



ORIGINAL ARTICLE

## Prevalence and Correlates of Reproductive Morbidity among Female Traders in Ibadan Nigeria

Ojifinni OO<sup>1</sup>, Ige OK<sup>2</sup>, Popoola OA<sup>3</sup>, Asuzu MC<sup>3</sup>

<sup>1</sup>School of Public Health, University of the Witwatersrand, Johannesburg

<sup>2</sup>Global Health Unit, Global Ministries, New York, New York, USA

<sup>3</sup>Department of Community Medicine, College of Medicine, University of Ibadan, Nigeria

### Keywords

Reproductive morbidity;  
Female traders;  
Pregnancy complications;  
Menstrual problems;  
Intimate partner violence;  
Ibadan

### ABSTRACT

**Background:** Efforts to mobilise resources for reproductive health services require data on common reproductive morbidities which constitute a significant proportion of global ill-health among women of reproductive age. This study assessed the prevalence and correlates of reproductive morbidity among female traders of reproductive age in Ibadan, Nigeria.

**Methods:** Using systematic random sampling, 410 female traders aged 15-49 years were selected and data collected with interviewer-administered structured questionnaires in a cross-sectional study at a major Ibadan market. Univariate, bivariate and multivariate analysis were done using SPSS version 23.0 and WINPEPI version 11.65 at 5% significance level.

**Results:** The respondents' mean age was 34.6±7.8 years and 223 (58.7%) had secondary education. Most 349 (91.8%) had experienced reproductive morbidity, of which 279 (79.9%) had gynaecologic morbidities with menstrual problems (273; 97.8%) being the commonest; 262 (75.1%) had obstetric morbidities among whom 221 (84.4%) had pregnancy complications while 185 (53.0%) experienced intimate partner violence (IPV). Women aged 30-39 years had lower odds of any reproductive (OR=0.27; 95% CI=0.08-0.89) and obstetric morbidities (OR=0.18; 95% CI=0.10-0.31) while those ≥40 years had twice the odds of gynaecologic morbidity (OR=2.18; 95% CI=1.22-3.90) as those <30 years. The odds of IPV and of experiencing any reproductive morbidity reduced with increasing wealth status.

**Conclusion:** Reproductive morbidity is common among traders in Ibadan. Obstetric and gynaecological morbidities were commoner among older women while higher wealth status was a protective factor. Reproductive health interventions should prioritise older and poorer women as at-risk groups for gynaecological interventions.

### Correspondence to:

Dr. Oludoyinmola O. Ojifinni  
School of Public Health,  
University of the Witwatersrand, Johannesburg  
Email: oludoyinmola@gmail.com  
Telephone: +27787001937; +2348034739283

### INTRODUCTION

Reproductive morbidities contribute significantly to global ill-health, making up to one-third of all deaths and disabilities among women of reproductive age and one-

fifth of the total global ill-health burden.<sup>1</sup> Reproductive morbidity has been described as “any morbidity or dysfunction of the reproductive behaviour including pregnancy, abortion, childbirth, or sexual behaviour and may include those of

psychological nature.” These are categorised into gynaecologic, obstetric and morbidity related to contraceptive use.<sup>2</sup> The importance of reproductive morbidity in calculating the burden of disease using disability adjusted life years (DALYS) has been emphasised as these conditions affect people in the prime of life.<sup>3, 4</sup> Maternal conditions are a major contributor to the global burden of disease ranking third in DALYS for women 15-44 years in 2005.<sup>5</sup> Although the DALYS for maternal conditions dropped by 17% between 2005 and 2013, the DALYS for gynaecological conditions increased by 11.7% in the same period.<sup>6</sup>

The burden of reproductive morbidities however, remains largely hidden due to a culture of silence and secrecy around issues related to the reproductive system in most low- and middle-income countries (LMICs).<sup>2, 7, 8</sup> Literature abounds on maternal mortality which has been used to measure country progress in improving their health systems. Beyond assessing mortality due to reproductive health problems however, an assessment of morbidity due to reproductive illness will assist in better awareness of the reproductive health care needs as more people tend to live with reproductive morbidity and its sequelae than die from these conditions.<sup>3</sup>

