Original Article

Pregnancy Outcomes and Associated Factors among Older Women in Adeoyo Maternity Teaching Hospital, Ibadan, Nigeria

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Abstract

Background: As women increasingly delay child bearing, the proportion of women having their first delivery at advanced maternal age is expected to rise. The proportion of women aged 35years and older in prenatal medical and obstetrical services has increased significantly over the past 30 years.
Objectives: The objectives were to examine the documented incidence of pregnancy among older women, to identify outcomes of pregnancy among older women and to examine factors influencing pregnancy outcomes among older women in Adeoyo Maternity Teaching Hospital (AMTH), Ibadan, Nigeria
Methods: The case files of 423 women were selected purposively among pregnant women aged ≥35years old within the period of 3years (January, 2013 and December, 2015). A 43-item checklist was used to retrieve information from the case files. The variables were analysed using the SPSS version 20.0.
Results: The study shows that 0.5% of the women suffered ectopic pregnancies, 10.6% experienced birth complications, drugs were administered to 91.9% of the women during labour, 6.9% had postpartum haemorrhage, 2.8% had eclampsia and 3.5% of the 423 women had puerperal sepsis. Factors such as age at marriage, age at first pregnancy, marital status, educational status, maternal body mass index, maternal morbidities before pregnancy onset and disorders of pregnancy among others were found to influence pregnancy outcomes in older women
Conclusion: Some sociodemographic characteristics and many obstetric factors are responsible for women to be pregnant at advanced age. Hence, this group of pregnant women are prone to some complications and therefore will benefit from professional individualised care.

Key words: Maternity care; Maternal health; Older women; Pregnancy.

Introduction

As women increasingly delay child bearing, the proportion of women having their first delivery at advanced maternal age is expected to rise. Nevertheless, the older woman is a socially constructed category, demonstrated in its varying definitions as a woman who is either thirty years (Shelton & Johnson, 2006), thirty-five years, forty years or forty-five years old, when she becomes a mother. Progressively, this has become more common in our contemporary society. Evidently, such pregnancy is regarded as high risk (Eleje et. al., 2014).

In Southern Nigeria, there is a high rate of perinatal deaths especially among older women. This is associated with high rates of unbooked pregnancies resulting in difficult labours, ruptured uterus, chorio-amnionitis, preterm/low-birth

weight babies and severe neonatal asphyxia (Ibekwe et. al., 2011). Unbooked status, foetal indication (foetal distress, prematurity, abnormal lie), emergency sections, and general anaesthesia may lead to poor Apgar scores and the need for active resuscitation.

The knowledge level of pregnant women about obstetric danger signs (during pregnancy, childbirth and postpartum period) is low and affected by residential area according to a study conducted in Ghana (Mesay, Abebe & Fessahaye, 2010). Women who are pregnant or planning a pregnancy after age 35years may have psychological needs that can be met in perinatal care or through referrals to appropriate services.

This study aimed to explore the various outcomes of pregnancy among older women attending maternity care services in Adeoyo Maternity Teaching Hospital, Ibadan, Oyo State, Nigeria.

Research questions and hypothesis

The study aimed to answer the following research questions:

1. What is the documented incidence of pregnancy among older women?
2. What are the outcomes of pregnancy among older women?
3. What are the factors influencing pregnancy outcomes among older women?

The hypotheses:

1. There is no significant relationship between the health status of the neonates and the antepartum health status of their mothers.
2. There is no significant relationship between age at first pregnancy and age at marriage.
3. There is no significant relationship between maternal educational status and neonatal health status at birth.
4. There is no significant relationship between Maternal Body Mass Index (BMI) and Pregnancy outcomes.

Background

Primiparous women aged 35years and above are at increased risk of complications in pregnancy and are at higher risk of caesarean section compared

with younger women. Older parturient have a higher risk of medical disorders of pregnancy. They are more likely to deliver by caesarean section and have low birth weight babies than their younger counterparts (Orazulike et. al., 2015).

Like all women in the postpartum period, women over age 35years need support (Rindfuss, 2011). Some women over age 35years have fewer family supports than younger women. This may be related to their geographic distance from their own extended family, or because their parents are elderly, coping with their own changing needs and/or health issues, or perhaps have passed away (Olusanya & Solanke, 2012). Women who have experienced foetal losses or have taken some time to conceive may be looking for reassurance that their pregnancy is going well. They may feel anxious about the shift to regular prenatal care, due to the reduced health care provider contact (Rajaee et. al., 2010). Service providers have an important role in supporting women through the difficult aspects of pregnancy after age 35years.

