

## Comparative Assessment of Unintended Pregnancy at Urban and Rural Hospitals in Enugu State, Nigeria

Johnpaul Ejikeme Nnagbo<sup>1</sup>, Euzebus Chinonye Ezugwu<sup>2</sup>, Charles Okwudiri Adiri<sup>3</sup>, Joseph Okike Ezugworie<sup>4</sup>, George Onyemaechi Ugwu<sup>5</sup>, Theophilus Ogechukwu Nwankwo<sup>6</sup>, Emmanuel Onyebuchi Ugwu<sup>7</sup> and Louisa Chinonso Nnagbo<sup>8</sup>

<sup>1</sup> Department of Obstetrics and gynaecology, University of Nigeria Teaching Hospital, Ituku/Ozalla, Enugu State.

<sup>2</sup> Department of Obstetrics and Gynaecology College of Medicine, University of Nigeria/ University of Nigeria teaching Hospital Ituku/Ozalla, Enugu state. <sup>3</sup> Department of Obstetrics and Gynaecology College of Medicine, University of Nigeria/ University of Nigeria Teaching Hospital Ituku/Ozalla, Enugu state. <sup>4</sup> Department of Anatomy, College of Medicine, University of Nigeria/ University of Nigeria Teaching Hospital Ituku/Ozalla, Enugu state. <sup>5</sup> Department of Obstetrics and Gynaecology College of Medicine, University of Nigeria/ University of Nigeria Teaching Hospital Ituku/Ozalla, Enugu state. <sup>6</sup> Department of Obstetrics and Gynaecology College of Medicine, University of Nigeria/ University of Nigeria Teaching Hospital Ituku/Ozalla, Enugu state. <sup>7</sup> Department of Obstetrics and Gynaecology College of Medicine, University of Nigeria/ University of Nigeria Teaching Hospital Ituku/Ozalla, Enugu state. <sup>8</sup> Department of ophthalmology, University of Nigeria Teaching Hospital, Ituku/Ozalla, Enugu state.

### ABSTRACT

**Background:** Unintended pregnancy continues to be an important reproductive health issue globally because of its associated maternal morbidities and mortality. Recently, anecdotal evidence suggested that unintended pregnancy rates were higher among antenatal women in the rural than urban areas of Nigeria. However, there is still scanty data in this subject in Nigeria. **Objectives:** To determine and compare the prevalence of unintended pregnancy among antenatal women at the rural and urban hospitals and to determine the predictors of unintended pregnancy at the rural hospitals in Enugu state, Nigeria. **Materials and Methods:** A cross-sectional comparative study which was carried out among antenatal women at 4 General hospitals in Enugu state; from April to July 2019. Ethical approval was obtained from Health Research Ethics Committee (HREC) of UNTH Enugu while permission was gotten from Enugu State Hospital Management Board (ENSHMB) prior to commencement of the study. All eligible antenatal attendees who consented to the study were interviewed using a semi-structured questionnaire until a sample size of 1160 was reached. The data was analyzed using IBM SPSS version 20.0. **Results:** Prevalence of unintended pregnancy among antenatal women in the rural versus urban hospitals was 30.6% Vs 24.6% ( $p=0.029$ ,  $OR=1.352$ ,  $1.030-1.773$  at 95% CI). The factors associated with unintended pregnancy at the rural hospitals include marital status and non-use of contraceptives.. **Conclusion:** The prevalence of unintended pregnancy among antenatal women in the rural General hospitals of Enugu state, Nigeria was higher than those in the urban and was associated with being single and non-use of contraceptives.

**Keywords:** Mistimed; pregnancy; Unintended; unwanted

### OPEN ACCESS

#### \*Correspondence:

Dr. Nnagbo Johnpaul Ejikeme,  
Department of Obstetrics and  
Gynaecology,  
University of Nigeria Teaching  
Hospital, Ituku/Ozalla,  
Enugu State, Nigeria.  
Tel: +2348066731322  
Email: jesp7200@yahoo.co.uk

#### Specialty Section:

This article was submitted to  
Medicine, a section of TJMR

Received: 26 July 2022

Accepted: 22 September 2022

Published: 6 November 2022

#### Citation:

JE Nnagbo, EC Ezugwu, CO Adiri,  
JO Ezugworie, GO Ugwu, TO  
Nwankwo et al. Comparative  
Assessment of Unintended  
Pregnancy at Urban and Rural  
Hospitals in Enugu State, Nigeria.  
Trop J Med Res. 2022;21(2):39-48.  
DOI:10.5281/zenodo.7558488

