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Effects of Incentive Use "Oparanya Care Services" in Improving Skilled Delivery of Mothers in Malava County Hospital Kakamega County in Kenya

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Abstract: *It is estimated that nearly 300,000 women die from pregnancy related complications and childbirth. Globally 34% of deliveries take place without skilled birth attendant. In Kenya more than 50% of deliveries are conducted by unskilled persons. These high indices of maternal mortality are reason for launching incentive use and digital programme in Kakamega County commonly known as "Oparanya care services". Despite the commitment provided by the county government in resource allocation and free maternity care from the national government, pregnant women still deliver under watch of unskilled attendants, which endangers the outcome of the delivery. The main objective of the study was to assess the effects of incentive use in "Oparanya Care Services" on improving skilled delivery of mothers in Malava sub-County Hospital. The specific objectives of the study were to determine the awareness of digital care programme, compare utilization of Focused Antenatal Care in beneficiaries and non-beneficiaries of Oparanya Care and identify the effects of Incentive use on the skilled delivery. The study is based on Andersen's (2005) behavioral models of health services, where three set of individual characteristics which influence an individual choice of skilled delivery to include demographic, social and enabling factors. The study was conducted in Malava sub-County hospital, Kakamega County and the target population comprised all mothers within reproductive age bracket 18-49 years and attending ANC facility at the hospital. The study employed cross-sectional descriptive study design. Purposive sampling was used to pick the hospital while systematic sampling was adopted in picking mothers who comprised the respondents to the study, where the k^{th} woman attending ANC was recruited. The sample of the study was 402 women who comprised beneficiaries and non-beneficiaries. Data was collected using a structured questionnaire. Data was analyzed using SPSS version 20.0. Descriptive statistics, frequencies, percentages and means were used to summarize the research findings while odds ratio (OR) and logistic regression were used to establish relationships between independent and dependent variables at $\alpha=0.05$. The study results indicated that the mean age (in years) was29.1 and 30.4 for beneficiaries and non-beneficiaries respectively. In addition, all (100%) of the beneficiaries and non-beneficiaries were aware of the digital programme running in the sub-county. Those who benefited from the programme attended ANC promptly compared to the non- beneficiaries. Being a beneficiary influenced mothers to seek skilled delivery promptly at the facility among other factors (p-value<0.05). The utilization of FANC was influenced by factors such as history of chronic illness, high blood pressure, complications during pregnancy and history of losing a child. The study concludes that incentive use in "Oparanya Care Services" significantly improves skilled delivery of mothers in Malava sub-County Hospital. The study recommends creation more awareness on OC programme, formulation of a robust assessment of beneficiaries and boosting its workforce, particularly the ANC staff.*

Keywords: *Beneficiaries, Incentive use, maternal mortality rate, Oparanya care programme And skilled delivery.*

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I. Introduction

1.1 Background

Healthy women are the foundation of strong community and healthy newborns are the future of the society. It is estimated that nearly 300,000 women die from pregnancy related complications and childbirth. Furthermore, estimates indicate that about 3 million newborns die within the first month of life. It is further estimated that approximately 4.6 million represented by 74% of all under five years deaths occurred within the first year of life (GHO, 2013).Globally it's estimated that 34% of the deliveries take place in the absence of a

skilled birth attendant, which translates into 45 million births (GHO, 2013). Therefore, evidenced based strategies are imperative to reduce the burden of intrapartum-related deaths especially in low income settings, where 60 million women mostly give birth at home every year (Darmstadt, 2009). In addition, over 90% maternal deaths occur in sub-Saharan Africa due to obstetrics complication that could be managed effectively by increasing women's access to skilled birth attendance (Yakoob, 2011).

Kenya has a high maternal mortality rate of 495 per 100,000 live births (KDHS, 2014) and a lifetime risk of maternal death at 1 in 38 live births(UNICEF, 2013; WHO, 2015). Most women in Kenya deliver at home and only 44% of deliveries are attended to by skilled birth attendants(KDHS, 2008-2009).Previous studies have demonstrated that, there is low utilization of skilled attendants during pregnancy, childbirth and the postnatal periods. Furthermore, there is limited provision of basic emergency obstetric and newborn care (EMONC) existing in Kenya (Kenya Ministry of Health, attainment of Millennium goal, 2010).

The attainment of SDG5, which is related to reduction of maternal mortality by two thirds by the year 2015, was not achieved due to non-substantial reduction of maternal mortality. However, this is potentially tenable through increased prenatal care, skilled attendance at delivery, increased immunization, poverty reduction and reduction of illiteracy in women (KDHS, 2008-2009). Moreover, programs such as conditional cash transfers basket typically offer nutritional support, antenatal care and access to skilled delivery. In spite of all the efforts by both national and County Governments in improving health of pregnant mothers, maternal mortality rate remains high. These high indices of maternal mortality are at least in part, the reasons for launching Incentive use and digital programme in Kakamega County commonly known as "Oparanya care services. However, the contributions of this programme towards improved maternal and child health is yet to be determined.

