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High Parity and Low Education are Predictors of Late Antenatal Care initiation among Women in Maternal and Child Health Clinics in Kwale County, Kenya

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Abstract

Background: Timely initiation of antenatal care (ANC) clinic attendance during pregnancy helps identify and reduce risk factors in pregnancy. The World Health Organization (WHO) recommends at least four ANC visits during pregnancy with the first being in the first trimester. In most developing countries including Kenya, the first visit occurs late in some mothers. **Aim:** This study describes ANC attendance by mothers at clinics in Kwale County. It was conducted with the aim of determining factors affecting ANC attendance in two dispensaries in Kwale County. **Design:** A cross-sectional study using quantitative research methods was adopted. **Results:** Two hundred and eighty pregnant women at a gestational age of 20 weeks and above were recruited and interviewed. All the mothers made at least one ANC visit with 19.6% starting in the first trimester. About a quarter of the mothers (24.0 %) came for the first time at nine months gestational age. There was a significant relationship between late ANC initiation and low or no formal education ($p = 0.001$) as well as higher parity ($p = 0.0001$). Mothers with no formal education were four times more likely to initiate ANC clinics late compared to those with secondary or tertiary education (OR = 4.687; CI 1.765 – 12.447). The likelihood of mothers whose husbands had no formal education initiating ANC later was almost three times more likely as compared to those who had secondary or tertiary education (OR = 2.775; CI 1.107 – 6.960). Multiparous women were more likely to initiate ANC clinics earlier compared to grand multiparous women (OR = 0.513; CI 0.223 – 1.183). **Conclusion:** Timely initiation and appropriate ANC attendance was low in Kwale. Low education level and high parity had a significant negative association with timely ANC initiation. There is need for community mobilization and enlightening on the importance of timely ANC attendance for mothers to reap the full benefits of maternal and child health care.

Keywords: Maternal, Antenatal, Child, Health, Parity, Multiparous, Grand multiparous.

Introduction

Proper utilization of antenatal care has been linked to reduced rates of both maternal and infant morbidity and mortality [Sipsma, 2014]. The World Health Organization (WHO) recommends at least four antenatal care visits during a woman's pregnancy. During ANC visits, mothers are given information for their personal care and that of newborns. [WHO, 2012]. Women who do not receive necessary check-ups miss an opportunity to detect problems and receive appropriate care and treatment. The World Health Organization recommends that ante natal care (ANC) clinic visits should start before 14 weeks gestation, during which a prescribed package of preventative, screening, and educational interventions are delivered. The minimum package of ANC services recommended by WHO include: checking for pre-existing health conditions of mothers, timely detection of complications, health promotion and disease prevention as well as birth preparedness. It involves monitoring mother and fetus' health and giving preventive care like tetanus vaccine, iron and folate supplements and malaria prevention measures during pregnancy.

WHO recommends that adequate care for a normal pregnancy that has no complications should comprise a minimum of four ANC visits, with the first occurring within the first trimester [WHO, 2013]. The first visit should occur before 12 weeks of gestation and not later than 16 weeks and afterwards, at 24 - 28 weeks, 32 weeks and 36 weeks. [Exavery *et al.,* 2013] Timely initiation of the first ANC visit allows more time for other visits and facilitates timely detection and management of complications associated with pregnancy. This contributes to the reduction of maternal and newborn morbidity and mortality. [Lassi et al., 2014] In Kenya, utilization of MCH services differs from one county to another and from community to community. The differences in the utilization are attributed to different factors. [Melaku *et al.,* 2014]

A study done in Kwale County revealed that pregnant women perceived health facilities as harsh settings for child birth hence some chose to delivery at their homes. [Wanjira *et al.,* 2011] Women also receive education and counseling on good nutrition, skilled attendance at birth, postpartum care for the women and newborns and prevention of mother-to-child transmission (PMTCT) of human immunodeficiency virus (HIV) during ANC visits. The main objective of this study is to determine the factors affecting ANC clinics attendance in Mwaluphamba and Kizibe dispensaries in Kwale County.

Methodology

Study design

The study was a cross sectional study that employed descriptive research design. It involved interviewing of pregnant women at a gestational age of 20 weeks and above who were attending ANC clinics in Kwale County.

Study site

The study was carried out in Mwaluphamba and Kizibe dispensaries in Kwale County. Kwale County is situated in the coastal part of Kenya. The County has a population of about 700,000 and covers an area of 8270.2km^2. The county has three government hospitals, eight health centers and sixty four dispensaries. Mwaluphamba and Kizibe dispensaries are in Mkongani ward whose population is about 40, 000 and an area of 213.6 km^2.