#### Access Code



<http://tjmr.org.ng>

## INTRODUCTION

Unintended pregnancy is a pregnancy reported to have been either unwanted (pregnancy occurred when no more children were desired) or mistimed (the pregnancy occurred earlier than desired).[1] It has long been known as a global health problem with substantial negative consequences for women, their families and the society.[2-3] Complicated induced abortion which can easily result in maternal mortality if not properly handled remains the greatest challenge associated with unintended pregnancy because it is a prelude to maternal mortality. Illegal and unsafe abortion from unintended pregnancy is responsible for 7 million women admitted to hospital and 4.7-13.2% of maternal deaths recorded each year in the developing countries.[4] It was also estimated that the cost of treating complications of unsafe abortion is high, nearing 600 million US dollars yearly in the developing countries.[4-6] This is why reducing maternal mortality remains a serious challenge in Nigeria, as unsafe abortion from unintended pregnancy remains one of the major contributors.[7] Reportedly, unsafe abortion is one of the leading causes of maternal deaths in Nigeria and Enugu state in particular.[8] Research evidence has shown that the cause of unintended pregnancy is multifactorial, with non-use of contraceptive services, contraceptive failure, and rape being implicated.[9] As unmet need for contraception rose from 16 to 19% between 2013 and 2018 in Nigeria, concurrent rise in unintended pregnancy rate and its consequences is anticipated.[10-12] Factors such as age, educational attainment, race, ethnicity, income and relationship status have been associated with the unintended pregnancy.[13-16] Women who are more educated, economically more viable and married are less likely to have unintended pregnancy compared to unmarried, less educated and economically less privileged women. These factors typically characterize the population of women seen in rural communities, but there are still divided opinion in literature on whether

women's place of residence increase the prevalence of unintended pregnancy or not.[13,15,17,18] However, in southeastern Nigeria, there is very scanty data about this subject.[13] Hence, an in-depth study of unintended pregnancy among women who live and attend ANC in rural and urban hospitals in Enugu state was embarked on. The finding of this study will help policy-makers, government and non-governmental organizations in making policies and planning reproductive health programs targeted at reducing the rates of unintended pregnancy in the state. The study therefore, determined and compared the prevalence of unintended pregnancy among antenatal women at the rural and urban hospitals and factors associated with unintended pregnancy at rural hospitals in Enugu state.

## MATERIALS AND METHODS

### Study Design

This was a cross-sectional comparative study carried out on antenatal attendees at the rural setting (Awgu and Udi) general hospitals and those in urban setting (Uwani and Polyclinic) general hospitals. The study was conducted over a 4-month period; from April to July, 2019.

### Study Area

Enugu state is one of the states in the southeastern part of Nigeria created in 1991 from the old Anambra state with Enugu as its capital. The human population of the state is over 3.8 million and population density of 585.49 per square kilometers, with a land area of 7,161km<sup>2</sup>. [19] The demographic characteristic of the state is such that there are 17 local government areas.[20] Enugu metropolis (urban) is made up of Enugu North, South and East local government areas with preponderance of the population engaged in civil service and trading, while the other local government areas outside Enugu Urban are largely rural areas. The rural areas are occupied by mixture of civil servants, traders and farmers and include Awgu, Udi, Aninri, Ezeagu,

Igbo-etiti, Igbo-Eze North, Igbo-Eze South, Isi-Uzo, Oji-River, Udenu and Uzo-Uwani predominantly agrarians. Enugu state currently has 7 general hospitals; all of which are secondary health facilities and include Polyclinic, Uwani, Udi, Nsukka, Agbani, Enugu-Ezike, Ikem and Awgu General Hospitals. Of this 7 general hospitals, polyclinic and Uwani General Hospitals are located in Enugu metropolis (Urban).