The situation in Nigeria is similar to most other LMICs with a high premium placed on childbearing which is an integral part of women’s lives and reproductive morbidity can have a negative impact on both their

social lives and economic abilities.<sup>9</sup> Social advancements have led to increasing involvement of women in economic activities outside the home and women are now an important part of the national workforce in the society. Optimal reproductive health is therefore valuable and addressing reproductive morbidity with its negative impact on women’s economic contribution is imperative. Provision of effective reproductive health care services requires an awareness of the prevalent reproductive morbidities. Individual gynaecologic health problems and obstetric morbidities have been assessed in different studies in Nigeria. For instance, sexually transmitted infections (STIs) are known to be one of the top five reasons for gynaecologic clinic visits in Nigeria<sup>10</sup> and the awareness, prevalence and health seeking behaviour of adolescents and youth has been documented.<sup>11-13</sup> Similarly, the experience of menstrual disorders has been assessed among female adolescents and youth in the country.<sup>14, 15</sup> No single study has however attempted to examine reproductive morbidities as a group among economically active women.

Within this context, this study aimed to determine the prevalence of selected reproductive morbidities and their correlates among female traders in a major market in Ibadan. This study reviewed gynaecologic morbidities including menstrual problems and STIs; obstetric morbidities including delay in conception, complications in pregnancy and at delivery and intimate partner violence (IPV).

## METHODOLOGY

This cross-sectional study was carried out in Ibadan, the capital city of Oyo State which is made up of 11 Local Government Areas (LGAs) and is the largest indigenous city in West Africa located in the south western part of Nigeria.<sup>16</sup> The estimated population in 2011 when the study was conducted was 2,763,064 while the core urban Ibadan, comprising five LGAs, had a population of about 1, 538, 818 of whom 681,329 were females.<sup>17</sup> This study among female traders aged 15 to 49 years was carried out in Aleshinloye market, a major market located in Ibadan South-West Local Government Area, one of the five core urban areas of the city. Aleshinloye market was purposively selected for the study because of the wide range of wares and varying categories of traders working in the market.

The minimum sample size of 372 female traders was calculated using the Kish formula for determining single proportions.<sup>18</sup> This was determined using the prevalence of the most common reproductive health problem identified from a previous study (unsafe abortions with a prevalence of 41% among young women in Edo State, Nigeria<sup>19</sup>) with precision set at 5%. The addition of a 10% non-response rate increased the minimum sample size to 410. A systematic random sampling technique was used for participant selection. The estimated number of shops in the market was 4926 and this was used as a proxy for the number of female traders with the understanding that one woman will be interviewed in each shop. After selecting

the first shop by simple random sampling, subsequent shops were selected systematically at intervals of 12.

Data was collected over a two-week period by the first author assisted by four university undergraduates who were trained for the purpose of the research. An interviewer-administered, structured questionnaire which included questions determined by reviewing existing literature was used. The questionnaire was pretested in another market different from the one selected for the study and corrections made based on the analysis of the pre-test data. Data analysis was on the Statistical Package for Social Sciences (SPSS) for windows version 22.0 and included descriptive statistics while the odds of experiencing reproductive morbidity were determined using WINPEPI version 11.65.<sup>20</sup> All analysis was done at the 5% level of significance.

**Assessment of outcome variables:** The outcome variables were the reproductive morbidities experienced by the participants. Since the selected reproductive morbidities were assessed through self-reporting by the study participants, the following operational definitions were used for easy identification by the participants.

*Gynaecologic Morbidity* – was defined as experience of either menstrual problems or STIs.

*Menstrual problems:* This included experience of the following every month in the three months preceding the study: Menorrhagia (menstrual flow containing clots); Menstrual irregularity (cycle length

longer than 45 days or shorter than 21 days); Abnormal menstrual flow (menstrual period longer than 7 days or shorter than 2 days); Dysmenorrhoea (painful periods) and Premenstrual syndrome (presence of either abdominal fullness or breast tenderness in the premenstrual period each month in the 3 months preceding the study).<sup>21</sup>

*Sexually transmitted infections:* Respondents who had experienced either genital ulcer diseases or abnormal vaginal discharge, offensive odour in the genital region, burning sensation while passing urine or persistent lower abdominal pain in the three months prior to the study were classified as having sexually transmitted infections.<sup>1</sup>

*Obstetric Morbidity* – included delay in achieving conception, experience of pregnancy or delivery complications.