1.2 Problem Statement

There is high maternal mortality of 800 per 100,000 live births in western Kenya (KDHS, 2014). This is attributed to delivery by unskilled attendant, poverty, illiteracy and underutilization of prenatal care. Achieving SDG5, that is, "reducing maternal mortality by three quarters by the year 2015", was a pipe dream and difficult to accomplish just a year before the target period (KDHS, 2014). Critical challenge for maternal and newborn health care in developing countries include, poor health-care system, low use of skilled care at birth, procuring of inexpensive equipment and low utilization of technology (WHO, 2005). Kakamega county has some of the worst health indicators in the country, Maternal Mortality Rate (MMR) is at 880 deaths per 100,000 live births while deliveries under skilled health providers is a paltry 25.4% compared to home delivery at 74.6%(KDHS, 2014). These indicators are spelt out more so in Malava sub-County due to its larger population than other sub-Counties in Kakamega County. This has remained so in spite of County government increasing resources to health sector (mother and child) and free maternity by central government. It has noted that mothers continue to deliver at home under help of unskilled attendants hence endangering the outcome of the delivery (Maine 1991). Therefore it is important to determine whether Incentive use in Oparanya care services has improved the health outcomes of maternal health (delivery by skilled attendance) in Malava sub-County hospital after being officially rolled out in the year 2015.

1.3 Justification of the Study

Kakamega County is one of the most populous counties in the republic; it has a high poverty index level which stands at 51.3% compared to the national average of 45.9%. This County has some of the worst health indicators in the country, MMR is at 880 deaths per 100,000 live births while deliveries under skilled health providers is 25.4% compared to home delivery at 74.6% (KDHS, 2008-2009). The findings on Incentive use in Oparanya care programme associated with skilled delivery in Malava sub-County hospital will equip local policy makers and stakeholders at the facility with relevant information on the programme and its quality improvement on health.

1.4 Research Hypotheses

Incentive use in "Oparanya Care Services" do not significantly improve skilled delivery of mothers in Malava sub-County Hospital

1.5. Objectives

1.5.1 General Objective

The main objective of the study is to assess the effects of Incentive use in "Oparanya Care Services" on improving skilled delivery of mothers in Malava sub-County Hospital.

1.5.2 Specific Objectives

i. To determine the awareness on Oparanya Care Services
ii. To compare utilization of Focused Antenatal Care in beneficiaries and non-beneficiaries of Oparanya Care Services

iii. To identify the effects of Incentive use on the skilled delivery

II. Methods And Materials

3.1 Study Area

The study was conducted in Malava sub-County hospital. This facility is situated in northern part of Kakamega County, approximately 24km from Kakamega town within Kakamega-Webuye highway.

3.2 Study Design

Cross-sectional descriptive study design was employed on both beneficiaries and non- beneficiaries in Oparanya care services.

3.3 Study Population

The target population comprised of all mothers within reproductive age bracket 18-49 years and delivered in Malava sub-County hospital.

Inclusion criteria:All mothers aged bracket 18-49 years and whodelivered in Malava sub-County hospital at the time of study.

Exclusion criteria:All mothers aged below 18 and above 49 years of age and delivered outside Malava sub-County hospital.

3.4 Sampling Method

Sampling technique**:** This study used purposive sampling on picking the hospital where study was conducted. Systematic sampling was adopted in picking mothers who filled questionnaires. The sample size was 407.

3.5 Data Collection Approaches

A non-probability purposive sampling technique was used in choosing facility practicing the Oparanya care programme. A modified questionnaire from IPE (Global programme) was used to collect data. Interviewed scheduled questionnaires were filled in by respondents.

3.6 Ethical Consideration

This research was guided by the basic ethical principles set out in the Belmont report (1979) which states that: Respect for persons, beneficence; and justice. In addition, permission was sort from institutional review ethics committee of MasindeMuliro university and National commission for science technology and Innovation(NACOSTI).

3.6.1 Informed Consent

Informed consent is defined as "a process of information exchange in which participants are provided with clear, understandable information needed to make a participation decision" (Houser 2008).Therefore, this researcher used consent process whereby consent was obtained at the beginning of the process but also informally at further critical points of data collection lending to dissemination of results. The four elements of informed consent were applied in this study: disclosure of essential information to the participants; participants understanding information, capacity to give consent and voluntary provision of consent by participants not forgetting right to withdraw at any stage without prejudice (Burns and Grove, 2007).

3.6.2 Confidentiality and Anonymity

This is management of personal information and no links to individual response (Burns and Grove, 2007). All data, notes and information obtained in the study whether written or digital were encrypted and stored securely in a locked place accessed by the researcher only.

3.6.3 Protection of Participants

The researcher had an obligation to ensure that participants in this study were free from harm at all stages of the process. The researcher endeavored to protect participants from any financial, physical, emotional or social stress or loss.

III. Results

4.1 Demographic Characteristics

A total of 201 programme beneficiaries and 201 non-beneficiaries were randomly selected and interviewed during the study. Most of the beneficiaries (30.8%) and non-beneficiaries (48.2%) fell in the age category of 30 – 34 years. Among beneficiaries, mean was 29.1 years compared with non-beneficiaries with a mean of age of 30.4 t-test to compare differences in mean in the two groups show a significant difference in ages with non-beneficiaries being older than beneficiaries (t=2.7; df=400; p=0.008).There were more married non-beneficiaries (91.5%) than beneficiaries (70.7%). Most of non-beneficiaries (52.2%) had attained tertiary education in contrast with beneficiaries where most had secondary education (49.2%). More than three-quarters of beneficiaries (76.1%) and non-beneficiaries (87.1%) were protestants. Whereas a larger proportion of

beneficiaries (63.7%) were farmers about one-half (51.7%) of non-beneficiaries held some form of formal job (Table 4.1).