### Study Population

The pregnant women attending antenatal clinics at the Awgu, Udi, Uwani and Polyclinic General Hospitals in Enugu state were studied. Awgu General Hospital provides healthcare services including antenatal services to the people of Awgu and its environs. The hospital serves as a referral center to the Cottage Hospitals, Primary Health Care clinics and Health Posts within Awgu and the neighboring Aninri LGA. The Antenatal Clinics were predominantly conducted by the midwives but high-risk cases were seen by the medical officers. An average of 15 pregnant women attends antenatal care weekly. Complicated cases that could not be handled at the General hospitals were referred to the University of Nigeria Teaching Hospital, Ituku/Ozalla which is the nearest tertiary health institution that provides specialist care to the district and its environs. Udi General Hospital had similar organogram as Awgu but an average of 20 pregnant women attends antenatal care weekly, while referrals were sent to University of Nigeria Teaching Hospital Ituku/Ozalla.

Polyclinic is an urban district (general) hospital that provide antenatal Care to pregnant women within Enugu metropolis. It serves as a referral hospital to the Cottage Hospitals and Primary Health Centers within Enugu metropolis. Polyclinic remains one of the most active district hospitals with an average of 40 antenatal patients registering weekly for care. The antenatal clinics were conducted by both midwives and medical officers. Those antenatal women with low-risk pregnancies were often attended to by midwives

while those at increased risk of complications were seen by the medical officers. The complicated cases that could not be handled there were often referred to the Enugu State University Teaching Hospital (ESUTH), Parklane, a state tertiary health facility that offer specialist care to patients within Enugu Metropolis (urban). Similarly, Uwani General Hospital had similar organogram as the polyclinic and also located within Enugu Metropolis. An average of 30 pregnant women attended antenatal care in this facility each week

### Inclusion Criteria

Pregnant women who received antenatal care at the study centers were included in the study.

### Exclusion Criteria

Pregnant women who refused to give an informed consent to participate in the study, those that conceived through in vitro fertilization and woman with abnormal pregnancies such as molar, ectopic pregnancies were excluded from the study

### Sampling Technique

The two urban hospitals (polyclinic and Uwani) were purposively selected as controls while Udi and Awgu General Hospitals were selected from the 6 rural hospitals by simple random selection technique. All women who received antenatal care at the study centers and consented to the study were consecutively recruited. They were interviewed with questionnaire at each antenatal day until the minimum sample size was reached. Each participant was given a study number at first contact which was written on their cards for identification and helped in avoiding multiple inclusion into the study.

### Sample Size calculation

The sample size was calculated using the sample size formula for comparing two proportions.[21]. Having considered 10% attrition rate, a minimum sample size of 580 participants were included at the urban hospitals and 580 in the rural hospitals.

### Materials and data collection

A semi-structured questionnaire was developed to enable data collection from participants. The questionnaire had 3 essential sections: basic socio-demographic variables, assessment of pregnancy intentions/planning and contraceptive practice. It contained both structured and semi-structured questions. The pregnancy intention aspect of the questionnaire was adapted from a validated London Measure of Unplanned pregnancy (LMUP) questionnaire.[22] This was a psychometrically validated measure of the degree of intention/planning of a current or recent pregnancy. The LMUP measured both pregnancy planning and intention; and also used the words interchangeably. It is made up of six (6) questions; each with 3-4 items scored 0,1 or 2. The scores were added to form an ordinal variable scale of 0-12, with each increase in score reflecting an increase in pregnancy intention. This was interpreted thus: scores 0-3 were seen as unplanned/unintended, 4-9 was ambivalent while 10-12 was interpreted as intended/planned. Unintended pregnancy was the main outcome variable. In this study, women with pregnancy intention score < 10 (including ambivalent and unplanned) were considered unintended while score =10 were intended.[23] The third aspect of the questionnaire centered on modern contraceptive practice and services at each of the centers.

Four (4) research assistants were trained on data collection. Data were collected at every antenatal clinic day. The patients were counseled immediately after their health talk in group. Consent to participate in the study was obtained before questionnaires were administered. The participants filled their questionnaires on the spot while those who could not understand English language were assisted by the researcher or the assistance to translate to Igbo language. Before the questionnaires were collected from the participants, they were cross-checked for proper filling.

#### Data Analysis

The data collected were entered and analyzed using statistical package for social sciences (IBM SPSS version 20.0). Analysis was descriptive and inferential. Descriptive statistics was used to summarize categorical variables such as tribe, religion, marital status, occupation, social class, level of education and pregnancy intention and presented as frequencies and percentages. Means and standard deviation were obtained for continuous variables such as age. Associations between categorical variables was done using chi-square and Fisher's exact where appropriate. P-values less than 0.05 was regarded as significant. Results were presented in tables and charts.

