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# Assessment of pre-eclampsia screening services during antenatal care visits at Bungoma County Referral Hospital, Kenya

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## Abstract

**Background:** Preeclampsia and eclampsia (PE/E) are major contributors to maternal and neonatal deaths in developing countries, associated with 10–15% of direct maternal deaths and nearly a quarter of stillbirths and newborn deaths, many of which are preventable with improved care. Effective screening for pre-eclampsia services is an excellent way of reducing maternal and neonatal mortality and morbidity. The main objective of this study was to determine the availability preeclampsia screening services that are offered to the pregnant women across the antenatal visits in Bungoma County Referral Hospital.

**Methods:** This was a cross-sectional descriptive study involving 282 stratified and randomly selected mothers attending ANC services. Data was collected using a pre-tested semi-structured interviewer administered questionnaire. All the analysis was done using Statistical package for Social sciences (SPSS V.20)

**Findings:** Pre-eclampsia screening services offered included obstetric history (96%), history of twins (88.5%), chronic medical illness (94%) and pressure monitoring (99.6%). Other screening services included urinalysis (49%) and hemoglobintests (65%). Distribution of services decreased steadily from the first to the fourth visit respectively:

**Conclusion and Recommendations:** Pre-eclampsia screening services are offered. However, they are not evenly distributed and they decreased progressively through the four scheduled ANC visits. There is need for continuous medical education to midwives on the need for pre-eclampsia screening through all the scheduled antenatal visits. Early antenatal attendance is mandatory to achieve the four scheduled ANC visits to enable effective and evenly distribution of pre-eclampsia screening service.

**Keywords:** *pre-eclampsia, antenatal care, Screening*

## Introduction

Pre-eclampsia is a serious complication of pregnancy characterized by raised blood pressure and proteins in urine (Tavassoli, Ghasemi, Ghomian, Ghorbani, & Tavassol, 2010). Pre-eclampsia accounts for 5% to 7% of all pregnancies and is associated with

poor maternal and perinatal outcomes (Douglas, Chandra, Hofmey & Dowswell, 2012). In low and middle income countries, eclampsia (complication of preeclampsia) is more common, estimated at 16 to 69 cases per 10, 000 live births (Frias, 2003 in

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Duley and Henderson–Smart & Chou (2010). Globally, 76,000 pregnant women die each year from complications of severe pre-eclampsia (Alkema *et al.*, 2016). Severe pre-eclampsia is associated with high perinatal mortality and morbidity (Sarsam, Shamdem, & Wazan (2008). In Kenya, severe pre-eclampsia (including eclampsia) is the second most frequent direct cause of maternal death (16%) after post-partum hemorrhage (22%).

Pre-eclampsia is associated with complications such as placental abruption, intracranial hemorrhage, hepatic failure, acute renal failure and cardiovascular collapse in pregnant women, while in babies, pre-eclampsia may predispose to intrauterine growth restriction, intrauterine fetal demise, low birth weight or prematurity (Tavassoli, *et al.*, 2010).

Since it is difficult to prevent preeclampsia, early diagnosis by the skilled birth attendants is important so that monitoring and treatment can be initiated early enough to reduce the severity of the disease (Fraser *et al.*, 2010). Accurate prediction of pre-eclampsia would enable early and optimal management pregnant women at risk (Uzan, Carbonnel, Pirconnet *et al.*, 2011). The screening is initiated when a prenatal client goes for her first booking at the hospital. Antenatal care as practiced is insufficient as a prevention strategy for preeclampsia (Urassa, Carlstedt, Nymstom, Massawe, & Linnmark, 2006).

Pre-eclampsia screening in the antenatal clinics in Kenya, especially in public hospitals has not been fully undertaken due to lack of /inadequate equipment such as blood pressure machine (McLntoshi & Washington, 2010; Bell, 2010). According to Osungbade & Ige (2011) inadequate information given to clients and their family on danger signs in pregnancy and where to

seek for help in case of signs of severe pre-eclampsia and eclampsia has resulted to maternal and neonatal morbidity and mortality.

In Kenya, there are missed opportunities for pre-eclampsia screening during ANC which may be attributed to lack of policies and inadequate provider knowledge for pre-eclampsia screening during antenatal period (Koki Agarwal, 2012). Therefore the main objectives of this study were to determine the availability preeclampsia screening services that are offered to the pregnant women and find out how the services are distributed across the antenatal visits in Bungoma County Referral Hospital, one of the public referral facility in Kenya.