Table 4.1 Demographic Characteristics

Variable	Categories	Beneficiaries		Non-beneficiaries	
		N	%	N	%
Age group	15 - 20	9	4.5	0	0.0
	20 - 24	38	18.9	14	7.0
	25 - 29	60	29.8	64	31.8
	30 - 34	62	30.8	97	48.2
	35 - 39	21	10.5	21	10.5
	40 - 44	11	5.5	5	2.5
	Total	201	100.0	201	100.0
Mean age±SD (Range)		29.1±5.9 (17.0 – 44.0)		30.4±3.9 (20 .0 – 42.0)	
Marital status	Single	37	18.4	13	6.5
	Married	142	70.7	184	91.5
	Divorced	10	5.0	1	0.5
	Widowed	5	2.5	3	1.5
	Separated	7	3.5	0	0.0
	Total	201	100.0	201	100.0
Level of education	None	16	8.0	8	4.0
	Primary	80	39.8	4	2.0
	Secondary	99	49.2	84	41.8
	Tertiary	6	3.0	105	52.2
	Total	201	100.0	201	100.0
Religion	Muslim	4	2.0	0	0.0
	Catholic	44	21.9	25	12.4
	Protestant	153	76.1	175	87.1
	Other	0	0.0	1	0.5
	Total	201	100.0	201	100.0
Source of income	Farmer	128	63.7	10	5.0
	Business	24	11.9	83	41.3
	Formal job	8	4.0	104	51.7
	Informal job	13	6.5	2	1.0
	None	28	13.9	2	1.0
	Total	201	100.0	201	100.0

4.1.1 Wealth status of beneficiaries and non-beneficiaries

One of the selection criteria for Oparanya Care beneficiaries is based on their wealth status. To determine respondents' wealth status, they were asked about the number of meals eaten per day. Study findings show that 56.7% of beneficiaries eat one or less meal per day compared with non-beneficiaries where 84.1% eat at least three-square meals a day suggesting that the OC programme correctly identified beneficiaries who deserve to be in the programme (Figure 4.1).

Figure 4.1Number of meals eaten per day

4.1.2 Past and Current Delivery History

Past delivery history of respondents can be used as a pointer on the success of the OC Programme. Results show that among beneficiaries, 13.4% delivered at home compared with one-quarter (25.4%) non-beneficiaries. More than three-quarters (86.6%) of the beneficiaries benefitted from skilled birth delivery during the previous

pregnancy. While most of beneficiaries' gestational age for the current pregnancy was 3rd trimester (33.3%), over one-third (36.3%) of non-beneficiaries who were pregnant were in their 2nd trimester (Table 4.2).

Table 4.2 Past and Current Delivery History

Variable	**Categories**	**Beneficiaries**		**Non-beneficiaries**	
		N	%	N	%
Where previous delivery took place	Home delivery	27	13.4	51	25.4
	Public hospital	153	76.1	137	68.2
	Private hospital	21	10.5	13	6.5
	Total	201	100.0	201	100.0
Current pregnancy: Gestational age	1st trimester	39	19.4	37	18.4
	2nd trimester	50	24.9	73	36.3
	3rd trimester	67	33.3	50	24.9
	Has delivered	45	22.4	41	20.4
	Total	201	100.0	201	100.0

4.2 Awareness and Knowledge of Health Service provided under Oparanya care services

The study sought to determine the level of awareness and knowledge of health services provided under OC. Results presented here revealed that all (100%) respondents were aware of Oparanya care Programme. All beneficiaries were enrolled in the programme. Among non-beneficiaries, the main reason for not being registered in the programme was 'not being qualified.' Barriers experienced for the choice of delivery point was mainly lack of finance for both beneficiaries (50.7%) and non-beneficiaries (69.1%). Distance to the facility as a barrier accounted for 22.4% and 29.3% of the responses from beneficiaries and non-beneficiaries, respectively as is depicted in Table 4.3.

Table 4.3Awareness and Knowledge Health Service Oparanya care services

Variables	Categories	Beneficiaries		Non-beneficiaries	
		N	%	N	%
Awareness of OC	Yes	201	100.0	201	100.0
	No	0	0.0	0	0.0
	Total	201	100.0	201	100.0
Enrolled in OC	Yes	201	100.0	0	0.0
	No	0	0.0	201	100.0
	Total	201	100.0	201	201
Reason for non-registration	Not qualified	-	-	194	96.5
	Not interested	-	-	4	2.0
	Refused to be registered	-	-	3	1.5
	Total	-	-	201	100.0
Barriers experienced for the choice of delivery point	Lack of finance	102	50.7	139	69.2
	Staff attitude	6	3.0	3	1.5
	Distance to facility	45	22.4	59	29.3
	No barriers	48	23.9	0	0.0
	Total	201	100.0	201	100.0
Plan to use OC	Yes	-	-	201	100.0
	No	-	-	0	0.0
	Total	-	-	201	100.0
Why plans to use OC	Improve child's health	-	-	115	57.2
	Help improve my health	-	-	68	33.8
	To avoid complications at delivery time	-	-	6	3.0
	To help me pay for all my visits	-	-	4	2.0
	Growth monitoring of baby	-	-	3	1.5
	Avoid complications after birth	-	-	2	1.0
	Help me financially	-	-	2	1.0
	No benefit	-	-	1	0.5
	Total	-	-	195	100.0

4.2.1 Benefits of Oparanya Care Programme

Nearly three-quarters (73.1%) of beneficiaries have benefitted from the programme (Table 4.4). Those who had not were newly enrolled. More than one-half (53.45) have used the cash to cater for the child's needs while 15.5% used the money to buy food. A small but important proportion (5.4%) used the money to buy a sheep or goat for the child – a practice that is highly valued by the Luhya culture. Another 4.7% either started a small business of used the money to improve their business (Table 4.4).