#### Ethical Approval

This was obtained from Health Research Ethics Committee (HREC) of the University of Nigeria Teaching Hospital, Ituku/ Ozalla, Enugu State. Reference No: *NHREC/05/01/2008B-FWA00002458-1RB00002323 (UNTH/CSA/329/OL.5)*. Before data collection began, a written permission was obtained from Enugu State Health Management Board and from various study centers

#### Operational Definitions

Mistimed pregnancy is pregnancy wanted at a later date than the time of conception.[24]

Unwanted pregnancy is pregnancy occurring when no children is desired.[24]

Urban Area: are towns with 5000 inhabitants or more whose occupation are not mainly Agrarian.[25]

Rural area: Settlements with population < 5000 people.[25]

#### RESULTS

Of the 1160 questionnaires used in the study 1053(90.8%) were properly filled. The remaining 107(9.2%) were incompletely filled and were excluded from analysis. Of the 1053 respondents' data analyzed, (520 /1053, 49.4%) were from the rural hospitals; giving a non-response rate of 10% while (533/1053, 50.6%) were from the urban hospitals with a non-response rate of 8.1%. The



**Table 1: Sociodemographic characteristics**

	Place of residence		$\chi^2$	P value
	Rural n (%)	Urban n (%)		
<b>Age group</b>				
<20	19 (3.7)	17(3.2)	38.698	< 0.001
20–24	148(28.5)	120(22.5)		
25–29	211(40.6)	175(32.8)		
30–34	85(16.3)	144 (27.0)		
35–39	47(9.0)	77 (14.5)		
40–44	10(21.9)	0 (0.0)		
<b>Tribe</b>				
Igbo	516 (98.5)	519 (97.4)	7.716	0.052
Yoruba	2 (0.8)	3 (0.6)		
Hausa	2 (0.8)	4 (0.8)		
Others	0 (0.0)	7 (1.2)		
<b>Marital status</b>				
Single	31(6.0)	27 (5.1)	0.406	0.524
Married	489 (94.0)	506 (94.9)		
<b>Parity</b>				
Primigravida	138 (26.5)	165 (31.0)	2.507	0.113
Multigravida	382 (73.5)	368 (69.0)		
<b>Number of living children</b>				
0	142 (27.3)	192 (36.0)	9.230	0.002
=1	378 (72.7)	341 (64.0)		
<b>Level of education</b>				
No tertiary	156 (30.0)	273 (51.2)	49.089	< 0.001
Tertiary	364(70.0)	260(48.8)		
<b>Employment status</b>				
Employed	161 (31.0)	315 (59.1)	84.132	< 0.001
Unemployed	359(69.0)	218 (40.9)		
<b>Husband's occupation</b>				
Artisan	111 (21.3)	113 (21.2)	38.372	< 0.001
Skilled	231 (44.4)	178 (33.4)		
Unskilled	87(16.7)	64 (12.0)		
Professionals	91 (17.6)	178 (33.4)		

**Table 2: Association between unintended, Mistimed and Unwanted pregnancy and place of residence**

Preg. Intention LMUP* score	Place of residence		P value	OR	95% C.I for OR
	Rural N=520 (%)	Urban N=533 (%)			
Pregnancy Intention					
(<10)Unintended	159 (30.6)	131 (24.6)	0.029	1.352	1.030–1.773
(=10) Intended	361(69.4)	402(75.4)			
Mistimed pregnancy					
Yes	168 (32.3)	99(18.6)	<0.001	2.092	1.573–2.783
No	352(67.7)	434(81.4)			
Unwanted Pregnancy					
Yes	35(7.9)	24(4.5)	0.023	1.815	1.080-3.050
No	479(92.1)	509(95.5)			