## Methods

A cross-sectional study was conducted in Bungoma County Referral Hospital, western region of Kenya. It focused on 282 stratified and randomly selected pregnant women attending Antenatal Clinic at the Maternal Child Health department in Bungoma County Referral Hospital. The study utilized a pre-tested semi-structured questionnaire and checklist as the research instruments. After obtaining approval for the study from Institutional Research and Ethics Committee (IREC), Moi University and permission from Bungoma County Hospital administration, data collection was spearheaded by the researcher, being assisted by the research assistants, who were identified and trained. Written informed consent was obtained from the sampled participants before enrollment into the study. Confidentiality was maintained. Data was extracted from the identified clients' antenatal booklets and keyed into the checklists. Semi-structured questionnaire was administered to the skilled birth attendant. The questionnaires were coded

and entry into the computer. Data analysis was done using Statistical Package for Students Service V.20. Descriptive statistics (frequencies, means and standard deviation) were used to summarize the data.

## Results

### *Socio-demographic characteristics*

Number of respondents' equivalent to 34.37% attending antenatal clinic were aged between 21-25 years; followed by those aged 26-30 years (26.1 %), those below 20 years and between 31-35 years were 24.29% and 10.08% respectively. The least represented age group was above 41 years at 1.6%. Majority of the participants (97.21%)

had a minimum of primary school education with only 2.79% not attending any formal educational institution. Over 90% of the participants were married while only 56.4 % had a formal source of income.

### *Pre-eclampsia Screening Services offered*

The pre-eclampsia screening services offered included obstetric history, history of twins, chronic medical illness and smoking. Other screening services included blood pressure monitoring, urinalysis and hemoglobin tests and abdominal palpations (Figure 1).

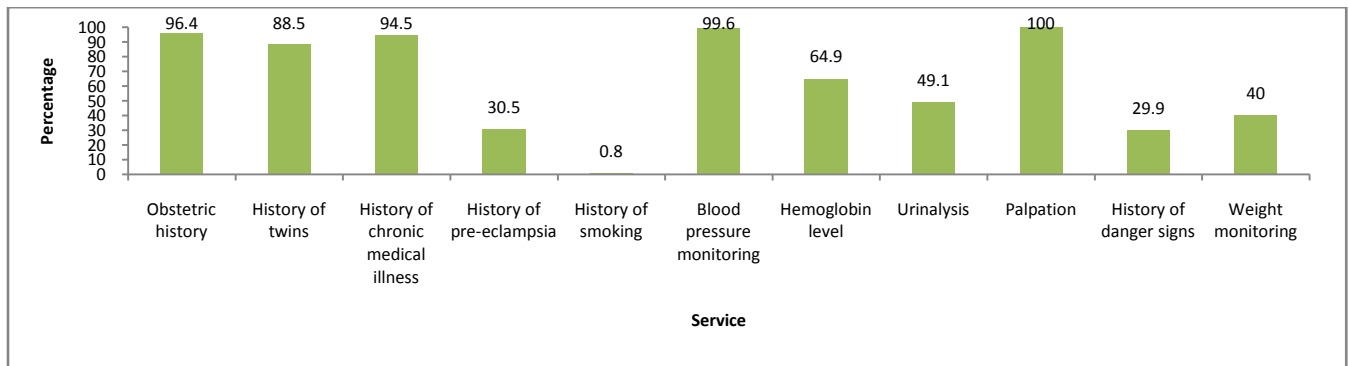


Figure 1: Pre-eclampsia Screening Services

The distribution of ANC visits among the participants decreased steadily from the first to the fourth visit (Figure 2). Screening

services for preeclampsia were also majorly concentrated during the first antenatal visit.