Sampling and sample size

The study was a baseline survey of a cohort study. Its aim was to determine the effect of maternal and child health service utilization and feeding practices on morbidity and nutritional status of infants in Kwale County, Kenya. Mwaluphamba and Kizibe dispensaries were purposively sampled because of their wider catchment. They fall within Kwale Health Demographic Surveillance System (HDSS). Pregnant women were consecutively recruited during MCH clinics at the dispensaries. They were informed about the study, its aims and requirements. Mother and Child Health (MCH) Cards were used to confirm gestation age. Mothers who were at a gestation age below 20 weeks, had complications or were below 15 years were excluded. The sample size was calculated using Fleiss formula [Fosgate 2009].

Data Collection and Analysis

Data collection was done using a structured questionnaire prepared in English and translated into Kiswahili. Data entry and cleaning was done using Excel while analysis was done using Statistical Package for Social Sciences (SPSS) for windows version 20 (IBM SPSS) Information was based on the mothers recall ability and confirmed from the MCH booklet, where necessary, to increase accuracy.

Mothers who started attending clinics within the first trimester were grouped differently from those who began clinics in the second and third trimester. The primary variable of interest was the timing of initiating ante-natal care while the Independent variables included mother's and partner's levels of education, mother's age, alcohol and tobacco use, employment status and parity. Chi-square tests were used to assess the association between initiation of ANC clinics and socio demographic variables and other characteristics. $P \leq 0.05$ were considered significant. Binary logistic regression was used to assess effect of different variables on the initiation of ANC clinics.

Ethics approval and consent to participate

Approval to carry out the study was obtained from Kenya Medical Research Institute - Scientific and Ethical Review Unit (KEMRI / SERU / CPHR / 003 / 3164). Information about the study and its aims was given to pregnant women. Written informed consent was sought from mothers before the study. Those in agreement were interviewed privately. The pregnant women' identity was not revealed at any one time to maintain privacy. Permission to carry out the study was sort from Mwaluphamba and Kizibe dispensaries where pregnant women were recruited and Kwale County Hospital where referrals were made. Kwale County Ministry of health and Mwaluphamba and Kizibe community leaders were informed of the intended study**.**

Results

Socio-demographic characteristics of study pregnant women

A total of 280 pregnant women were recruited from Mwaluphamba (50.4 %) and Kizibe (49.6 %). Their mean age was 25.1 years. More than half (53.9%) of the mothers were aged between 20 – 29 years. More than one third of the pregnant women, (35.7%) had children below two years. More than two thirds of the families, (65%) had five to ten adult residents, 62 (22%) had less than four and 36 (13%) had more than ten. More than 70% of

the mothers were housewives; about 20% were casual laborers while less than seven percent were employed (Table 1). Fifty two percent of participants had their first ANC visit during the second trimester, 28% during the third trimester and 20% during the first trimester.

Ante Natal Care clinic practices

Concerning ANC practices, twenty percent began attending ANC clinics within the expected first twelve weeks. Subsequently they attended as instructed by the health workers at the clinics. None use of modern contraception methods was high, with almost three quarters (73.1%) giving reason for nonuse as husband disapproval. More than five percent used contraception but stopped due to side effects. About nine percent used contraception but conceived (inconsistent use). Two thirds of mothers (66%) had planned for the current pregnancy yet more than three quarters (75.9 %) of them started attending clinics late. About two thirds (65%) of the pregnant women had not used modern contraception methods before the current pregnancy. Almost ninety percent (89.1%) of those who wanted a child later or had not intended to get pregnant began clinics late. More than ninety percent used insecticide treated nets (ITN). Use of alcohol and tobacco was minimal with 6.1% and 4.6% respectively. More than three quarters of the mothers reported that they had received Iron and folate supplements. Less than ten percent had no records of having received the supplements neither could they tell the kind of drugs they took. More than half of the mothers had received anti-tetanus vaccine. One hundred and sixty seven (60%) had hemoglobin (Hb) levels tested (Table 2).

Determinants of antenatal care clinic initiation

The proportion of women who initiated antenatal care clinics late was high. There was a significant relationship between late ANC initiation and lack of formal education ($p = 0.001$). Parity was significantly associated with initiation of ANC clinics ($p = 0.0001$). The fathers' education level, employment status, number of children below two years and whether the pregnancy was planned had no significant association with the timing of ANC initiation.

Mothers who had no formal education were 4.7 times more likely to start attending ANC clinics later than those who had secondary or tertiary education. Those with primary education were 1.7 more likely to initiate clinics later than those with secondary and tertiary education. The likelihood of mothers whose husbands had no formal education and those with primary education initiating ANC later were 2.8 and 1.7 times respectively as compared to those who had secondary or tertiary education (Table 3). Mothers who had 2 - 4 children were 0.513 times less likely to initiate ANC clinics later than those with five children and above while those in first pregnancy were 0.209 less likely to begin clinic later than those with five children and above.