*Delay in achieving conception:* This was defined as experience of greater than one-year delay in achieving conception. This outcome was assessed among women who had ever been pregnant at the time of the survey.

*Pregnancy complications:* Respondents who reported experiencing any one or more of the following in their last pregnancy: Hypertension (high blood pressure); Diabetes (high blood sugar); Anaemia (shortage of blood); Convulsions; Urinary tract infection (dysuria defined as painful urination); Antepartum haemorrhage and Fever. This outcome was assessed for participants who had ever been pregnant.

*Delivery complications:* Having a positive history of any one or more of the following in the most recent delivery – Prolonged labour (>12 hours); Postpartum haemorrhage (defined as bleeding that was so much that the respondent thought she would die); Convulsions and Stillbirth. This outcome was assessed for participants who had ever been pregnant.

*Intimate partner violence:* Using the Nigeria Demographic and Health Survey (NDHS) definition of domestic violence as any act of violence resulting in physical, sexual, or psychological harm or suffering to women, girls, or men, including threats of such acts, coercion, or arbitrary deprivation of liberty<sup>8</sup> we identified intimate partner violence as follows: Respondents who had experienced either psychological abuse (insults or intimidation; threats against a loved one or controlling behaviour such as restricting contact with friends or family members), physical abuse (such as threats to or actually throwing something at, pushing, grabbing, shoving, slapping, kicking or beating), or sexual abuse (forced sexual intercourse) in the 3 months prior to the study were categorised as having experienced intimate partner violence. This category also included experience of any of these variants while pregnant.

### **Assessment of independent variables**

*Socioeconomic status:* the participants' wealth index was used as the measure of socioeconomic status and was defined using the ownership of some of the productive and non-productive household amenities and

household living conditions. These items were divided into household effects, means of transportation and ownership of agricultural land, farm animals and bank/savings account.<sup>22</sup> The selected household effects were television, refrigerator and generator; means of transport were car/motorcycle; living conditions were living in an en suite (toilets, bathrooms and kitchen) accommodation and the ownership of a house. Principal Component Analysis (PCA) was used to assign indicator weights and a single factor extracted which represents household wealth. The factor scores were then aggregated into quintiles and classified into the lowest, second, middle, fourth and highest socioeconomic classes.

#### *Ethical considerations*

Ethical approval (approval number UI/EC/11/0074) was obtained from the University of Ibadan/University College Hospital Institution Review Board. Permission for the study was also obtained from the market chairman and the leader of the female traders. Participation in the study was voluntary. All participants signed consent forms after the purpose of the research was explained to them. Data confidentiality was maintained by ensuring no identifying information was documented while the data was only made available to the research team.

## **RESULTS**

Of the 410 interviews conducted, 380 completed all questions giving a 92.6% response rate. The remaining 30 were

removed from the analysis because of missing information provided.

#### ***Socio-demographic characteristics***

The socio-demographic characteristics of the respondents are shown in Table 1. The mean age of the respondents was  $34.6 \pm 7.8$  years. Two hundred and ninety-seven (78.2%) were married, 330 (86.8%) were Yoruba, and 223 (58.7%) had secondary education. The most common items sold by 138 (36.3%) of the participants were clothing and accessories.

#### ***Prevalent Reproductive Morbidities***

A total of 349 (91.8%) of the respondents had experienced at least one reproductive morbidity. Among these, 279 (79.9%) reported gynaecologic morbidities while 262 (75.1%) reported obstetric morbidities (Table 2). Menstrual problems were the most common gynaecologic morbidity experienced by 273 (97.8%) and of this, premenstrual syndrome experienced by 231 (82.8%) of the participants had the highest prevalence. Among the 114 (40.9%) who had STIs, persistent lower abdominal pain and abnormal vaginal discharge were reported by 100 (87.7%) and 95 (83.3%), respectively while genital ulcers were least reported 30 (26.3%).

Among the obstetric morbidities, pregnancy complications were most common 221 (84.4%). IPV was reported by 185 (53.0%) overall, with psychological abuse being most common 109 (58.9%) followed by sexual abuse 95 (51.4%) among those who had experienced IPV. Physical abuse, reported by 44 (23.8%) was the least common form of

IPV among the study participants while 74 (40%) had experienced IPV during pregnancy.

