7.8	10	7.3	
	Other	88	23.7	23	9.1	
	Total	372	100.0	138	100.0	
No. of under five children in the house	1	260	69.9	109	79.0	0.2
	2	86	23.1	25	18.1	
	> 2	26	7.0	4	2.9	
	Total	372	100.0	138	100.0	

3.2 Socio-demographic characteristics associated with the utilization of MCH services

Table 2 shows the socio-demographic characteristics associated with the utilization of maternal and child health services. Sub-county was used as the explanatory variables while the utilization of health services was used as the response variable. The results show that among the respondents aged less than 30 years, being mothers from Mt. Elgon sub-county is statistically significantly associated with utilization of health care services (OR: 0.5; 95% CI: 0.3 – 0.9; p = 0.01) while this was not the case with those aged 30 years and above (OR: 1.4; 95% CI: 0.7 – 3.0; p = 0.35). A significantly lower proportion of respondents from Mt. Elgon Sub County (64.7%) compared to those from the Cheptais sub-county (77.6%) were able to use MCH services. There was a marginal statistically significant association between respondents who were married and utilization of MCH services (OR: 0.6; 95% CI: 0.4 – 1.1; p = 0.08). A smaller proportion of married respondents from Mt. Elgon Sub County (66.7%) were able to use the services unlike their counterparts from Cheptais Sub County (75.4%). Among the unmarried who are residents from the two Sub Counties, the difference was not statistically significant. Further analysis shows statistically significant relationship between those with none or primary education and use of the services as depicted by lower proportion of respondents (66.3%) from Mt. Elgon Sub County as opposed to those from Cheptais Sub County (77%) from the same education category (OR: 0.6; 95% CI: 0.4 – 0.9; p = 0.03). Among the socio-demographic variables that produce significant results, albeit marginal, was having been employed (OR: 3.7; 95% CI: 0.9 – 15.3; p = 0.06). The results suggest that those who were employed and were residents of Mt. Elgon Sub County were almost four times more likely to use MCH services unlike those from Cheptais Sub County. In contrast, respondents from Mt. Elgon Sub County who were not employed were less likely to use services in comparison to their colleagues from Cheptais Sub County (OR: 0.6; 95% CI: 0.4 – 0.9; p = 0.02).

Similar findings were noted with regard to the length of stay in the respective sub-counties. Having stayed for at most 6 months or less in the Mt. Elgon sub-county was marginally statistically associated with utilization of MCH services (OR: 3.7; 95% CI: 0.9 – 15.3; p = 0.06) in contrast to those from Cheptais Sub County in the same category. Those who had stayed for at least 6 months from Mt. Elgon Sub County were about four times more likely to have utilized the services. On the other hand, respondents who had stayed for more than 6 months and residents of Mt. Elgon sub-county were 40% less likely to have used the services (OR: 0.6; 95% CI: 0.4 – 0.9; p = 0.02).

Table 2: Socio-demographic characteristics influencing utilization of maternal and child health services

Variables	Explanatory variable	Utilized health facility		Total (n)	OR	95% CI	p-value
		Yes (%)	No (%)				
<30 years age group	Mt. Elgon	64.7	35.3	255	0.5	0.3 – 0.9	0.01
	Cheptais	77.6	22.4	125			
≥30 years age group	Mt. Elgon	67.4	32.6	86	1.4	0.7 – 3.0	0.35
	Cheptais	59.1	40.9	44			
Married	Mt. Elgon	66.7	33.3	255	0.6	0.4 – 1.1	0.08
	Cheptais	75.4	24.6	126			
Not married	Mt. Elgon	61.6	38.4	86	0.9	0.4 – 1.8	0.7
	Cheptais	65.1	34.9	43			
None or primary education	Mt. Elgon	66.3	33.7	255	0.6	0.4 – 0.9	0.03
	Cheptais	77.0	23.0	135			
Secondary and above	Mt. Elgon	62.8	37.2	86	1.3	0.6 – 3.0	0.5
	Cheptais	55.9	44.1	34			
Works	Mt. Elgon	60.0	40.0	25	3.7	0.9 – 15.3	0.06
	Cheptais	28.6	71.4	14			
Does not work	Mt. Elgon	65.8	34.2	316	0.6	0.4 – 0.9	0.02
	Cheptais	76.8	23.2	155			
≤6 months stay	Mt. Elgon	60.0	40.0	25	3.7	0.9 – 15.3	0.06
	Cheptais	28.6	71.4	14			
>6 months stay	Mt. Elgon	65.8	34.2	316	0.6	0.4 – 0.9	0.02
	Cheptais	76.8	23.2	155			