Table 1: Sociodemographic characteristics and ante natal care clinic visitation among pregnant women attending ANC in Mwaluphamba and Kizibe Health centers in Kwale County, Kenya (N = 280)

Characteristics	Frequency	Percent
Health facility		
Mwaluphamba	141	50.4
Kizibe	139	49.6
Age of expectant mother (n = 267)		
15 - 19 years	59	22.1
20 - 29 years	144	53.9
30 - 39 years	51	19.1
40 - 45 years	13	4.9
Marital status (n = 279)		
Married / staying with a man	256	91.8
Single	19	6.8
Divorced	3	1.1
Widowed	1	0.4
Type of marriage (n = 218)		
Monogamous	182	83.5
Polygamous	34	15.6
Husband' s education level		
No formal schooling	95	33.9
Primary	149	53.2
Secondary	31	11.1
College	5	1.8
Mother's education		
No formal schooling	141	50.4
Primary school	115	41.1
Secondary school	20	7.1
College	4	1.4
Mother's employment status		
Housewife	206	73.6
Casual laborer	55	19.6
Government employee	8	2.9
Self-employed / business	11	3.9
Husband's employment status		
Not employed	45	16.1
Casual laborer	135	48.2
Government employee	18	6.4
Self-employed / Business	82	29.3

Table 2: Antenatal care Clinic practices of mothers in Mwaluphamba and Kizibe Health centers in Kwale County, Kenya.

Variables		Early ANC Initiation n (%)	Late ANC initiation. n (%)	Total n (%)
Use of insecticide treated mosquito nets n = 279				
	Yes	53 (96.4)	202 (90.2)	255 (91.4)
	No	2 (3.6)	22 (9.8)	24 (8.6)
Use of iron / folic tablets during pregnancy n = 279				
	Yes	53 (96.4)	161 (71.9)	214 (76.7)
	No	1 (1.8)	44 (19.6)	45 (16.1)
	Unknown	1 (1.8)	19 (8.5)	20 (7.2)
Anti-tetanus injection n = 278				
	Yes	44 (81.5)	116 (51.8)	160 (57.6)
	No	10 (18.5)	108 (48.2)	118 (42.4)
Use of modern contraception				
	Yes	19 (34.5)	79 (35.1)	98 (35.0)
	No	36 (65.5)	146 (64.9)	182 (65.0)
Pregnancy planned (n = 275)				
	Yes	44 (81.5)	139 (62.9)	183 (66.5)
	No	10 (18.5)	82 (37.1)	92 (33.5)
Respondent's cigarette / tobacco use				
	Yes	3 (5.5)	10 (4.4)	13 (4.6)
	No	52 (94.5)	215 (95.6)	267 (95.4)
Respondent's alcohol use				
	Yes	5 (9.1)	12 (5.3)	17 (6.1)
	No	50 (90.9)	213 (94.7)	263 (93.9)
Hemoglobin levels among pregnant women (n = 167)				
Severe anemia: Hb < 7		3 (5.5)	14 (6.2)	17 (6.1)
Moderate anemia: (Hb 7.0 – 9.0)		8 (14.5)	30 (13.3)	38 (13.6)
Mild anemia: (Hb ; 9.0 - 10.9)		17 (30.9)	39 (17.3)	60 (21.4)
Normal: (Hb > = 10.9)		16 (29.1)	36 (16.0)	52 (18.6)
Unknown (Not yet tested)		10 (18.2)	103 (45.8)	113 (40.3)

Table 3: Factors associated with late initiation of ANC clinic in Mwaluphamba and Kizibe Health centers in Kwale County

Characteristics	Early ANC Initiation (%)	Late ANC Initiation (%)	P value	OR (95% CI)
Mother's education level				
No formal education n = 141	16 (29.1)	125 (55.6)	0.001	**4.687** (1.765- 12.447)
Primary school level n = 115	30 (54.5)	85 (37.8)		1.675 (0.744 – 3.772)
Secondary and tertiary level n = 24	9 (16.4)	15 (6.7)		REF
Husband's education level				
No formal education n = 95	13 (23.6)	82 (36.4)	n.s	**2.775** (1.107 – 6.960)
Primary school level n = 149	31 (56.4)	118 (52.4)		1.675 (0.744 – 3.772)
Secondary and tertiary level n = 36	11 (20.0)	25 (11.1)		REF
Parity				
Primi - gravida; n = 72	25 (45.5)	47 (20.9)	0.0001	**0.209** (0.09 – 0.485)
Multiparous; n = 118	21 (38.2)	97 (43.1)		**0.513** (0.223 – 1.183)
Grand multiparous; n = 90	9 (16.4)	81 (36.0)		REF

Discussion

This study provides baseline results on ante natal care (ANC) clinic attendance, practices and associated factors among mothers seeking maternal and child health services in Kwale County. The findings of low antenatal attendance (19.6%) are similar to what has been previously reported (17.6%) in Kwale. This may be attributable to the fact that a number of them were teenage mothers and those with primary level of education hence they may not have adequate knowledge of available MCH services [KNBS, 2014].