Methodology

Study design: This study was a retrospective descriptive study of pregnancy outcomes among older women (women aged 35years and older) who had used Adeoyo Maternity Teaching Hospital (AMTH), Yemetu, Ibadan for perinatal care services from January, 2013 to December, 2015 (3years).

Study setting: A retrospective descriptive study was conducted at Adeoyo Maternity Teaching Hospital (AMTH), Yemetu, Ibadan, Oyo State, Nigeria.

Adeoyo Maternity Teaching Hospital (AMTH) is a state-owned General hospital located in Ibadan city, Oyo State, Nigeria. It is highly patronized by Ibadan residents especially those of low and middle socioeconomic status. It also serves as a referral centre for many primary health centres and private clinics within Ibadan and its environs. The antenatal clinic experiences rapid influx of clients with as many as about 4000 monthly and 12,000-50,000 annually. The antenatal clinic of Adeoyo Maternity Teaching Hospital is run on all weekdays. It has a 16-bedded labour ward which records a delivery rate of about 900 monthly and 4,000-45,000 annually. Adeoyo is a Yoruba word

which means "Crown of Oyo". The hospital has been very famous for the high rate of delivery it records. This it owes partly to the affordability of the health care services provided especially to the low and middle economic class as well as its central location in the Ibadan community. It is fondly called the Ibadan baby factory since the rate of natality is high in the hospital. Adeoyo Maternity Teaching Hospital is a secondary health care centre and maternity hospital which also serves the purpose of teaching and research in Ibadan.

Sample size determination: To arrive at the sample size, the Chochran 1963:75 (2012) was used:

$n = \frac{z^2 pq}{e^2}$ calculated at a confidence level of 95%

n= sample size z= constant 1.96 (z^2 is the abscissa of the normal curve) e= desired level of precision

p= prevalence of 50% q= 1-p z= 1.96, p= 0.5, hence q= 1- 0.5= 0.5, e=0.05

$n = \frac{(1.96)^2 (0.5)(0.5)}{(0.05)^2}$ n= 385

In order to cater for 10% attrition, 38 more checklists were added to make a total of 423 checklists.

Sampling technique: A purposive sampling technique was used to select a sample of 423 case files of pregnant women from ages 35years and older per year as emerged from January, 2013 to December, 2015 at the selected hospital, Adeoyo Maternity Teaching Hospital (AMTH), Yemetu in Ibadan.

Data Collection and analysis: Variables of interest including gestational age at booking, number of antenatal visits, antenatal complications, gestational age at delivery, duration of labour, delivery method, birth complications, drugs administered during labour/dose, foetal presentation, number still births, number of miscarriages, birth-weight of the neonate, sex of the neonate, Apgar score, plurality, presence of congenital anomalies, medical attendant and maternal morbidity available were selected from the available case files and recorded on 423 self-designed 43-item checklists.

The variables were analyzed using the SPSS version 20.0 software. All the 423 checklists were found adequate for data analysis. The odds ratio was calculated. Relationships between maternal age, number of antenatal visits, age at marriage, age at first pregnancy, body mass index, maternal antepartum health status and selected obstetrical variables as well as their effect on pregnancy outcomes were assessed using the chi-squared test and the Pearson correlation test. Differences were considered statistically significant when p≤0.05. An ordinal multinominal logistic regression test was also carried out to predict the effects of all identified factors on the pregnancy outcomes recognised.

Ethical approval: Ethical approval was obtained from the Oyo State Ethical Review Committee and the management of Adeoyo Maternity Teaching Hospital (AMTH), Yemetu, Ibadan, Oyo State. All records selected for use by the Researcher were kept private and anonymity of subjects was ensured. To this extent, case files under observation were identified with numbers rather than the names of the subjects.

Results

Socio-demographic characteristics of respondents

Case files of 423 older women were recruited into this study. Most of the women fell within the age bracket of 35years to 38 years (78.5%, 332), 77 (18.2%) women fell within the age bracket 39years to 42 years and 14 (3.3%) women fell within the age bracket 43years to 46 years. The mode of their ages which is the age difference between the oldest and the youngest woman was 11years and the mean age was 41.3±5.1years. Virtually all the women were married (96.7%, 409) and the rest divorced (3.3%, 14). See table 1 displays more information.

Incidence of pregnancy in older women

The incidence of pregnancy in the older women among all women attending maternal care services in Adeoyo Maternity Teaching Hospital (AMTH), Yemetu, Ibadan was calculated below using the point Prevalence Rate (PR) formula

Point Prevalence Rate (PR) =

$\frac{Number\ of\ cases\ with\ the\ condition\ or\ disease\ at\ a\ given\ point\ in\ time}{Number\ in\ the\ Population\ at\ risk\ of\ being\ a\ case}$

$\times K$

Where K= Number of People for whom we want to have the rate established (1000),

Number of cases with the condition at a given point in time (3years) = 423, which is the sample size calculated for this study, and

Number in the Population at risk of being a case = 3× 45 000 = 135 000, which is the estimated total population of women who patronized the maternal care services of the hospital for the three years under study.