3.3 Time taken to reach the nearest health facility and utilization of maternal and child health services

Table 3 illustrates the time taken to the nearest health facility and its relationship with the utilization of maternal and child health services. Respondents from Mt. Elgon who would take more than one hour to reach the nearest health facility by foot (OR: 0.5; 95% CI: 0.3 – 0.8; p = 0.007), or take less than 30 minutes by boda-boda (OR: 0.6; 95% CI: 0.4 – 1.0; p = 0.05) or less than 30 minutes by vehicle (OR: 0.6; 95% CI: 0.4 – 1.0; p = 0.05) or less than one hour by donkey (OR: 0.6; 95% CI: 0.4 – 1.0; p = 0.05) were less likely to utilize maternal and child health services. The association between these factors and the utilization of MCH services was statistically significant. Results show a statistically significant association between working days not being suitable for the respondent and the community and utilization of MCH services (OR: 0.5; 95% CI: 0.3 – 1.0; p = 0.04). Half (50%) of the respondents from Mt. Elgon who complained about unsuitable working days were less likely to utilize MCH services in comparison with their colleagues from Cheptais. There was a marginal statistically significant relationship between mobile/outreach clinic not being

available every week in the study area and utilization of MCH services (OR: 0.7; 95% CI: 0.4 – 1.0; p = 0.06).

Table 3: Association between the time taken to the nearest health facility, working days and utilization of maternal and child health services

Variables	Explanatory variable	Utilized health facility		Total (n)	OR	95% CI	P-value
		Yes (%)	No (%)				
Time to facility by foot less than 1 hour	Mt. Elgon	68.8	31.2	141	0.2	0.6 – 2.1	0.6
	Cheptais	65.3	34.7	75			
Time to facility by foot more than 1 hour	Mt. Elgon	63.0	37.0	200	0.5	0.3 – 0.8	0.007
	Cheptais	78.7	21.3	94			
Time to facility by boda boda less than 30 min	Mt. Elgon	53.7	46.3	203	0.6	0.4 – 1.0	0.05
	Cheptais	65.4	34.6	107			
Time to facility by donkey less than 1 hour	Mt. Elgon	53.7	46.3	203	0.6	0.4 – 1.0	0.05
	Cheptais	65.4	34.6	107			
Time to facility by vehicle less than 30 min	Mt. Elgon	53.7	46.3	203	0.6	0.4 – 1.0	0.05
	Cheptais	65.4	34.6	107			
Mobile/Outreach Clinic not available every week in the area	Mt. Elgon	65.4	34.7	329	0.7	0.4 – 1.0	0.06
	Cheptais	73.8	26.2	164			
Working days not suitable for respondent and the community	Mt. Elgon	62.5	37.5	168	0.5	0.3 – 1.0	0.04
	Cheptais	76.4	23.6	72			

3.4 Relationship between the affordability of services and utilization of maternal and child health services

Table 4 illustrates the relationship between the payment of services and the utilization of maternal and child health services. Where respondents were to pay for ANC services (OR: 0.2; 95% CI: 0.1 – 0.6; p = 0.002) or not pay for FP services (OR: 0.5; 95% CI: 0.3 – 0.8; p = 0.007), a statistically significant smaller proportion were able to utilize MCH services. Even where such respondents were not paying for services at government facilities, a marginally statistically significantly smaller proportion from Mt. Elgon was able to utilize MCH services (OR: 0.6; 95% CI: 0.3 – 1.0; p = 0.06). Payment or non-payment for delivery services was not statistically significantly associated with the use of MCH services.