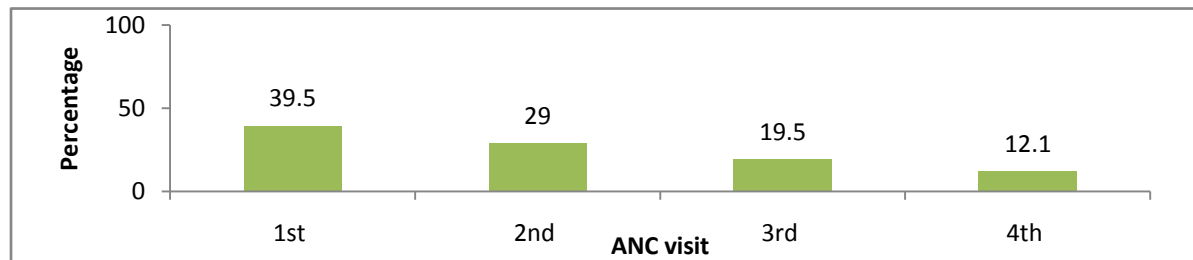


Figure 2: Distribution of ANC visits

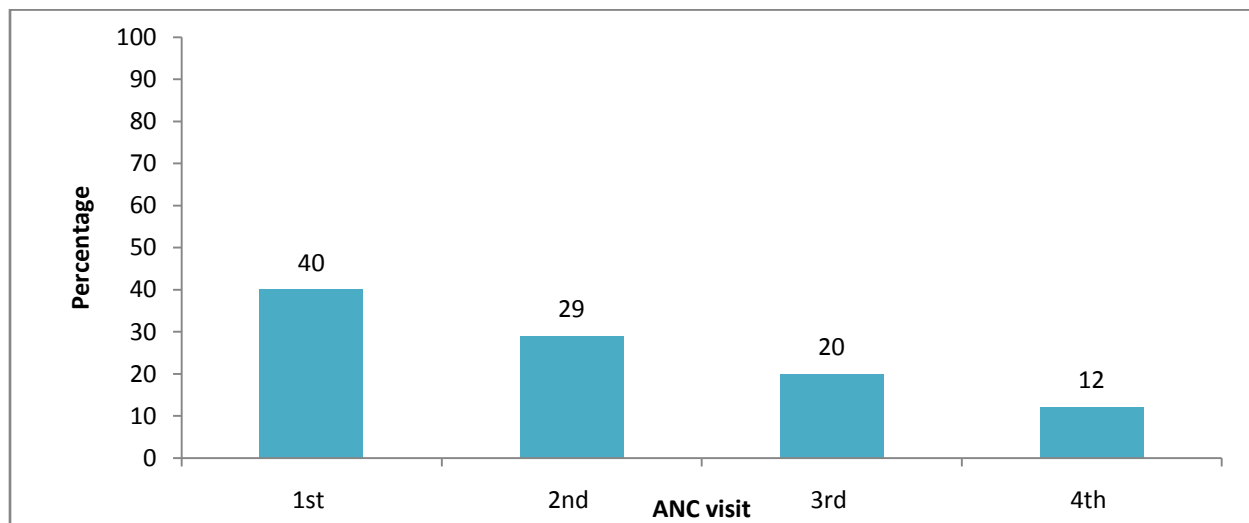


Figure 3: Distribution of weight monitoring across clinic visits

Screening for obstetric history decreased with the decreasing number of clients from the first through the fourth visit respectively.