The Prevalence Rate of Pregnancy in 1000 older women was thus:

$$PR = \frac{423}{135\,000} \times 1\,000 = 3.13$$

PR= 3.13. This is approximately 3 in 1000 pregnant women. This implies that 3 out of every 1000 pregnant women who attend the maternal care services of Adeoyo Maternity Teaching Hospital (AMTH), Yemetu, Ibadan are 35years old or above.

Pregnancy outcomes among Older Women

As shown in Table 2, outcomes such as ectopic pregnancy, birth complications, postpartum haemorrhage, eclampsia and others were observed among older women.

Neonatal Pregnancy Outcomes

As shown in Table 3, outcomes such as still birth, plurality, congenital anomalies and miscarriages were observed in the neonates born to older women.

Factors Contributing to Pregnancy Outcomes in Older Women

As revealed in Table 4, factors such as age at marriage, age at first pregnancy, maternal body mass index, estimated gestational age at booking and others were found to influence pregnancy outcomes among older women.

Testing of Hypotheses

Pearson correlation and chi-square tests were carried out to determine the relationship between the observed outcomes and factors. The results are presented in Tables 4-7.

Hypothesis 1: Table 5 shows that there is no significant relationship between the health status of the neonates and the antepartum health status of their mothers.

Hypotheses 2: Table 6 reveals that there is no significant relationship between age at first pregnancy and age at marriage

Hypothesis 3: Table 7 shows that there is no significant relationship between maternal educational status and neonatal health status at birth

Hypothesis 4: table 8 shows that there is no significant relationship between Maternal Body Mass Index (BMI) and Pregnancy outcome.

Table 1   Sociodemographic Characteristics of the pregnant older women

Variables	Frequency	Percentage (%)
Age Groups		
35 to 38	332	78.5
39 to 42	77	18.2
43 to 46	14	3.3
Marital Status		
Married	409	96.7
Divorced	14	3.3
Religion		
Christianity (Christian)	204	48.2
Islam (Muslim)	219	51.8
Ethnic Group		
Yoruba	402	95.0

Igbo	13	3.1
Hausa	2	0.5
Others	6	1.4
Educational Status		
Primary	89	21.1
Secondary	234	55.3
Tertiary	100	23.6
Occupation		
Teaching	97	23
Trading	324	76.6
Military work	2	0.4
Occupational Status		
Unemployed	13	3.1
Self-employed	324	76.6
Private-employed	22	5.2
Government-employed	64	15.1

Table 2: Outcomes of Pregnancy among Older Women (N= 423)

Variables	YES (%)	NO (%)
Ectopic Pregnancy	2 (0.5)	421 (99.5)
Birth complications	45 (10.6)	378 (89.4)
Drugs administered during labour	389 (91.9)	34 (8.1)
Postpartum haemorrhage	29 (6.9)	394 (93.1)
Ecclampsia	12 (2.8)	411 (97.2)
Puerperal Sepsis	15 (3.5)	408 (96.5)
Prolonged labour	30 (7%)	393 (93%)

Table 3: Pregnancy Outcomes in the Neonates (N= 423)

Pregnancy Outcomes	Present (%)	Not Present (%)
Still Birth	26 (6.1)	397 (93.9)
Miscarriage	18 (4.3)	405 (95.7)
Congenital anomalies	11 (2.6)	412 (97.4)
Plurality	12 (2.8)	411 (97.2)

Table 4: Factors Contributing to Pregnancy Outcomes in Older Women

Variables	Min	Max	Mean	Std. dev.
Age at marriage (years)	15	36	25.72	4.26
Age at first pregnancy (years)	15	38	25.77	4.82
Maternal Body Mass Index (kg/m²)	15.10	41.40	25.30	10.42
Estimated gestational age at booking	19	40	28.95	5.24
Number of antenatal visits	1	11	3.88	1.72

Table 5: Relationship between the health status of the neonates and the antepartum health status of their mothers

		Gestational age at booking	Apgar score of neonates
Gestational age at booking	Pearson Correlation	1	-0.548
	Sig. (2-tailed)		0.012
	N	423	423
Apgar score of neonates	Pearson Correlation	-0.548	1
	Sig. (2-tailed)	0.012	
	N	423	423