Table 4: Relationship between payment of services and utilization of maternal and child health services

Variables	Explanatory variable	Utilized health facility		Total (n)	OR	95% CI	P-value
		Yes (%)	No (%)				
Does not pay for services at government health facility	Mt. Elgon	50.3	49.7	193	0.6	0.3 – 1.0	0.06
	Cheptais	62.8	37.2	79			
Does not pays for FP services	Mt. Elgon	64.4	35.6	208	0.5	0.3 – 0.8	0.007
	Cheptais	79.0	21.0	114			
Pays for ANC services	Mt. Elgon	48.9	51.1	45	0.2	0.1 – 0.6	0.002
	Cheptais	82.4	17.6	34			
Does not pay for normal delivery services	Mt. Elgon	65.6	34.4	288	0.7	0.4 – 1.1	0.1
	Cheptais	72.9	27.1	129			

3.5 Relationship between ownership of facility and utilization of maternal and child health services

Table 5 shows the relationship between ownership of facility and utilization of maternal and child health services. Respondents from Mt. Elgon who felt that waiting time for all MCH services was unacceptable were 50% less likely to utilize the services (OR: 0.5; 95% CI: 0.3 – 0.8; p = 0.004), and this was statistically significant. Where facilities were owned by the government, respondents from Mt. Elgon were less likely to utilize MCH services. Thirty percent of such respondents did not use the services (OR: 0.7; 95% CI: 0.5 – 1.0; p = 0.07), though the association was but marginally statistically significant. A higher proportion of respondents from Mt. Elgon (49.4%) than those from Cheptais (36.6%) who said that waiting time for all MCH services was acceptable utilized MCH services even though the results were not statistically significant (OR: 1.7; 95% CI: 0.8 – 3.6; p = 0.2). Waiting time at the nearest facility of more than 30 minutes was not statistically significantly associated with utilization of MCH services. The use of interpreters during respondent's or relative's visits to the health facility was statistically significantly associated with the use of MCH services (OR: 0.2; 95% CI: 0.01 – 0.81; p = 0.02). Where such interpreters were used in Mt. Elgon, 80% of the respondents were less likely to have utilized MCH services.

Table 5: Relationship between ownership of facility, cognition, and utilization of maternal and child health services

Variables	Explanatory Variable	Utilized health facility		Total (n)	OR	95% CI	p-value
		Yes (%)	No (%)				
Facility owned by government	Mt. Elgon	62.4	37.6	314	0.7	0.5 – 1.0	0.07
	Cheptais	70.7	29.3	157			
Waiting time at the nearest facility is more than 30 min	Mt. Elgon	65.4	34.6	341	0.7	0.5 – 1.1	0.09
	Cheptais	72.8	27.2	169			
Waiting time acceptable	Mt. Elgon	51.4	48.6	144	0.7	0.4 – 1.1	0.1
	Cheptais	61.9	38.1	84			
Waiting time for all MCH services is acceptable	Mt. Elgon	49.4	50.6	87	1.7	0.8 – 3.6	0.2
	Cheptais	36.6	63.4	94			
Waiting time for all MCH services is unacceptable	Mt. Elgon	70.9	29.1	254	0.5	0.3 – 0.8	0.004
	Cheptais	84.4	15.6	128			
Interpreter has been used during respondent's or relative's visits to health facilities	Mt. Elgon	42.3	57.7	26	0.2	0.01 – 0.81	0.02
	Cheptais	77.8	22.2	18			