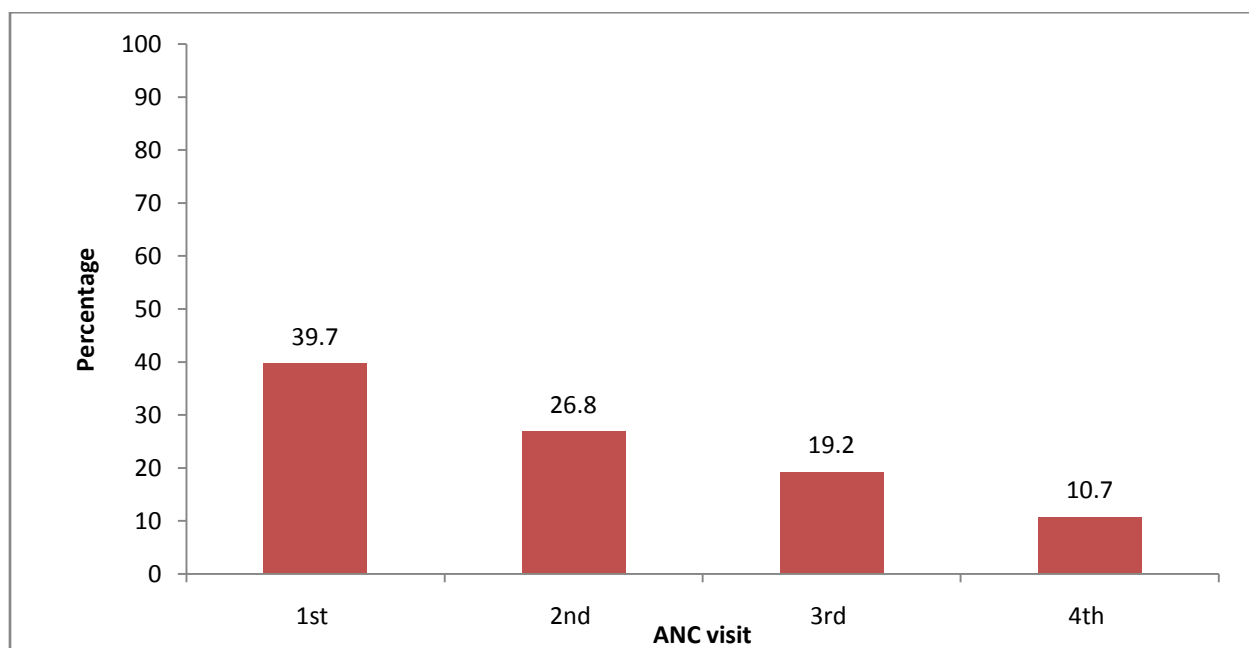
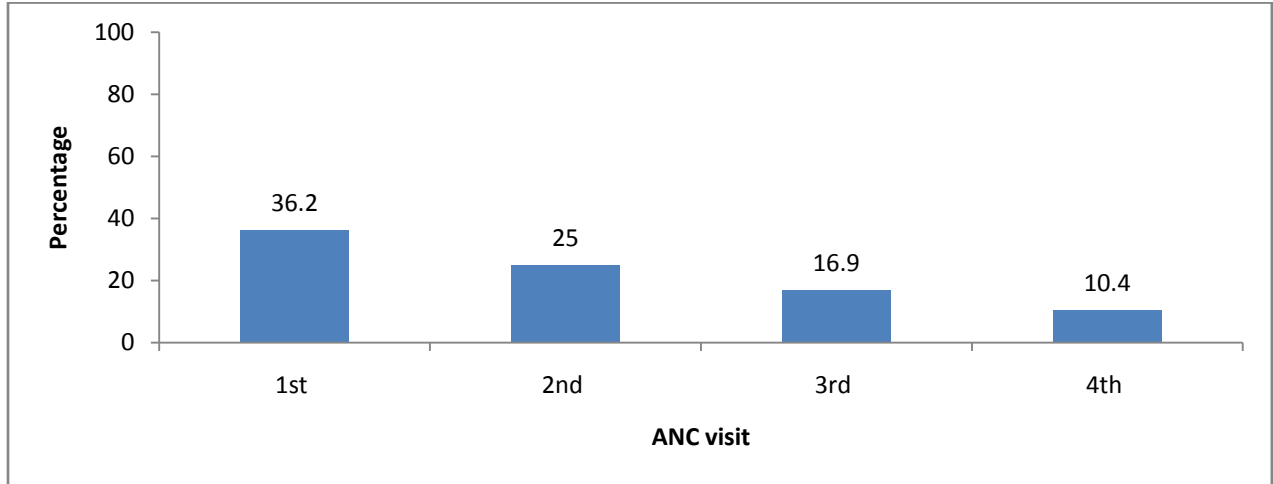
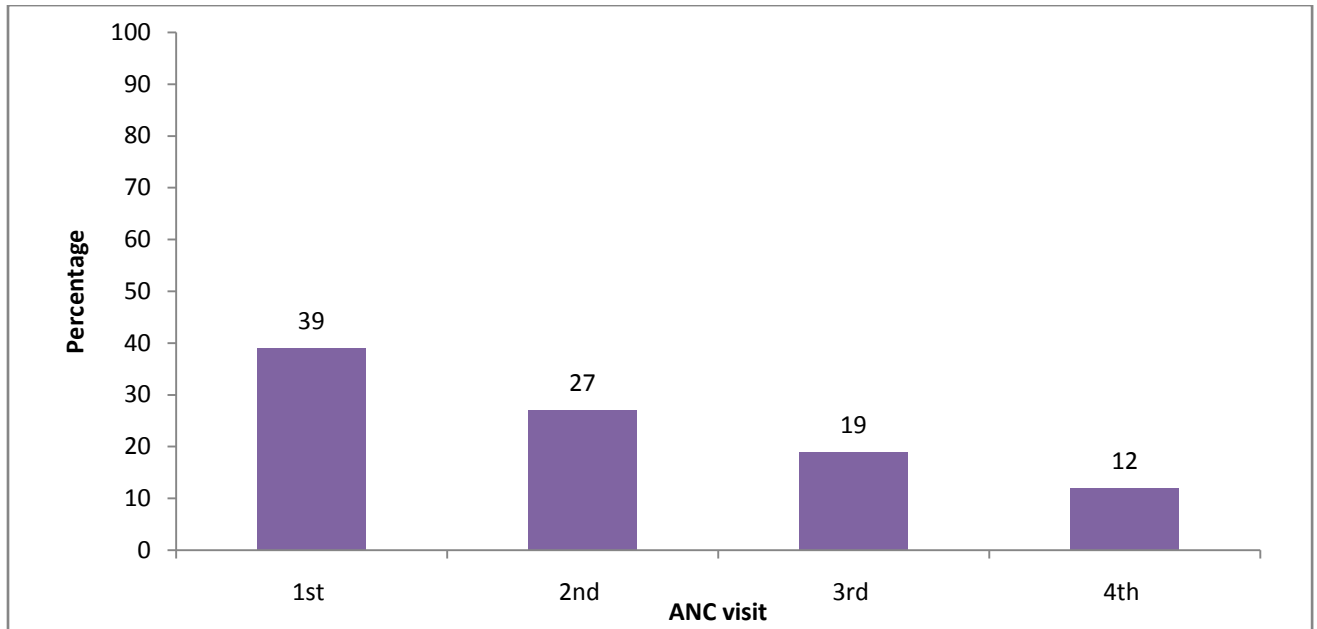


Figure 4: Distribution of screening for obstetric history

Distribution for screening for history of twins was high during the first ANC visit but then reduced respectively through the subsequent visits.