Table 6: Relationship between age at first pregnancy and age at marriage

		Age at first pregnancy	Age at marriage
Age at first pregnancy	Pearson Correlation	1	0.701
	Sig. (2-tailed)		0.000
	N	423	423
Age at marriage	Pearson Correlation	0.701	1
	Sig. (2-tailed)	0.000	
	N	423	423

Table 7:

a)   Cross tabulation of Level of Education against Apgar Score of Neonates

		Apgar Score of neonates			
		High (7-10)	**Moderate (4-6)**	**Low (0-3)**	**Total**
Level of Education	Primary	63	22	4	89
	Secondary	201	30	3	234
	Tertiary	72	19	9	100
	Total	336	71	16	423

b)   Chi-Square Tests of Level of Education against Apgar Score of Neonates

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	53.186	6	0.000
Likelihood Ratio	42.596	6	0.000
No. of valid cases	423		

Table 8:

a)   Cross tabulation of Maternal B.M.I. and Pregnancy Outcome

		Pregnancy outcome			
		Live birth	**Still birth**	**Miscarriage**	**Total**
Maternal B.M.I.	Under-weight	39	6	3	48
	Normal	173	11	8	192
	Over-weight	94	10	6	110
	Obese	60	9	4	73
	Total	366	36	21	423

b)   Chi-Square Tests of Maternal B.M.I and Pregnancy Outcomes

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	39.993	8	0.028
Likelihood Ratio	33.969	8	0.037
No. of valid cases	423		

Discussion

A total of 423 case files were examined. They belonged to women aged between 35years and 46years. The mode of their age which is the age difference between the oldest and the youngest of all the older women was 11years and the mean age was 41.3±5.1years. Virtually all the women were married (96.7%, 409) and the rest divorced (3.3%, 14). 51.8% (219) of the women were Muslims while 48.2% (204) of them were Christians. 95% (402) of the women were Yoruba, 3.1% (13) of the women were Igbo, 0.5% (2) of the women were Hausa and women from other ethnic groups including Tiv and Urhobo were responsible for the remaining 1.4% (6). Majority of the women were traders (76.6%), 23% were teachers including those working in private and Government-owned schools and 0.4% of them were military officers. Most of the women had formal education to a considerable extent. 3.1% (13) of the women were unemployed, 76.6% (324) of the women were self-employed, 5.2% (22) of the women were private-employed and 15.1% (64) of the women were government-employed.

The point prevalence rate formula was used to determine the incidence of pregnancy in older women. Results showed that 3 out of every 1000 pregnant women who attend the maternal care services of Adeoyo Maternity Teaching Hospital (AMTH), Yemetu, Ibadan are 35years old or above.

Maternal aspects of pregnancy outcomes included postdatism (40.8%), prolonged labour (labour of greater than 18hours) was observed in 30 (7%) of the women, hypotonic uterine contraction (33.6%), postpartum haemorrhage (6.9%) puerperal sepsis (3.5%), pre-ecclampsia (9.6%), ecclampsia (2.8%) all requiring between 1-6days of hospitalization after delivery. 14.7% of the women had no complaints antepartum and this same trend followed post-partum for this category. Close to 95% of them received medications during labour. Childbirth methods included caesarean delivery (2.4%), induction of labour (5%), augmentation of labour (10.6%) and vaginal delivery (82%). The higher the maternal age, the greater the risk for some complications in labour and birth (Tabcharoen et. al., 2009). This was equally observed during this study. Older parturient have a

higher risk of medical disorders of pregnancy. They are more likely to deliver by caesarean section and have low birth weight babies than their younger counterparts as shown by a study conducted in Port-Harcourt, Nigeria (Orazulike et. al, 2015). These as shown by the results were also found to occur here in Ibadan. This suggests that birth complications and delivery of low birth weight neonates occur more in older women than in younger women.

Above 50% of the neonates were male (52.2%). The mean birth weight of the neonates was 3.22kg while apgar scores ranged from 0 to 9 and the mean score was 7. Neonatal aspects of pregnancy outcomes identified included still births (6.1%), miscarriages (4.3%), plurality (2.8%) and congenital anomalies (2.6%). The live singleton and normal neonates accounted for 84.2%. Congenital anomalies including talipes equionovarum, Down syndrome, imperforate anus, polydactyl and anencephaly were observed. Studies showed that stillbirth rates rise with maternal age (Reddy, Ko & Willinger, 2006) and this further suggests that babies born to older women have greater chances of being born with congenital anomalies. The rate of foetal loss increases with age and there is a steep increase after age 35years (Nybo et. al., 2000). Result from the study agreed with this finding.