3.6 Relationship between cultural competence and utilization of maternal and child health services

Table 6 shows the relationship between cultural competence and utilization of maternal and child health services. The results show a statistically significant association between respondents consulting health professionals for advice when respondents or family experience small health problems with a comparatively smaller proportion of respondents from Mt. Elgon utilizing MCH services (OR: 0.5; 95% CI: 0.2 – 0.9; p = 0.03). surprisingly, even where respondents from Mt. Elgon were sometimes treated with appropriate cultural respect by facility staff (OR: 0.6; 95% CI: 0.4 – 0.9; p = 0.03) or where health professionals sometimes take respondent's culture and religion into account when interacting with them (OR: 0.6; 95% CI: 0.4 – 0.9; p = 0.03), still a statistically significantly smaller proportion were able to utilize MCH services. Respondents from Mt. Elgon who did not consult elders for advice when respondents or family experienced small health problems were also less likely to utilize MCH services through the association was marginally statistically significant (OR: 0.7; 95% CI: 0.4 – 1.0; p = 0.08).

Table 6: Relationship between cultural competence and utilization of maternal and child health services

Variables	Explanatory variable	Utilized health facility		Total (n)	OR	95% CI	p-value
		Yes (%)	No (%)				
Consults health professionals for advice when respondent or family experience small health problems	Mt. Elgon	70.3	29.7	155	0.5	0.2 – 0.9	0.03
	Cheptais	83.3	16.7	84			
Sometimes treated with appropriate cultural respect by facility staff	Mt. Elgon	48.0	52.0	227	0.6	0.4 – 0.9	0.03
	Cheptais	60.3	39.7	116			
Health professionals always take my culture and religion into account when interacting with me	Mt. Elgon	53.7	46.3	203	0.7	0.4 – 1.1	0.1
	Cheptais	62.7	37.3	110			
Health professionals sometimes take my culture and religion into account when interacting with me	Mt. Elgon	48.0	52.0	227	0.6	0.4 – 0.9	0.03
	Cheptais	60.3	39.7	116			

3.7 Multivariate logistic regression of determinants of utilization of maternal and child health services

This study examined the determinants of utilization of maternal and child health services in the study area. Multivariate logistic regression of determinants was performed by putting all the factors that had a marginal or significant association ($p \leq 0.08$) with the outcome to determine the recommended model. Results of multivariate logistic regression identified only two factors as determinants that are independently associated with the utilization of maternal and child health services in Mt. Elgon Sub-County. These included women who are employed (OR: 2.8; 95% CI: 1.1 – 7.3; p=0.03) and having visited facility as a patient (OR: 0.5; 95% CI: 0.3 – 0.9; p=0.03).

In addition, there is a tendency for perception on respondent's health status being excellent or good (p = 0.5), use of interpreter (p = 0.2), all MCH services being available (p = 0.3), services being available once a week (p = 0.4) and paying for ANC services (p = 0.1) to be associated with utilization of MCH services. Although these factors are not statistically significant, their confidence intervals include higher value odds ratio upper limits of between 2.1 and 4.2.

Table 7: Multivariate logistic regression of determinants of utilization of maternal and child health services

Risk factor	Overall a	95% CI	P-value
Working	2.8	1.1– 7.3	0.03
Has visited the nearest health facility as a patient	0.5	0.3 – 0.9	0.03
Less than 30 years	0.7	0.5 – 1.2	0.2
Married	0.9	0.5 – 1.4	0.6
None or primary school level	1.0	0.5 – 1.7	0.9
Health status excellent or good	1.2	0.7 – 2.1	0.5
Use of interpreter	1.5	0.8 – 3.1	0.2
All MCH services available	1.3	0.8 – 2.4	0.3
Services available once a week	1.5	0.5 – 4.2	0.4
Services available once/twice a week	1.0	0.6 – 1.8	0.9
Work days are suitable	0.9	0.6 – 1.4	0.5
Pays for FP	1.3	0.8 – 2.0	0.2
Pays for ANC	1.6	0.9 – **2.7**	0.1

3.8 Discussions

Generally, the predictors that were identified by participants which played a major role in maternal-child health care utilization included socio-demographic characteristics of clients, health facility factors and the cultural competence of health care workers. The study revealed a statistically significant relationship between age and use of maternal-child health care services (p = 0.01). Among those aged below 30 years and residents of Mt. Elgon, a significantly smaller proportion of respondents in this age group utilized the services. Similar findings were reported by Vilder, *et al.*, (2016) who found out that a significantly smaller number of mothers of less than thirty years of age were utilizing maternal health services in India. In the study area, underutilization of maternal health services could be attributed to the harsh terrain which is characteristic of Mt. Elgon which is located on the border of eastern Uganda and western Kenya. Its vast form, 80 kilometers (50 mi) in diameter, rises 3,070 meters above the surrounding plains.