*Fig 5: Distribution of screening for history of twins*



*Figure 6: Distribution of non-screening for smoking history*

Weight monitoring was done to majority of clients as shown in figure 7

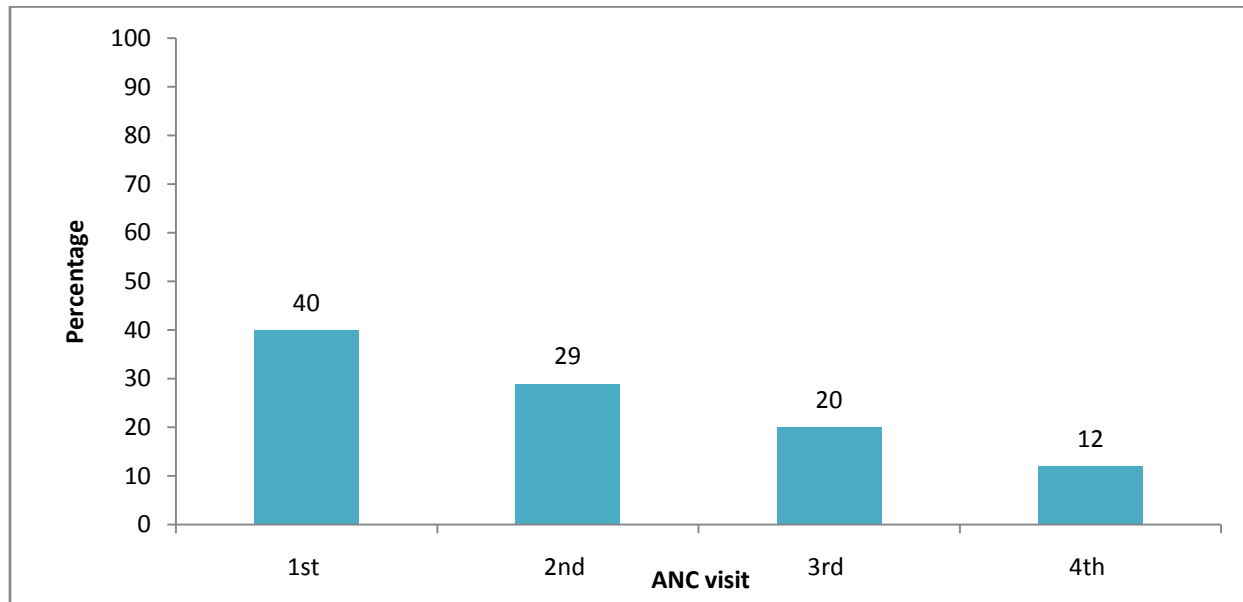


Figure7: Distribution of weight monitoring across clinic visits

Majority of the clients were screened for haemoglobin level during the first ANC visit. The number screened dropped during

the second visit but was again intensified during the 3<sup>rd</sup> and 4<sup>th</sup> visit.