Factors influencing Pregnancy Outcomes among Older Women

Age at index pregnancy: The age at index pregnancy was a very important factor likely to influence pregnancy outcomes among this group of women. Most of the women are multiparous women while about 10 percent were elderly primiparous women who had miracle babies.

Marital status and age at marriage: Another factor found to contribute to pregnancy outcomes is the marital status of the women. Women who got married at age 17years-19years as well as those who got married in their early 20s got pregnant earlier than women who were divorced and/or who married in their 30s. Some of the women had multiple marriages or were exposed to sexual activity early in life. Such women had their first pregnancy at age 15years-17years but had ages 25years-30years recorded as their age at marriage. The results of this study prove that the older a

woman becomes, the more at risk she is with each pregnancy. Therefore, marriage at older age should be discouraged.

Maternal Educational status: In this study, the women with tertiary education had better pregnancy outcomes than those with lesser educational status. This implies that the more educated the older woman is, the better the chances that she has adequate knowledge to care for herself and her baby.

Maternal Body mass index: In Midwifery care, it is no myth that a normal range of maternal body mass index, foetal head engagement and normal range of foetal birth weight are factors associated with vaginal delivery in nulliparae. Variations in these three factors may be the underlying reasons for failure to progress, which is the most common indication for caesarean section among the elderly primips (Adeyemi, Adekanle &Afolabi, 2014). In this study equally, the elderly primiparous women were found to suffer this complication the more, thereby suggesting this is true. Women with body mass index values less than 18.5kg/m² and those with body mass index values greater than 25kg/m² had a higher incidence of pre-eclampsia, induction of labour, caesarean section, pre-term labour and other complications which led to foetal demise. They also experienced miscarriage and still births more compared to women whose body mass index values were between 18.5kg/m² and 24.9kg/m².

Estimated Gestational age at booking: In Southern Nigeria, there is a high rate of perinatal deaths especially among older women which is associated with high rates of unbooked pregnancies resulting in difficult labours, ruptured uterus, chorio-amnionitis, preterm/low-birth weight babies and severe neonatal asphyxia (Ibekwe et. al., 2011). These were also found to hold in the group of older women studied by the Researchers. The older women who booked their pregnancies early during pregnancy experienced better outcomes compared to those who booked late.

Compliance with antenatal care regimen: The number of antenatal visits is another factor which influenced pregnancy outcomes among the older women. The more the antenatal visits, the better the pregnancy outcomes. It was observed that the older women who booked their pregnancy late into the third trimester (34weeks-38weeks) of their pregnancy had little medical monitoring. However, the ones who booked early (14-20weeks) had better medical monitoring. Hence, the latter came out with better pregnancy outcomes than the former. A similar trend was also observed with the need for the obstetrician and paediatrician's presence at birth in women who booked for antenatal care late into the third trimester of their pregnancy as they formed the bulk of those who developed birth complications. Therefore, early booking to access prenatal care should be emphasized to older women before and during pregnancy.

Hypotheses Testing: The statistical values in table 5 show that the earlier the mother books the pregnancy, the more likely she is to deliver an alive and well neonate at p=0.012 which is less than 0.05. Hence, there is a significant relationship between the antepartum health status of the older mother and the health status of the neonates.

Table 6 shows that the there exists a very significant relationship (p=0.000) between the age at marriage of the older women and age at first pregnancy. This implies that the earlier a woman gets married, the more likely she is to deliver before reaching advanced maternal age.

Tables 7b shows that there is a very significant and proportional relationship between the maternal level of education and the neonatal health status at birth with a p-value of 0.000. Older women who had tertiary education demonstrated the best neonatal outcomes compared to their counterparts who had primary and/or secondary level of education. This implies that the more educated the older woman is, the better her chances of birthing a healthy baby.

Table 8b shows that there exists a proportional relationship between maternal body mass index (B.M.I) and Pregnancy outcome (p=0.028). Older women with an above-normal Body Mass Index value had higher incidence of pre-eclampsia, induction of labour, caesarean deliveries, pre-term labour and other complications which are signs of poor pregnancy outcomes leading to miscarriage, foetal demise, fresh still birth, birth trauma and premature delivery. In conclusion, increased B.M.I. increases the risk of not having a live birth.

Conclusion: This study has provided information on the outcomes of pregnancy in older women as well as documented factors responsible for them. Hence, serving as an alert to health care professionals, women and research consumers at large to the outcomes of pregnancy at advanced maternal age. Pregnancy in older women is a high risk obstetric condition. Pregnant older women will benefit greatly from advanced maternal care services. Health care professionals should always be on constant look out for this group of parturient and seek ways to enhance positive pregnancy outcomes in them.

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