LMUP\* London Measure of Unplanned Pregnancy

**Table 3: Factors associated with unintended pregnancy among women in the rural area**

Variables	Pregnancy Intent. N=520		P value	OR	95% C.I for OR
	Unintended n (%)	Intended n (%)			
<b>Age group</b>					
< 35	144 (31.1)	319(68.9)	0.459	1.264	0.679–2.353
=35	15 (26.3)	42 (73.7)			
<b>Marital status</b>					
Single	25 (80.6)	6 (19.4)	< 0.001	11.039	4.430-27.503
Married	134 (27.4)	355 (72.6)			
<b>Parity</b>					
Primigravida	43 (31.1)	95 (68.9)	0.862	1.038	0.681-1.581
Multigravida	116(30.4)	266 (69.6)			
<b>Number of living children</b>					
0	51 (35.9)	91 (64.1)	0.105	1.401	0.931-2.109
= 1	108 (28.6)	270 (71.4)			
<b>Level of Education</b>					
No tertiary	54(34.6)	102 (65.4)	0.191	1.306	0.875-1.949
Tertiary	105 (28.8)	259 (71.2)			
<b>Employment status</b>					
Employed	47 (29.2)	114 (70.8)	0.646	0.909	0.605-1.365
Unemployed	112 (31.2)	247 (68.8)			
<b>Contraceptive prior to pregnancy</b>					
Use	27 (57.4)	20 (42.6)	< 0.001	3.488	1.891-6.432
Non-use	132 (27.9)	341 (72.1)			

mean age of the respondents was 27.8±5.06 years (range = 17- 42 years). They were mainly Igbos (98.3%, n=1053), married (96.1%, n=1053), and with tertiary level of education (59.3%, n= 1053). The details are shown in table 1.

The overall prevalence of unintended pregnancy among the study population was 27.5% (290/1053). The prevalence of unintended pregnancy was significantly higher among the pregnant women that attend antenatal care in the rural hospital than those in the urban hospital (30.6% Vs 24.6%; OR=1.352, CI 1.030-1.773, p=0.029). This suggests that the prevalence of unintended pregnancy may be higher in rural areas compared to those living in urban setting. The prevalence of mistimed pregnancy was almost two times higher among the antenatal women in the rural hospital than those in urban hospitals (32.4 Vs 18.3 %; OR= 2.092, 95% CI 1.573-2.783, P<0.001). Also, the prevalence of unwanted pregnancy was significantly higher among antenatal women at the rural than urban hospitals (7.9 Vs 4.5%, OR= 1.815, 95% CI =1.080-3.050, p=0.023). Details are shown in table 2.

The study demonstrated that marital status and contraceptive use among women who attend antenatal care in the rural area were significantly associated with unintended pregnancy (P<0.001). Rural women who are single were 11 times more likely to have unintended pregnancy than the married ones (OR =11.039, 95% CI= 4.430-27.503) (table 5). Similarly, antenatal women in the rural hospitals who used contraceptives prior to the index pregnancy were 3 times more likely to have unintended pregnancy than those who did not (OR =3.488, 95% C.I =1.8916.432); Details are shown in table 5.

## DISCUSSION

The higher prevalence rate of unintended pregnancy in the rural hospitals may be due to the higher rate of unmet needs for contraception and

non-contraceptive use which characterize the rural areas in Nigeria. This high figure is in agreement with the findings at the 2018 Nigerian NDHS and reports by Sutton et al in USA, Ayele et al in Ethiopia, Palamuleni et al in Malawi, Habib et al in Pakistan and Goicolea et al in Ecuador. [4,11,18,23,26-27] The finding simply suggests that 3 out of 10 antenatal women at the rural hospitals in Enugu state have unplanned pregnancy. This prevalence possibly would have been higher should the validated psychometric measure of pregnancy intention (LMUP) not be used in the study. The LMUP gives true prevalence than mere report by participants of pregnancy intention.[28,29] However, in the current study, interpretation was carefully done to accommodate the adjustment made by Habib et al in their study.[22] Lawani et al and Sedgh et al reported even higher prevalence rates of unintended pregnancy in the rural compared to urban hospitals in other parts of Nigeria.[6,13] However, these studies did not use psychometric measure of pregnancy intention as in the current study. But this finding differs from result by Sabahelzain et al in Sudan who reported higher prevalence of unintended pregnancy prevalence in Urban than rural women (34 vs 28%), though was not statistically significant.[30]