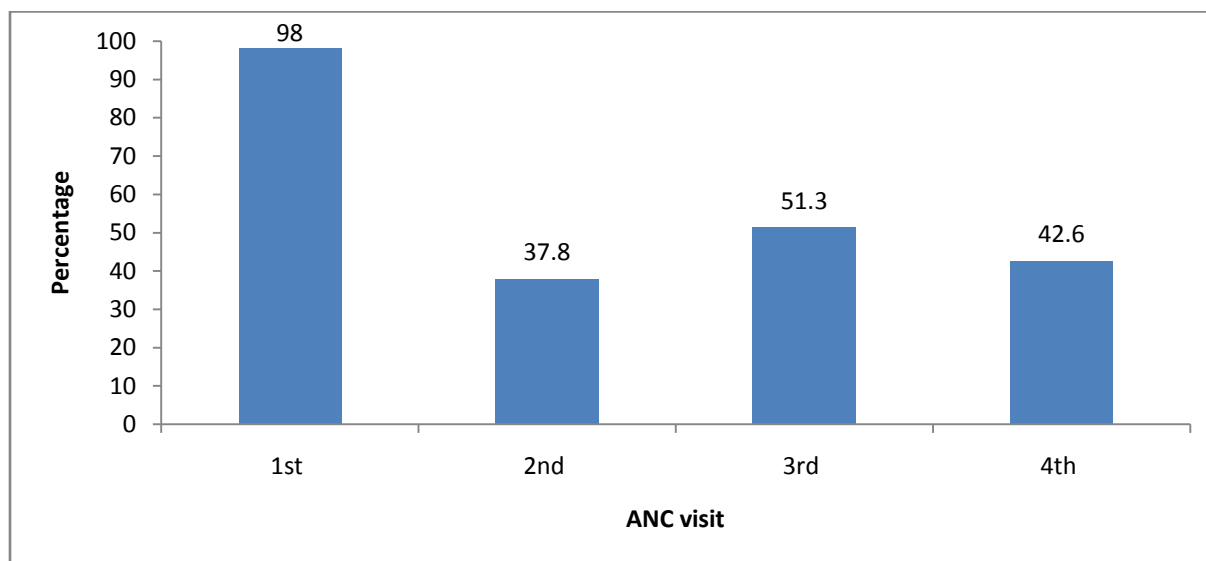


Figure 8: Distribution of hemoglobin count screening across ANC schedule

Majority of the clients (over 97%) were screened for proteins in urine, dropping through the 2<sup>nd</sup> and 3<sup>rd</sup> visits only to pick up again during the 4<sup>th</sup> ANC (21.3 %) as shown in figure 9.