Education level have been reported to be a contributor to timely ANC outcomes in studies elsewhere [Gebrekiden, 2017, Bayou, 2016, Muyunda, 2016 and Rahman, 2017]. For example, in Bangladesh, mothers with higher education levels were more likely to initiate ANC care early while those with high parity and young age were most likely to initiate ANC care late. The high number of teenage mothers promotes late initiation of ANC due to stigma associated with being pregnant and/or pregnancy disclosure. Teenage pregnancies are unplanned hence the increase in late initiation of ANC care. Other studies done in Kenya, Ethiopia and Zambia have reported unplanned / unwanted pregnancies as having a high association to late initiation of antenatal care [Ochako, 2016; Gebrekidan 2017; Sinyange 2016]. Lack of knowledge about pregnancy, pregnancy disclosure,

lack of power to make decisions, poverty, shame among teenagers and cultural beliefs attached to adolescent pregnancy have been reported as reasons for late or inadequate ANC attendance [Exavery 2013, Pell *et al.,* 2013, Gross *et al.,* 2013].

In this study higher parity was associated with late initiation of ANC visits. Similar results have been reported in Ethiopia and Brazil where older multiparous women attended ANC in late pregnancy [Yaya, 2017; Bernardes *et al*., 2014]. This may be due to being accustomed to pregnancy experience, or may feel they have heard enough advice from health professionals. In this case they only need to get the MCH cards to avoid being reprimanded by health care workers [Pell *et al.,* 2013]. Further, such women face pressure associated with multiple number of children in their care hence affecting ANC attendance [Hawley *et al.,* 2014]. Late initiation and utilization of ANC services could be resulting from perceptions of previous pregnancies, time management and scarce resources for big families. It is possible that multiparous mothers, who have greater experience, feel more confident in their pregnancy and consider antenatal care less important.

Late recognition of pregnancy especially among teenage mothers and lack of education have been known to delay ANC initiation as reported in studies in Tanzania, Brazil, American Samoa and industrialized western countries [Gross *et. al.,* 2012 Bernardes *et al.,* 2014, Hawley *et al.,* 2014, and Boerleider, 2013]. A study carried out in Nairobi County's public health facilities revealed that women with less or no education were not able to seek antenatal care services due to lack of maternal health care knowledge and ignorance [Barasa, 2015]. Illiteracy may contribute to a mother not initiating ANC visits early since they are unaware of the number of times they ought to visit the health care clinics as well as the right timing. This has been reported in Uganda where women who are illiterate visited ANC clinics fewer times [Kawungezi, 2015]. Unemployment contributes immensely to ANC attendance. This has been previously reported in Brazil, Pakistan, Eastern Sudan and other developing countries. [Domingues 2013, Sohag 2013, Ali 2010, Ahmed 2010].

Conclusion and Recommendations

Conclusion

This study has revealed that low education levels and high parity are some of the factors that affect early initiation and utilization of ANC in Mwaluphamba and Kizibe dispensaries. The proportion of pregnant women who start antenatal care clinics on time and adequately utilize the services in this region is very low. Although there is free maternity health care in all public health facilities in Kenya, there is need for policy makers to counter hindrances like distance and lack of knowledge on ANC initiation and attendance.

Recommendations

Based on the findings of this study we have the following recommendations to improve maternal and child health service utilization for better health of both the mother and child: To increase the number of dispensaries that provide MCH services, to improve access to information on MCH services, to empower women through better education and economic activities and to encourage mothers overcome cultural practices which are barriers to MCH service utilization. Adolescents and young women who are sexually active should be

encouraged to use family planning methods to reduce unwanted pregnancies. A sustainable approach should be taken by the rural health administrators to provide MCH services without compromising quality or making mothers feel intimidated.

List of Abbreviations

AIDS - Acquired Immunodeficiency Syndrome.
ANC - Ante natal care
HIV - Human Immunodeficiency Virus
MCH - Maternal and Child Health
WHO - World Health Organization

Declarations

Competing interests

The authors declare that they have no competing interests.

Authors' Contributions

NMW designed the study, participated in data collection, analysis and drafted the manuscript for publication. VW, AM, RNL, JN, SK and MK provided scientific advice on the study design, data collection and manuscript preparation. RW provided scientific advice on study design and was involved in analysis and manuscript preparation. All the authors read and approved the manuscript.

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