The factors associated with unintended pregnancy at the rural General hospitals as was found in this study include marital status and contraceptive use. Marital status and contraceptive use were significantly associated with unintended pregnancy in both rural and urban hospitals. Marital status as a predictor of unintended pregnancy found in this study was similar to previous reports from other environments. [13,27,31-32] According to this finding, being single, residing and attending ANC in the rural hospital was associated with 11 times risk of having unintended pregnancy. This risk may be heightened by the fact that single ladies are often faced with sociocultural, socioeconomic and religious issues associated with unintended pregnancy in this environment, especially in the rural communities. [16,18] Contraceptive use was significantly associated with unintended pregnancy in the rural hospitals in this

study. This is in-keeping with the findings by Ayele et al who found that more women who received contraceptives were reported to have had unintended pregnancies compared to those who did not use contraceptives.[33] Women in the rural hospitals were 3 times more likely to have unintended pregnancy when they used contraceptives prior to the index pregnancy. This may simply imply that there is high rate of contraceptive failures or inconsistent and incorrect use among antenatal women in the rural General hospitals. This may be due to poor contraceptive education and counseling prior to use; considering that they may not have access to good contraceptive counselors or may lack access to the internet.[34] Furthermore, it may also be due to the fact that women in the rural areas are socioeconomically disadvantaged and may not be able to have access to the most effective contraceptives.[1] The other possible explanation is non-use of contraception due to unavailability, partner dislike, fear of side effects and religious belief as have been reported in a study.[13] The implication of high rates of non-use of contraception is rise in unintended pregnancy rates with its attendant complications. This is in-keeping with studies by Lawani et al in Abakaliki, Sabahelzain in Sudan and Habib et al in Pakistan, Agida et al in Abuja and Tayo et al in Lagos. [13,26,28,35-36] but in contrast to the finding by Goicolea et al in Ecuador.[27]

In this study, though young age was demonstrated to be associated with unintended pregnancy like in previous studies, [4,13,26-27] after segregating into two age groups (<35 and =35 years), it was shown not to be a predictor of unintended pregnancy among antenatal women in both rural and Urban Hospitals. It is known that women who are young are likely to be single and single status has been known to be associated with high unintended pregnancy rate. However, the reason young age was not associated with unintended pregnancy in the current study was not clear. Women who reside and attend antenatal care at the

rural hospital were 2 times more likely to have mistimed pregnancy than those at the urban hospitals. This finding may be partly explained by the significant proportion of the participants in the rural areas who did not use contraception, low socio-economic (husbands' occupation), no tertiary education and unemployment status which characterized the rural population. This finding agrees with report by Sutton *et al* in the USA who noted that factors responsible for the observed disparity in the urban -rural unintended pregnancy rates lie in the local socioeconomic disadvantages in the rural areas. [18]

Moreover, women who reside and attend antenatal care at the rural hospitals were also 2 times more likely to have unwanted pregnancy than those in the urban area. This may be due to young age (20-24), single status, women of parity = 1, having tertiary education, being employed and having husbands who were unskilled. This finding is partly in-keeping with the report by Palamuleni et al in Malawi.[26] The implication of this finding is that as our women acquire tertiary education more pregnancies may become unwanted in the urban areas. Again, as long as premarital pregnancies remain a sociocultural issue in our environment, many pregnancies in the rural areas will remain unwanted.[37] The study population was limited to only participants who were seen at the booking clinic, leaving out pregnant women in the communities who are not booked for ANC at all. Therefore, the result of this study may not be a true reflection of the prevalence of unintended pregnancy in the general population. Furthermore, as a questionnaire-based study, the reliability of the information provided by participants remains questionable since they are subjective rather than objective.

## CONCLUSION

Using LMUP score, the prevalence of unintended pregnancy is higher among antenatal women who reside and attend antenatal care at the rural than urban hospitals in Enugu state.

**Acknowledgement:** We acknowledge the Hospital Management Board (HMB), Enugu State Ministry of Health for authorizing the research to be carried out at their General Hospitals.

**Author contributions:** NJE and ECE conceptualized and designed the study. NJE, ECE, ACO and EJO contributed to implementation of the project and revision of the manuscript. All authors were involved in the writing and revision of the manuscript. All authors read, approved the final manuscript and agreed to be accountable for all aspects of the work.

**Data availability:** The data used to support the findings of this study are available from the corresponding author upon reasonable request.

**Funding:** No funding sources.

**Conflict of interest:** None declared.

**Ethical approval:** The study was approved by the Health Research Ethics Committee (HREC) of University of Nigeria Teaching Hospital, Ituku-Ozalla, Enugu State.