Access to health facilities in this area requires the use of motorized transport and one spends at least Ksh. 500 (USD 5) which most of the young women may not have, unlike the older age group that are more economically independent. The harsh mountainous terrain cannot allow women, more so the younger women seeking services to reach the health facilities unaccompanied as they have to go through the forest with the elephants. Another explanation that was advanced on the possible reason why the younger age groups do not utilize the services is basically cultural. A study conducted by Ngari (2010) among the Ogiek community revealed elders have negative influence on the younger mothers and encourage to use herbs for treatment before visiting the health facilities. The older women, on the other hand, know the herbs and can decide whether to use them or go to the hospital.

In this study, there was a statistically significant relationship between those with none or primary education in Mt. Elgon with reference to the utilization of maternal and child health

care services. Forty percent of respondents in this category were less likely to have used the health facilities compared to those who had attained at least secondary education who were 1.3 times more likely to have utilized the MCH services. It appears that education plays a major role in the utilization of maternal and child health care services. The chances of getting employment are higher which improve access to health facilities. However, after controlling for other factors, education was not significantly associated with the outcome. Our results are contrary to the findings of a study conducted by Sakeah *et al* (2014) and Makapi *et al* (2011). Indeed, the socio-economic standing of mothers improves with literacy levels of mothers. The extent to which a mother is educated determines autonomy in decision-making regarding the use of maternal and child health care services.

Bivariate analysis results show that a higher proportion of women in Mt. Elgon (60%) who are working were more likely to utilize the services unlike those in Cheptais with a marginal statistically significant results (p=0.06). These results concur with the study done in Eastern Nepal, where women who were not formally working were less likely to use maternal and child health care services(Lama & Krishna, 2014). After controlling for other confounders, employment was statistically significantly associated with the utilization of maternal and child health care services (p=0.03). Women who were employed in Mt. Elgon were almost three times more likely to use these services. This then implies that employment after controlling for education and other factors is one of the determinants of service utilization. Employment gives one socioeconomic power and autonomy to access health care services amongst other services. Most of those who are employed work outside their places of residence which are located close health facilities. Results also show a statistically significant relationship between mothers who had stayed in Mt. Elgon for less than 6 months compared to those who had been residents for a longer period. Respondents who had stayed in Mt. Elgon Sub- County for at least 6 months or less were almost four-fold more likely to have utilized the services compared to their counterparts in Chaptais (p= 0.02). On the other hand, respondents who had stayed in Mt. Elgon Sub- County for more than 6 months were 40% less likely to have used maternal and child health care services with marginally significant results (p= 0.06). Mothers who are new in the study area are not familiar with culture/traditional groups offering care and use of local herbs and therefore are more likely to seek health services in the nearby health facilities while mothers who have been residents for a longer time and who are familiar with the indigenous groups rely on the use of local herbs for management of maternal and child illnesses before seeking hospital care. It is also likely that those who are new in the area are have been used to utilizing health facilities.

The study shows a statistically significant association on working days not being suitable for the respondent and the community on the utilization of MCH services (p = 0.04). Respondents from Mt. Elgon who felt that the working days were not suitable were 50% less likely to have sought services in the health facilities compared to those from Cheptais. Most dispensaries are open from Monday to Friday from 8.00 am to 5.00 pm while some of the obstetric emergencies occur outside normal working hours or days.