Table 4.4 Benefits of Oparanya Care Programme

Variables	Categories	B		Non-beneficiaries	
		N	%	N	%
Has OC benefitted you	Yes	147	73.1	0	0.0
	No	54	26.9	201	100.0
	Total	201	100.0	201	100.0
How OC has benefitted respondent	Used cash to cater for child needs	79	53.4	-	-
	Bought food	23	15.5	-	-
	Paid fare, food and clothing	10	6.8	-	-
	Used as fare to health facility	9	6.1	-	-
	Given money and bought a sheep/goat for the child	8	5.4	-	-
	Saved for the child I am expecting	8	5.4	-	-
	Used to provide basic needs	3	2.0	-	-
	Started a small business	3	2.0	-	-
	Used money to improve my business	4	2.7	-	-
	Not yet, its completed 4th ANC	1	0.7	-	-
	Total	145	100.0	-	-

4.2.2 Registration of respondents in OC database and provision of booklets

A key component of OC is the registration of participants and provision of booklets. With this regard, the results showed that all beneficiaries had had their data entered in the programme's database compared with 96.5% of non-beneficiaries. All respondents had booklets for the ANC, delivery and PNC services. A small proportion of beneficiaries (5%) and non-beneficiaries (7%) paid Ksh. 20 for the booklets (Table 4.5).

Table 4.5 Registration of respondents in OC database and provision of booklets

Variables	**Categories**	**Beneficiaries**		**Non-beneficiaries**	
		N	%	N	%
Personal data in OC database	Yes	201	100.0	194	96.5
	No	0	0.0	7	3.5
	Total	201	100.0	201	100.0
Have booklet	Yes	201	100.0	201	100.0
	No	0	0.0	0	0.0
	Total	201	100.0	201	100.0
Paid for the booklet	Yes	10	5.0	14	7.0
	No	191	95.0	187	93.0
	Total	201	100.0	201	100.0
Amount paid	Ksh. 20/=	10	100.0	14	100.0

4.2.3 Total amount paid beneficiaries by service attended

Furthermore, the study endeavoured to determine the amount of money paid to the beneficiaries. Results indicate that more than one-third (36.9%) who had attended ANC were paid Ksh. 2,000 while 37.9% who had delivered had been paid a similar amount and another 23.4% who received PNC services had each got Ksh. 2,000 as is illustrated in Figure 4.2.

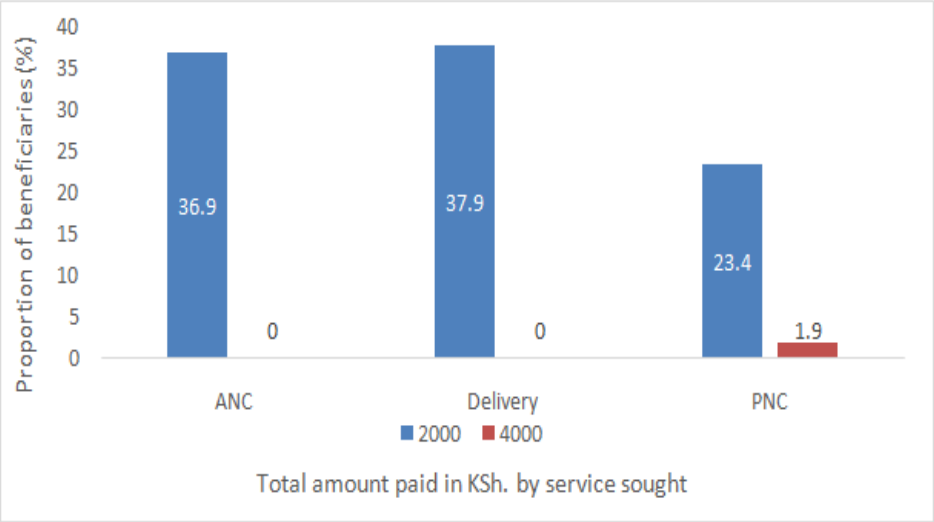

Figure 4.2 Total amount paid beneficiaries by service attended

4.3Utilization of Focused Antenatal Care in beneficiaries and non-beneficiaries of Oparanya Care Services

In terms of the utilization of focused antenatal care in beneficiaries and non-beneficiaries of Oparanya care services, results presented here demonstrate that more than three-quarters of beneficiaries (77.6%) and non-beneficiaries (79.6%) interviewed had sought ANC services on the day of the survey. Most of the beneficiaries were making their 3rdvisit (32.1%) in contrast with 35.8% of non-beneficiaries who were making their 1st visit. One-quarter of beneficiaries (25.6%) were making their 4th visit as opposed to a smaller proportion of non-beneficiaries (2.5%) falling in the same category as shown in Table 4.6.