**Table 1: Sociodemographic Characteristics of the Study Population**

Characteristics	n (%)
<b>Age (years)</b>	
<30	110 (29.0)
30–39	151 (39.7)
≥ 40	119 (31.3)
<b>Marital Status</b>	
Married	297 (78.2)
Single*	83 (21.8)
<b>Tribe</b>	
Yoruba	330 (86.8)
Other tribes	50 (13.2)
<b>Level of Education</b>	
No formal education	19 (5.0)
Primary	47 (12.4)
Secondary	223 (58.7)
Tertiary	91 (23.9)
<b>Item sold</b>	
Clothing and accessories	138 (36.3)
Food items	111 (29.2)
Household utensils	95 (25.0)
Services (Tailoring/Hairdressing)	36 (9.5)
<b>Wealth quintiles</b>	
Lowest	64 (16.8)
Second	88 (23.2)
Middle	100 (26.3)
Fourth	84 (22.1)
Highest	44 (11.6)

*n=380; Mean=34.6±7.8 years; \*Included those who were widowed, separated/divorced or never married.*

### Socio-demographic factors and reproductive morbidities

The socio-demographic factors that were analysed in this study were age, marital status, level of education and socioeconomic status which was measured using the wealth quintiles of the respondents. As shown in Table 3, women between ages 30 and 39 years had significantly lower odds of experiencing any reproductive morbidity compared with those <30 years ( $p=0.023$ ). The odds of experiencing any reproductive morbidity was lower with increasing wealth

status, although this was only significant for those in the fourth wealth quintile ( $p=0.015$ ). Women who were 40 years and above had twice the odds of gynaecologic morbidity as women who were <30 years ( $p=0.008$ ). On the other hand, single women had significantly lower odds of reporting gynaecologic morbidity compared with the married ( $p=0.025$ ). The odds of gynaecologic morbidity was lower with increasing wealth status although this finding was only significant among those in the fourth ( $p=0.001$ ) and the fifth ( $p=0.003$ ) quintiles. Women aged 30–39 years and those ≥40 years had significantly lower odds of obstetric morbidity ( $p<0.001$  and  $p=0.001$ , respectively). On the other hand, single women had significantly higher odds of experiencing obstetric morbidity compared with those who were married ( $p<0.001$ ).

The odds of experiencing menstrual problems was about 3% higher among women between 30 and 39 years than among those below 30 years while the odds were two times higher among women 40 years and above than among women below 30 years (Table 4a). With regards to marital status, married women had significantly lower odds of experiencing menstrual problems than the single women ( $p=0.021$ ). Higher wealth status appeared to be protective against experiencing menstrual problems as the odds of having menstrual problems reduced with increasing wealth quintiles. The association with wealth status was only significant for those in the fourth and fifth quintiles (OR=0.24, 95% CI = 0.11–0.53 and OR=0.19, 95% CI= 0.07–

**Table 2: Prevalence of reproductive morbidities among the study population**

<b>Reproductive morbidities</b>		<b>Yes (%)</b>
<b>Any reproductive morbidity</b>		<b>349 (91.8)</b>
<b>Gynaecologic morbidity*</b>		<b>279 (79.9)</b>
<b>Menstrual problems**</b>		<b>273 (97.8)</b>
	Premenstrual syndrome	231 (82.8)
	Dysmenorrhoea	166 (60.8)
	Abnormal menstrual flow	109 (39.9)
	Menstrual irregularity	94 (34.4)
	Menorrhagia	92 (33.7)
<b>Sexually transmitted infections**</b>		<b>114 (40.9)</b>
	Persistent lower abdominal pain	100 (87.7)
	Abnormal vaginal discharge	95 (83.3)
	Burning sensation while passing urine	43 (37.7)
	Genital ulcers	30 (26.3)
<b>Obstetric morbidity*</b>		<b>262 (75.1)</b>
	Delay in achieving conception	63 (24.0)
	Pregnancy complications	221 (84.4)
	Delivery complications	118 (45.0)
<b>Intimate partner violence*</b>		<b>185 (53.0)</b>
	Psychological abuse	109 (58.9)
	Sexual abuse	95 (51.4)
	Social restriction	71 (38.4)
	Physical abuse	44 (23.8)
	IPV while pregnant	74 (40.0)

\*n= 349;

\*\*n=279

0.53, respectively).