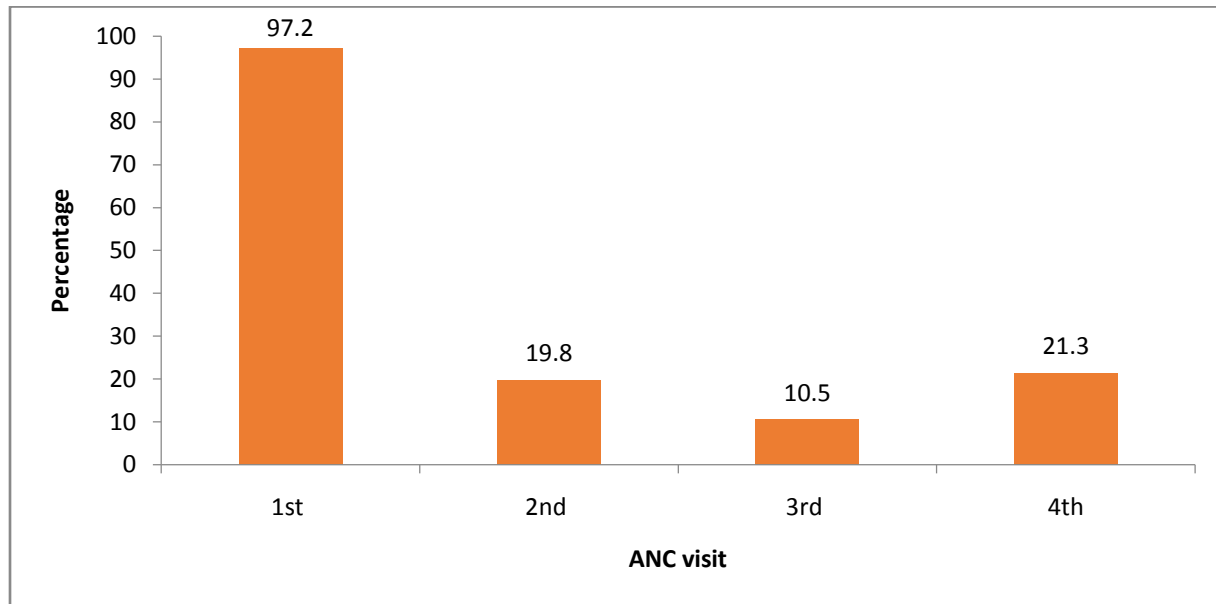


Figure 9: Distribution of Urinalysis screening

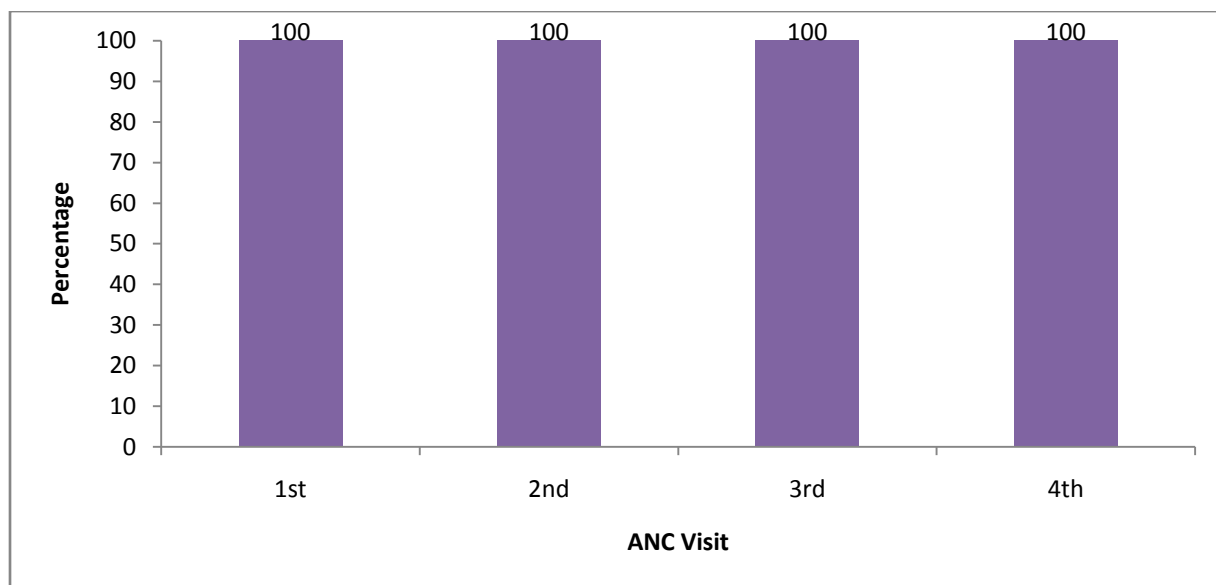


Figure 10: Distribution by palpation

Majority of the clients were not screened for danger signs across the ANC visits. All the clients were palpated across the Four ANC (figure 10)

Majority of the clients (over 80%) were asked when their last delivery took place (figure 11)

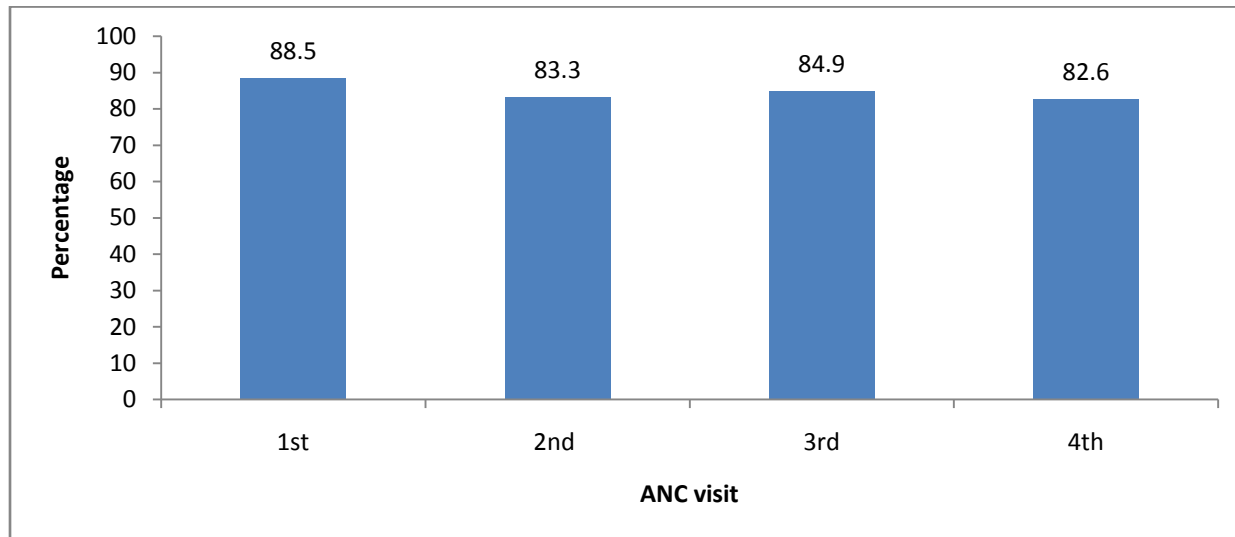


Figure 11: Distribution by history of last delivery

## Discussion

The study established that preeclampsia screening services were being offered to pregnant women attending antenatal clinic in Bungoma County Referral Hospital. The study agrees with Fraser *et al*, (2010) and Uzan *et al* (2011) since pre-eclampsia is unlikely to be prevented, screening for preeclampsia by the skilled birth attendants is important so that monitoring and treatment can be offered to those at risk to reduce severity of the disease for better pregnancy outcomes.