Table 4.6 Utilization of FANC in beneficiaries and non-beneficiaries of Oparanya Care Services

Variables	**Categories**	**Beneficiaries**		**Non-beneficiaries**	
		N	%	N	%
Why at the facility today	ANC	156	77.6	160	79.6
	Delivery	9	4.5	5	2.5
	PNC	18	9.0	17	8.5
	FP	3	1.5	3	1.5
	Child vaccination	12	6.0	16	8.0
	Child growth monitoring	2	1.0	0	0.0
	Treatment of childhood illness	1	0.5	0	0.0
	Total	201	100.0	201	100.0
Number of ANC visits for pregnant mothers	1st	31	19.9	72	35.8
	2nd	35	22.4	55	27.4
	3rd	50	32.1	10	5.0
	4th	40	25.6	5	2.5
	Other services	45	22.4	59	29.4
	Total	201	100.0	201	100.0

4.3.1 Gestational age by number of ANC visits for the current pregnancy

Table 4.7 shows cross-tabulation results on gestational age versus number of ANC visits. Compared with non-beneficiaries, a larger proportion of respondents (59.7%) who were in their 3rd trimester had made at least 4 visits to the facility unlike only 10% of the former.

Table 4.7 Gestational age by number of ANC visits for the current pregnancy

Gestational age: Trimester	Beneficiaries: No. of visits				Total	Non-Beneficiaries: No. of visits				Total
	1st	2nd	3rd	4th		1st	2nd	3rd	4th	
1st Trim	31 (79.5)	8 (20.5)	0 (0.0)	0 (0.0)	39 (100.0)	24 (96.0)	1 (4.0)	0 (0.0)	0 (0.0)	25 (100.0)
2nd Trim	0 (0.0)	27 (54.0)	23 (46.0)	0 (0.0)	50 (100.0)	39 (58.2)	26 (38.8)	2 (3.0)	0 (0.0)	67 (100.0)
3rd Trim	0 (0.0)	0 (0.0)	27 (40.3)	40 (59.7)	67 (100.0)	9 (18.0)	28 (56.0)	8 (16.0)	5 (10.0)	50 (100.0)
Total	31	35	50	40	156	72	55	10	5	142

4.3.2 Use of Skilled Birth Attendants

The study additionally sought to determine whether the respondents had a previous pregnancy in conformity with the requirements for the inclusion criteria in the study. The results presented here revealed that most of beneficiaries (52.7%) had delivered at home unlike only 9% of the non-beneficiaries signifying the need for the programme for the former group of respondents. The deliveries reported took place before the introduction of Oparanya Care Services. Ninety percent of non-beneficiaries were delivered by skilled birth attendants during the previous pregnancy (Table 4.8).

Table 4.8 Use of skilled birth attendant

Variables	Categories	Beneficiaries		Non-beneficiaries	
		N	%	N	%
Had previous pregnancy	Yes	201	100.0	201	100.0
	No	0	0.0	0	0.0
	Total	201	100.0	201	100.0
Where delivered	In the current facility	20	9.9	98	48.8
	In another facility	18	9.0	50	24.9
	At the hospital	40	19.9	33	16.4
	On the way to hospital	10	5.0	1	0.5
	Miscarriage	7	3.5	1	0.5
	Home	106	52.7	18	9.0
	Total	201	100.0	201	100.0

4.3.3 Availability and Accessibility of Health Care

The study further examined availability and accessibility of health care services by comparing the two groups. Results indicate that most of beneficiaries (44.3%) and non-beneficiaries (49.2%) cited county hospital as the nearest health facility where they regularly seek health care services. The facilities are mostly government-owned. Majority of beneficiaries (81.6%) and non-beneficiaries (95.5%) have ever been to the facility in the past one year as shown in Table 4.9. Majority of non-beneficiaries (91%) compared with beneficiaries (58.2%) live within a radius of 5 km from the nearest facility. Mean time taken to reach the nearest facility by foot is about 1.8 hours for beneficiaries and 2 hours for non-beneficiaries. One-third of beneficiaries (33.3%) and 44.3% of non-beneficiaries take less than 30 minutes to reach the facility using public transport. The mean fare by public transport for beneficiaries is Ksh.40 and ranges between Ksh. 20 – 170 which is lower than that of non-beneficiaries who spend a mean fare of Ksh. 95 ranging from Ksh. 20 – 300. The facilities provide treatment for minor ailments, ANC, among others. Oparanya Care Services are available in the facilities frequented by both beneficiaries and non-beneficiaries.

Table 4.9 Availability and accessibility of health care

Variables	Categories	Beneficiaries		Non-beneficiaries	
		N	%	N	%
Nearest health facility where respondent regularly get health care services	Dispensary	50	24.9	48	23.9
	Health Centre	58	28.9	52	25.9
	County Hospital	89	44.3	99	49.2
	County Referral Hospital	1	0.5	1	0.5
	Private Facility	3	1.5	1	0.5
	Total	201	100.0	201	100.0
Who owns facility	Government	163	97.0	164	97.6
	Private	4	2.4	3	1.8
	Other	1	0.6	1	0.6
	Total	168	100.0	168	100.0
Ever been to the facility past one year	Yes	164	81.6	192	95.5
	No	37	18.4	9	4.5
	Total	201	100.0	201	100.0
Distance from facility	0 – 5 km	117	58.2	182	91.0
	6 – 10 km	34	16.9	8	4.0
	>=11 km	2	1.0	4	2.0
	Don't know	48	23.9	6	3.0
	Total	201	100.0	200	100.0
Time to reach facility by foot	Mean±SD (Range) in hours	1.8±1.1 (1 – 9)		2.0±.4 (1 – 3)	
Time to reach facility by public transport	Don't know	36	17.9	35	17.4
	<30 mins	67	33.3	89	44.3
	30 – 59 mins	49	24.4	57	28.4
	1 – 5 hrs	6	3.0	11	5.5
	6 – 11 hrs	1	0.5	0	0.0
	No public transport	40	19.9	9	4.5
	Accessible by foot	2	1.0	0	0.0
	Total	201	100.0	201	100.0
Cost of transport	Mean±SD (Range) in KSh.	40.2±25.9 (20 – 170)		95.9±50.8 (20 – 300)	
Available services	Treatment of minor ailments	141	12.5	191	14.3
	Oparanya care services	119	10.5	199	14.9
	Antenatal clinic	173	15.3	200	14.9
	Delivery services	148	13.1	200	14.9
	Postnatal	142	12.6	200	14.9
	Immunization	169	14.9	198	14.8
	Peadiatrics	121	10.7	109	8.1
	Other (Dental, Nutrition, etc)	118	10.4	41	3.1
	Total	1131	100.0	1338	100.0