## REFERENCES

- Centers for Disease Control and Prevention (CDC). Unintended Pregnancy Prevention. Available at [www.cdc.gov/reproductivehealth/unintendedpregnancy](http://www.cdc.gov/reproductivehealth/unintendedpregnancy). Last accessed 23<sup>rd</sup> November, 2018.
- Bankole A, Adewole IF, Hussain R, Awolude O, Singh S, Akinyemi O. The incidence of Abortion in Nigeria. *Internat, Persp on Sexual and Reprod Health* 2015; 41(4):170-180.
- Singh S, Remez L, Sedgh G, Kwok L, Onda T. Abortion Worldwide 2017. Uneven Progress and Unequal Access. *Guttmacher Institute Abortion Report* 2017; 1-164.
- Say L, Chou D, Gemmil A, Tuncalp O, Moller AB, Daniels J et al. Global Causes of Maternal Death: a WHO Systematic analysis. *Lancet Glob Health* 2014; 2(6): e323-33.
- Singh S, Maddow-Zimet I. Facility-based treatment for Medical Complications resulting from Unsafe Pregnancy Terminations in the Developing world, 2012; a review of evidence from 26 Countries *BJOG* 2015.
- Vlassoff. Economic Impact of Unsafe Abortion-related Morbidity and Mortality: evidence and estimation challenges. *Brighton institute of Development Studies* 2008. (IDS Research Reports 59).
- Orji VK, Jeremiah I, Kasso T. Induced Abortion among Undergraduate students of University of Port-Harcourt. *Niger J Med* 2009; 18(2): 199-202.
- Ezugwu EC, Onah HE, Ezugwu FO, Okafor II. Maternal Mortality in a Transitional hospital in Enugu, Southeast, Nigeria. *Afr. J Health* 2009; 13 (3): 67-72.
- Klima CS. Unintended Pregnancy, Consequences and Solutions for a Worldwide Problem. *J Nurse Midwifery* 1998; 43(6): 483-91.
- WHO. Family Planning/ Contraception Fact Sheet 2017. Available at [www.who.int/en/news-room/fact-sheets/detail/family-planning](http://www.who.int/en/news-room/fact-sheets/detail/family-planning).
- National Population Commission (Nigeria) and ICF International 2014. Nigeria Demographic and Health Survey 2013.
- National Population Commission (Nigeria) and ICF International 2019. Nigeria Demographic and Health Survey 2018. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF.
- Lawani LO, Ekem NN, Onoh RC, Eze JN, Ekwedigwe KC, Egede JO, et al. The Prevalence and Determinants of Unintended Pregnancies Among Women in Abakaliki, Southeast Nigeria. *Glob. J Health Sc.* 2016; 10(10):65-73.
- Manjok E, Smesny A, Ekabua JE, Essien EJ. Contraceptive Practices in Nigeria: Literature Review and recommendation for Future Policy Decision. *Open Access J Contracept.* 2010; 1:9-