Where mothers claimed the non-availability of mobile/outreach clinics, a significantly smaller proportion of mothers utilized the services in Mt. Elgon (p = 0.06). This could have been contributed by the rough terrain and distance to health facilities. The results are corroborated by similar findings in our study where a smaller proportion (63%) of respondents from Mt. Elgon compared with 78.7% from Cheptais were able to use the services where the time taken to reach the facility by foot is more 1 hour (p = 0.007). This was true even in cases where FP services were free or where they were to pay for ANC

services. Whereas 36% of the mothers from this area were less likely to use the FP services, almost 50% did not utilize the ANC services. The results are in line with a study conducted by (Kassile, Lokina, Mujinja, & Mmbando, 2014) in Tanzania where distance influenced the mother's access to the services. The result is also supported by the study by (Zelalem, Belayihun, Teji, & Admassu, 2014) who found out that the cost of a single trip per person from home to hospital influences the utilization. The study by (UNFPA, 2010) had shown that 90% of children often die at home without the utilization of services due to long distance.

The use of interpreters during respondent's or relative's visits to the health facility was negatively associated with the use of MCH services (p= 0.02). Where such interpreters were used in Mt. Elgon, 80% of the respondents were less likely to have utilized MCH services. According to Ogiek culture, one should not tell somebody your problem other than the health worker. By going through an interpreter the client would have laid open their problem and hence lack of confidentiality. This is different from report of a study conducted in the USA where use of interpreters positively influences utilization of MCH services (Kaufert & Putsch, 2006).

There was a marginally statistically significant relationship between ownership of facility and utilization of maternal and child health services p-value 0.07 whereby respondents from Mt. Elgon were less likely to use MCH services in GOK owned facilities. This could be supported by the complaints on waiting time for MCH services which was unacceptable as expressed by respondents from Mt. Elgon. From the results, 30% of respondents from the same study area were less likely to use MCH services. This is further explained by Mahapatro (2012) were 84.2% of study participants felt that waiting time was unacceptable resulting in under-utilization of the services.

Further evidence shows a statistically significantly smaller proportion of respondents from Mt. Elgon who were less likely to have utilized MCH/FP services because of being too busy (p= 0.02). The reason could be the cultural gender roles of women. In the study area, women are responsible for taking care of their children, farming, milking of cows, selling farm products and household chores. Culturally, a man takes care of animals and the security of the family and community. Overall, a woman's day to day activities is much more engaging leaving them with little time to utilize health facilities for MCH/FP services.

There was a statistically significant association between respondents consulting health professionals for advice when respondents or family members experienced small health problems with a comparatively smaller proportion of respondents from Mt. Elgon utilizing MCH services (p=0.03). Even where respondents from Mt. Elgon were sometimes treated with appropriate cultural respect by facility staff (p= 0.03) or where health professionals sometimes take respondent's culture and religion into account when interacting with them (p= 0.03), still a statistically significantly smaller proportion were able to utilize MCH services. Respondents from Mt. Elgon who did not consult elders for advice when respondents or family experienced small health problems were also less likely to utilize MCH services though the association was marginally statistically significant (p= 0.08). Surprisingly, unlike the study conducted by (Schyve, 2007) were those who consulted health workers were more likely to utilize MCH services. Ogiek communities are believers and users of herbs (Ngari. 2010).

4.0 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The study gives very useful information on the utilization of maternal and child health care services in the area of high rates of maternal and child motility and morbidity on predisposing, enabling and the need characteristics The study findings have identified key factors that are unique to the Ogiek community, a marginalized community that lives most of their lives in the forest of Mt. Elgon. These factors include the use of an interpreter, consulting health care workers or elders. These results contribute to both maternal and child health care practice and policy change that could directly meet the cultural needs of the Ogiek community.

Recommendations

These data contribute more knowledge about the unique group of mothers (vulnerable and marginalized) which intern may be used by policymakers to plan strategies to increase access and improve utilization.

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ACKNOWLEDGEMENT

Great thanks to the almighty God for His grace and mercy. My sincere gratitude to my supervisors: Mr. John Arudo and Mr. Gregory Sakwa for their guidance, endless patience and intellectual support in the research and writing of this thesis. I appreciate the support of the School of Nursing, Midwifery and Paramedic Sciences of Masinde Muliro University of Science and Technology.

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