4.3.4 Health Needs of the Household

Health needs of mothers may determine utilization of health care services. From the study, 28.4% of beneficiaries had a history of chronic illness in comparison with 7% of non-beneficiaries. Majority of beneficiaries (69.8%) and non-beneficiaries (71.7%) had high blood pressure. A small proportion of beneficiaries (6%) and non-beneficiaries (1.5%) were unable to carry out regular household activities in the past one year. Majority of beneficiaries (94%) and non-beneficiaries (98.5%) were in either excellent or good health (Table 4.10).

Table 4.10 Health Needs of the household

Variables	**Categories**	**Beneficiaries**		**Non-beneficiaries**	
		N	%	N	%
History of chronic illness	Yes	57	28.4	14	7.0
	No	138	68.7	155	77.1
	Don't know	6	3.0	32	15.9
	Total	201	100.0	201	100.0
Diagnosis	Arthritis	1	1.6	2	4.35
	Asthma	5	7.9	0	0.0
	High Blood Pressure	44	69.8	33	71.7
	Chronic Pain	4	6.4	11	23.9
	DM	9	14.3	0	0.0

	Total	63	100.0	46	100.0
Childhood diseases reported in the family	Measles	5	2.70	1	2.4
	Diphtheria	0	0.0	6	14.3
	Never	180	97.3	35	83.3
	Total	185	100.0	42	0.0
Inability to carry out usual activities due to health problems in the past one year	Yes	12	6.0	3	1.5
	No	189	94.0	198	98.5
	Total	201	100.0	201	100.0
Rating of health	Excellent	34	16.9	189	94.0
	Good	155	77.1	9	4.5
	Poor	12	6.0	3	1.5
	Total	201	100.0	201	100.0

4.3.5 Health Needs: Reported Perinatal Complications and Child Mortality

More beneficiaries (35.3%) than non-beneficiaries (18.4%) had had a history of complications during pregnancy (Table 4.11). The same applied to proportion of respondents who had had a history of complications during labour among beneficiaries (31.8%) and non-beneficiaries (10.4%). One in ten of beneficiaries (10.4%) had a history of complications during delivery compared with 4.5% of the non-beneficiaries. The proportion reporting death due to complications during pregnancy, delivery or after delivery was higher among non-beneficiaries (11%) than beneficiaries (5%). On the contrary, a higher proportion of beneficiaries (24.450 had lost a child compared with non-beneficiaries (10.4%).

Table 4.11Health Needs: Reported Perinatal Complications and Child Mortality

Variables	**Categories**	**Beneficiaries**		**Non-beneficiaries**	
		N	**%**	**N**	**%**
History of complications during pregnancy	Yes	71	35.3	37	18.4
	No	130	64.7	164	81.6
	Total	**201**	**100.0**	**201**	**100.0**
History of complications during labour	Yes	64	31.8	21	10.4
	No	136	67.7	180	89.6
	Don't know	1	0.5	0	0.0
	Total	**201**	**100.0**	**201**	**100.0**
History of complications during delivery	Yes	21	10.4	9	4.5
	No	180	89.6	192	95.5
	Total	**201**	**100.0**	**201**	**100.0**
History of death due to complications	Yes	10	5.0	22	11.0
	No	190	94.5	179	89.0
	Don't know	1	0.5	0	0.0
	Total	**201**	**100.0**	**201**	**100.0**
Ever lost a child	Yes	49	24.4	21	10.4
	No	152	75.6	180	89.6
	Total	**201**	**100.0**	**201**	**100.0**

Time taken in health facility and level of satisfaction

Assessment of mean time taken during a visit to the facility show that beneficiaries took a shorter time of 34.7 minutes in contrast with non-beneficiaries who took 40.5 minutes (Table 4.12). The difference was significant ($t=4.7$; $df=400$; $p<0.0001$) suggesting that beneficiaries were attended to faster than non-beneficiaries. The mean level of satisfaction measured using a scale of 0 – 10 indicated no significant difference between the two groups ($t=-1.1$; $df=400$; $p=0.3$).