- 22.
15. Calvert C, Baisley K, Dole AM, Maganja K, Changalucha J, Watson-Jones D, et al. Risk Factors for Unplanned Pregnancy among Young Women in Tanzania. *J Fam Plann Reprod Health Care* 2013; 39: e2;1-12
  16. Lamina MA. Prevalence and Determinants of Unintended Pregnancy Among Women in South-western Nigeria. *Gha Med J* 2015; 49(3): 187-194.
  17. Eliason S, Baiden F, Yankey BA, Awusabo-Asare K. Determinants of Unintended Pregnancy and Childbirth 2014; 14: 261. Available at [www.biomedcentral.com/1471-2393/14/261](http://www.biomedcentral.com/1471-2393/14/261).
  18. Sutton A, Litcher D, Sassler S. Women left Behind: Unintended pregnancy and Fertility in Rural America. Population of America Conference. Available at <http://paa.confex.com> . last accessed 06/01/2019.
  19. Enugu State. Wikipedia. Available at <http://en.m.wikipedia.org/wiki/Enugu-state>
  20. The Third National Bureau of Statistics. Demographic Statistics Bulletin 2017.
  21. Charan J, Biswas T. How to Calculate Sample Size for Different Study Designs in Medical Research? *Indian J Psychol. Med.* 2013; 35 (2):121-126.
  22. Barrett G, Smith SC, Wellings K. Conceptualization, Development and Evaluation of a Measure of Unplanned Pregnancy. *J Epidemiol Comm Health* 2004; 58: 426-433.
  23. Habib MA, Raynes-Greenow C, Nausheen S, Soofi SB, Sajid M, Bhutta ZA, et al. Prevalence and Determinants of unintended pregnancies amongst women attending antenatal clinics in Pakistan. *BMC Pregnancy and Childbirth* 2017; 17: 156(2-10).
  24. Centers for Disease Control and Prevention. Unintended Pregnancy Prevention. Available <https://www.cdc.gov/reproductivehealth/Unintendedpregnancy>. Last accessed 22/01/2015.
  25. Ghana Statistical Service. Ghana Living Standard Survey (sixth round), 2012-2013. United States Census Bureau. 2010 Census Urban Area: Urban-Rural Classification Program. Geography. Available <https://www.census.gov/geo/reference/ua/uafaq>. Last Revised 09/02/2015
  26. Palamuleni ME, Adebowole AS. Prevalence and determinants of Unintended pregnancies in Malawi. *Afr. Population Studies* 2014; 28(1): 551-563.
  27. Goicolea I, Sabastian MS. Unintended pregnancy in the amazon basin of Ecuador: a multilevel analysis. *Int. J for Equity in Health* 2010; 9: 2-11.
  28. Morof D, Steinauer J, Haider S, Liu S, Darney P, Barret G. Evaluation of the London Measure of Unplanned pregnancy in the United States Population of Women. *PLOS ONE* 2012; 7(4): e35381 (1-7).
  29. Rocca CH, Krishnan S, Barret G, Wilson M. Measuring Pregnancy Planning: An Assessment of the London Measure of Unplanned Pregnancy among Urban, South Indian women. *Demogr. Res.* 2010; 23: 293-334.
  30. Sabahelzain MD, Abdalla SM, Meraj SA, Mohamed EY, Almansour AM, Medani KT, et al. Prevalence and factors associated with unintended pregnancy among married women in an urban and rural community, Khartoum state, Sudan. *Glob. J Med. and Publ. Health* 2014; 3 (4):1-7
  31. Haffejee F, O'Connor L, Govender N, Reddy P, Sibiya MN, Ghuman S, et al. Factors associated with unintended Pregnancy Among Women attending a Public Health-facility KwaZulu-Natal, South Africa. *South African Fam Pract* 2018; 60(3): 79-83.
  32. Goicolea I. Adolescent pregnancies in the amazon Basin of Ecuador. A right and Gender approach to girls' sexual and reproductive health 2009. <http://www.diva-portal.org/smash/record> Unua university, Department of Public Health and Clinical Medicine and Department of Clinical Science, PhD thesis in Epidemiology and public health. Accessed 28/05/2010.
  33. Ayele M, Hamba N, Gudeta B. Assessment of the prevalence of Unplanned Pregnancy and

- Associated Factors Among Pregnant Women Attending Antenatal Care at Hambiso Health Center Hambiso, North Shewa Ethiopia. *J Women's Healthcare* 2017; 6(6): 1-5.
34. Martins S L, Starr K A, Hellerstedt W L, Gilliam M L. Differences in family planning services by ruralurban geography: survey of Title Xsupported clinics in Great Plains and Midwestern states. *Perspectives on sexual and reproductive health and health information technology in rural areas: results of a national survey. The Journal of Rural Health* 28(1); 2016:16-27.
35. Agida TE, Akaba GO, Ekele BA, Adebayo F. Unintended Pregnancy among Antenatal Women in a Tertiary Hospital in North Central Nigeria. *Niger Med J* 2016; 57: 334-8.
36. Tayo AO, Akinola OI, Adenwunmi AA, Rabi KA. Prevalence of Unintended Pregnancy among Patients attending Antenatal Clinics in a Tertiary Hospital in Lagos, south west Nigeria. *Int J Med Sci* 2014; 4: 47-50.
37. Yaya S, Amouzou A, Uthman OA, Ekholuenetale M, Bishwajit G, Udenigwe O, et al. Prevalence and Determinants of terminated and unintended pregnancies among married women: analysis of pooled cross-sectional surveys in Nigeria. *BMJ Global health* 2018; 3: e000707. Available at <http://gh.bmj.com> last accessed 12/11/18.