According to Poon & Nicolaides (2014) screening by combination of maternal risk factors can identify about 95 % of case for patients at risk for preeclampsia. Therefore agreeing with Poon & Nicolaides, it was established in this study that the following preeclampsia screening services were offered to the antenatal clients: Social demographic data: Age, education, marital status, employment; Physical examination: blood pressure monitoring, weight monitoring, head to toe examination and abdominal palpation; laboratory tests to include: Haemoglobin level and urinalysis; health education on danger signs to include:

blurred vision, severe headache, epigastric pain among others. The study agrees with following studies which emphasis on the preeclampsia screening during antenatal period Duley, Shireen & Abalos, 2006) and Maternal Guidelines Development Group Therapeutic Committee (2010). Churchill, (2013) and Akolekar *et al*, (2011) agrees with this study that Pre-eclampsia presents in several ways, therefore health providers have to be vigilant so that all pregnant women are screened for preeclampsia.

The study also established that other preeclampsia screening services offered to ANC mothers included obstetric history; history of twins, previous history of preeclampsia, history for chronic medical illness and history of smoking. This is in line with Wagner *et al*, (2004) and Osungbade & Ige, (2011) who report that baseline investigations for preeclampsia should be performed early in pregnancy for all women to determine pregnant women at risk.

The study established that a lot of emphasis was put on blood pressure monitoring (99%); obstetric history 96%, history of chronic medical illness (94%) and history of



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twins (89%). The findings are higher than those found in a retrospective study done in Tanzania (Fraser *et al.*, 2010), where screening for blood pressure was 85% while proteinuria was 33%. The free antenatal services given to pregnant women in Kenya in all public hospitals could be the basis for the increase in this study.

In this study, 65% were screened for history of preeclampsia in the previous pregnancy (ies). According to Ministry Of Medical Services & Ministry Of Public Health Services(2010) and Milne *et al.*, (2005) previous pre-eclampsia is associated with early onset of pre-eclampsia in the current pregnancy that may result in to adverse perinatal outcomes and therefore the importance of screening clients. Family history of pre-eclampsia increases a woman's risk of developing pre-eclampsia herself (Clinical Protocols and Guidelines Maternity All Sites, 2010). The study agrees with Simon, Carlle, Perrotin & Giravdeau, (2013) and MOMS/MOPHS (2010) that health care worker should document the occurrence of preeclampsia during previous pregnancies.

All participants were done physical examination including abdominal palpation. The study supports Bell (2010) who states that since effective measures and screening tools for preeclampsia are presently inadequate, routine nursing assessment of the signs and symptoms indicative of pre-eclampsia or eclampsia remain critical to the detection, monitoring and effective management of the pre-eclampsia.

Majority (99%) of the clients had their blood pressure taken during the antenatal visits. The findings agree with KDHS (2014) that all pregnant women were taken Blood pressure. Measurement of blood pressure is the major factor to screening for pre-eclampsia and part of routine antenatal care,

whose aim is to create awareness on the importance of high blood pressure (Duley *et al.*, 2009). Accurate monitoring of Blood pressure is importance (Poon & Nicolaide, 2014).

Majority (>95%) of the clients were not informed about the danger signs in pregnancies which include severe headache, drowsiness, mental confusion, epigastric pain, nausea/ vomiting, a sharp rise in blood pressure, abdominal pains, generalized body swelling and convulsions. The findings are lower than the 58% by KDHS (2014). 64.9% of the participants in this study were screened for hemoglobin level compared to 100% by KDHS (2014). However the trend of findings was slightly higher than the 53% found by KDHS (2003). The complete blood count is helpful where the major signs of preeclampsia are absent; Proteinuria and hypertension (Fraser *et al.*, 2010).

### **Conclusion and Recommendations**

Pre-eclampsia screening services are offered at Bungoma county Referral Hospital. The services that are mostly offered include; social demographic factors that help screen for preeclampsia are age, marital status, source of income; obstetric history, history of twins, urinalysis, history of chronic medical illness, blood pressure monitoring, and hemoglobin level. The most conspicuously missing screening service was history of smoking. However the preeclampsia screening services are not done systematically across the ANC visits. The services kept on decreasing in number from the 1<sup>st</sup> through the 4<sup>th</sup> visit respectively.

The services decreased progressively through the four visits due to the reducing clients' numbers. Most clients initiate antenatal visits late in pregnancy (during the second and third trimester) and therefore end up not completing the four ANC visits since

they will have delivered. The study recommends that skilled birth attendants should ensure that all ANC clients are offered all the pre-eclampsia screening services. In addition, the facility management should put emphasis on continuous medical education to reinforce the importance of pre-eclampsia screening services and other services across the scheduled antenatal clinic visits.

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