Table 4.12 Time Taken in Health Facility and Level of Satisfaction

Variables	Categories	Beneficiaries	Non-beneficiaries
Time taken in facility	Mean time in Min	34.7±13.3 (10 - 60)	40.5±11.7 (2.0 – 68.0)
Level of satisfaction	Mean	7.9±13.3 (2 - 10)	7.7±1.9 (2 - 10)

4.3.5 Beneficiary Suggestions to improve OC

When asked to give suggestions on how to improve OC services, 35.8% of beneficiaries would like the payment to be on time while 23.5% would like all mothers to be paid rather than payment being based on the section criteria. As for non-beneficiaries, 25.1% want more health workers to be employed and another 21.1% concur with beneficiaries on the need for all mothers to benefit from the OC Services (Table 4.13 and Table 4.14)

Table 4.13 Beneficiary Suggestions to Improve OC

Suggestions	**N**	**%**
Pay money on time	67	35.8
All mothers be paid	44	23.5
Increase amount	25	13.4
Add more registration centres	17	9.1
Build more health facilities	9	4.8
Help raise kids to at least 5yrs	6	3.2
Extend the period	4	2.1
Add more laptops for registration	4	2.1
Improve road network for easy access	3	1.6
Employ more health workers	2	1.1
Pay all the cash	2	1.1
Add more e.g. pampers and soap	1	0.5
Communicate for any meeting	1	0.5
No transparency	1	0.5
To be funded on monthly basis	1	0.5
Total	**187**	**100.0**

Table 4.14 Non-beneficiary Suggestions to improve OC

Suggestions	**N**	**%**
Employ more health workers	50	25.1
All mothers be paid	42	21.1
Build more health facilities	33	16.6
Educate all stakeholders	24	12.2
Educate the community about health service	17	8.5
Equip the facilities	7	3.5
Communicate for any meeting	6	3.0
Improve road network for easy access	4	2.0
Educate mothers on breastfeeding	3	1.5
Emergency vehicles to be provided	3	1.5
Do not charge pregnant women	2	1.0
Help raise kids to at least 5 years	2	1.0
Increase amount	2	1.0
Educate mothers about vaccination	1	0.5
Free bills in hospital bills	1	0.5
Take care of HIV positive patients	1	0.5
Women to attend with their husbands	1	0.5
Total	**199**	**100.0**

4.4 Factors associated with FANC

To determine factors associated with at least a minimum of four visits during pregnancy for respondents who had reached the 3rd trimester, multiple regression was performed on several independent variables (Table 4.15). Two factors that were significantly associated with respondents attending at least four visits during the third trimester were being married (OR: 0.4; 95% CI: 0.2 – 0.8; p = 0.02) and being a beneficiary or not (OR: 8.9; 95% CI: 2.8 – 27.5; p <0.0001). Married respondents were less likely to meet the minimum required four visits in their third trimester while beneficiaries were 9-fold more likely make at least four visits as recommended. Being a beneficiary is therefore a determinant in influencing mothers' ANC visits.

Table 4.15 Bivariate Analysis on Factors Associated with FANC

Variables	**Effect**	**OR**	**95% CI**	**P value***
Age group	Age 15 – 29 vs 30 plus years	1.1	0.5 – 2.2	0.9
Marital status	Married vs not married	0.4	0.2 – 0.8	0.02
Level of education	Primary or none vs Secondary and above	1.2	0.6 – 2.4	0.7
Religion	Protestant vs the rest	1.7	0.7 – 4.1	0.2
Place of delivery during last pregnancy	Home vs facility	1.5	0.6 – 3.6	0.4
Treatment	Beneficiary vs Non-beneficiary	8.9	2.8 – 27.5	0.0002
Health Needs	Has chronic illness vs well	1.1	0.5 – 2.4	0.8
Complications during pregnancy	History of any complications during pregnancy vs none	1.5	0.7 – 3.2	0.3
Complication during labour	History of any complications during labour vs none	1.1	0.5 – 2.3	0.9
Complication during delivery	History of any complications during delivery vs none	0.3	0.1 – 1.2	0.1
History of death during perinatal period	History of any death during perinatal period vs none	2.5	0.7 – 9.6	0.2
Inability to conduct usual	Inability vs ability	0.3	0.03 – 2.3	0.2

activities				

**Significant if p value < 0.05*

4.4.5 Factor associated with skilled birth delivery

Multiple regressions was undertaken to find out factors that are associated with skilled birth delivery as shown in Table 4.16. Factors that were significantly associated with skilled birth delivery included being a protestant versus other religions (OR: 1.8; 95% CI: 0.5 – 6.0; p = 0.4) Comparing respondents in the support and non-support group, there was no association between having taken less than 2 years since diagnosed (OR: 2.7; 95% CI: 1.4 – 5.4; p = 0.003); being a beneficiary versus not being one (OR: 11.3; 95% CI: 5.6 – 22.9; p <0.0001); having chronic illness (OR: 0.2; 95% CI: 0.1 – 0.4; p <0.0001) and having had complications during pregnancy (OR: 2.2; 95% CI: 1.1 – 4.2; p = 0.02). Protestants were two times more likely to deliver in health facility compared with other respondents from other religious groups. The findings also show that beneficiaries were 11-fold more likely to deliver in health facilities compared with those not in the programme. Those who had previously had complications during pregnancy were two times more likely to deliver in health facilities. However, respondents who had chronic illness were less likely seeks skilled birth delivery.

Table 4.16 Factors Associated with Skilled Birth Delivery

Variables	**Effect**	**OR**	**95% CI**	**P value***
Age group	Age 15 – 29 vs 30 plus years	1.0	0.6 – 1.8	1.0
Marital status	Married vs not married	1.0	0.5 – 2.0	0.9
Level of education	Primary or none vs Secondary and above	1.6	0.9 – 2.9	0.1
Religion	Protestant vs the rest	2.7	1.4 – 5.4	0.003
Treatment	Beneficiary vs Non-beneficiary	11.3	5.6 – 22.9	<0.0001
FANC	At least 4 visits by 3rd trimester vs < 4 visits by 3rd trimester	0.5	0.2 – 1.2	0.1
Health Needs	Has chronic illness vs well	0.2	0.1 – 0.4	<0.0001
Complications during pregnancy	History of any complications during pregnancy vs none	2.2	1.1 – 4.2	0.02
Complication during labour	History of any complications during labour vs none	1.5	0.7 – 2.9	0.3
Complication during delivery	History of any complications during delivery vs none	0.7	0.2 – 1.9	0.5
History of death during perinatal period	History of any death during perinatal period vs none	1.4	0.4 – 4.6	0.6
Inability to conduct usual activities	Inability vs ability	1.4	0.4 – 5.6	0.6

*Significant if p value < 0.05

4.3.6 Effect of incentives on use of skilled birth delivery

To determine the effect of incentive on being delivered by skilled birth attendant, a logistic regression was performed on incentives as independent variable and facility delivery as the outcome variable. The results show that for a one unit increase in incentive, the odds of being delivered by skilled birth attendant (versus not being delivered by a skilled birth attendant) increase by a factor of 6.0 (OR: 6.0; 95% CI: 3.7 – 9.4; p = <0.0001).

Table 4.17 Effect of Incentives on Use of Skilled Birth Delivery

Variables	Effect	OR	95% CI	P value*
Incentive	Incentive vs no incentive	6.0	3.7 – 9.4	<0.0001

*Significant if p value < 0.05

IV. Discussion

This chapter discusses the important findings from the study in relation to the study objectives, literature review and the key variables. The discussions were based on the awareness of mothers on Oparanya care services, comparisons of utilization of focused antenatal care in beneficiaries and non-beneficiaries in Oparanya care services and identified effects of incentive use on the skilled deliveries therefore presented as follows.

5.1 Socio-demographic characteristics of the respondents

The study results indicated that the mothers who sought ANC services comprised youthful mothers who are aware of Oparanya care services. In both groups, majority of these mothers were married. This implied that most of the respondents had a family which the programme encourages and also they may have interest of

promoting the progress of the Oparanya care programme. The Oparanya care services have been utilized mostly by those with higher level of education, implying that education level showed significant influence on the Oparanya care services. This research findings corroborate the studies done in Zambia (ZDHS,2006) and disagrees with studies done in Tanzania (Mpembeni *et al.*, 2007).

5.1.4 Source of income

Majority of the respondents in the beneficiary category were farmers compared to the non-beneficiary who had formal jobs. The mothers are vetted for Oparanya care services and the vetting seems to successfully identify the mothers who require financial support, since the analysis of the results showed clearly the relationship between benefiting and income level. The results are comparable to studies by (Sridhar,2006) which indicated that mothers and less privileged children benefited in those countries like Mexico and Honduras among others, on the other hand, they contrast studies by (Lim,2010) which showed that beneficiaries were children attending school and those for vaccination).

5.2 Awareness of mothers on Oparanya care service

A significant majority of the women, whether beneficiaries or not were aware of Oparanya care services. The few of the beneficiaries who were not aware of Oparanya care services was attributed to the digital programme operating only in selected hospitals in the county. Indeed, the programme was new and on pilot phase. This can be confirms the findings of studies conducted in Mexico, Colombia and Brazil among others (Sridhar, 2006) and also digital programme development in the county (PD 105/2014).

5.3 Utilization of focused antenatal care in beneficiaries and non-beneficiaries in Oparanya care services.

Mostly, the mothers came to the hospital to seek ANC services, which include delivery, postnatal care, and family planning among others which is an indication of mothers utilizing focused antenatal care services in the county based on available resources. These studies are consistent with those of (Villar and Bergsjo, 1997), who indicated that many developing countries have adopted the traditional approach without adjusting the interventions to meet the particular needs of their population.

5.4 Effects of incentive use on the skilled delivery

The mothers utilized skilled delivery by the fact that they attended the facility and this was influenced by whether one has had pregnancy before. This was evident since majority of the mothers who utilized the incentive were beneficiaries. This finding is supported by previous studies done in other countries such as, Honduras which offer the conditional cash transfers to improve the number of mothers seeking skilled delivery (Lim, 2010). Hence "Oparanya care services" as an incentive significantly improved skilled delivery of mothers in Malava sub-County hospital. This agree with studies by (KDHS, 2004), which indicated that incentives usually makes mothers to seek skilled delivery. This, according to the mothers is that the facility offers a safe assisted births if any as indicated by findings of KDHS, 2004. Those who delivered at home had their reasons as well; TBAs were easily available and friendly and lack of finances, these barriers for choice of delivery point has improved to be a major hindrance of mothers being delivered by skilled attendant (GHO, 2013).

V. Conclusion

6.1 Conclusions

1. Most of mothers are aware and have knowledge on the digital programme offered in the hospital and the county as a whole, a few who were not aware of the programme was attributed to selectivity of Oparanya care programme to a few hospitals in the county. Barriers cited (real or perceived) of mothers seeking health services were distance to the health facility and financial constraints, all this impedes the use or accessibility of skilled delivery in Malava sub-county.

2. Despite the increase of mothers seeking focused antenatal care services improving substantially after the introduction of the digital programme, some of the mothers fail to use FANC services. These pose a huge challenge in improving maternal mortality in the county.

3. The factors that motivate mothers deliver in the hospital is attributed to incentive disturbursement in the Oparanya care programme and safe services among others, cost and distance to the health facility for the skilled care is a major factor, considering the average household income levels, occupation of families and poverty level in Malava sub-county.

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