Age and marital status were significantly associated with experience of STIs. Women between 30 and 39 years had 41% lower odds than women less than 30 years old. On the other hand, the odds of STIs were twice as high among women who were 40 and above than for those less than 30 years. Single women had 39% lower odds of experiencing STIs than those who were married while being in the higher wealth quintiles appeared protective against the experience of STIs. For IPV, the odds were significantly lower among women in their 30s (p=0.004) while those aged 40 years and above had significantly higher odds of reporting IPV (p=0.018). The odds of IPV reduced significantly with increasing wealth quintiles among the study population.

As shown in Table 4b, the odds of delayed conception were significantly lower among women aged 30–39 (OR=0.26; 95% CI = 0.010–0.64) and women ≥40 years (OR=0.38; 95% CI = 0.15–0.99) than those who were less than 30 years. In addition, women in the second and third wealth quintiles had significantly higher odds of delayed conception than those in the lowest quintiles. The odds were also higher in the upper two quintiles, although this was not statistically significant. The odds for experiencing complications in pregnancy reduced with increasing age while single women had 16% higher odds than the married of experiencing complications in pregnancy. These findings were however only statistically significant for women aged 30–39 years (p=0.003). The odds of having complications in pregnancy was

significantly lower in the second (OR=0.48; 95% CI = 0.24–0.96), fourth (OR=0.29; 95 CI = 0.14–0.61) and fifth wealth quintiles (OR=0.12; 95% CI = 0.04–0.38).

Age was not significantly associated with the experience of delivery complications. On the other hand, single women had significantly higher odds of experiencing delivery complications than the married women ( $p=0.042$ ) while those with secondary education had lower odds compared with those who had tertiary education. Being in the higher wealth quintiles appeared to be protective against having delivery complications but this was only significant for those in the highest wealth quintile ( $p=0.028$ ).

## DISCUSSION

This community-based descriptive study captures the burden of reproductive health morbidities among women traders in a Nigerian city using self-reported symptoms. Overall, most of the study participants had experienced at least one form of reproductive morbidity with the reported prevalence of gynaecologic morbidity being higher than that of obstetric morbidity and IPV. The prevalence of reproductive morbidities of 91.8% in this study is much higher than the 57% reported in a similar study among married women in an urban slum in India and another study reviewing self-reported reproductive health problems among adolescents in an urban area of Bangladesh where the prevalence was 50%.<sup>23, 24</sup> The difference may be because the reproductive morbidities assessed in the

Indian study included contraceptive-related morbidities but not IPV unlike this study while the study in Bangladesh was restricted to adolescents.

Women in their 30s had lower odds of both overall reproductive morbidity and obstetric morbidity while single women had higher odds of obstetric morbidity than the married. Women who are single are also likely to be younger than the married. It has been documented that pregnancies at the extremes of age (before 18 and after 35 years) are associated with poor outcomes,<sup>25</sup> with the risk of maternal morbidity and mortality being higher in adolescence when the pelvis is not yet fully developed.<sup>26, 27</sup> The risk of maternal morbidity and mortality also increases with higher parity and older maternal age due to associated medical morbidities.<sup>27</sup> These facts may account for the direction of the odds among the participants in this study.

Among the reproductive morbidities assessed in this study, menstrual problems had the highest prevalence. A similar study in Iran found menstrual problems, pelvic organ prolapse at 41.4% and reproductive tract infections (37.6%) to be most common.<sup>28</sup> In the Indian study mentioned above, sexually transmitted infections (STIs) were most common (99%) followed by menstrual problems (68%) and pregnancy related problems (11%).<sup>24</sup> A systematic review of studies on menstrual problems in developing countries found that menstrual problems are fairly common although the culture of silence in most of the countries hampers care seeking.<sup>29</sup> If left untreated,



these disorders often impede daily activities as found in a study among undergraduate students in southwest Nigeria<sup>14</sup> and can have a negative impact on a woman's economic capacity. Menstrual irregularities have also been associated with discontinuation of contraception in previous studies.<sup>30</sup> Considering this high prevalence of menstrual disorders, reproductive health care services need to prioritise care for menstrual problems particularly among younger women.

Complications in pregnancy including hypertension and diabetes were the second most common cause of obstetric morbidity in this study with a prevalence of 84.4% with higher odds among younger women. In comparison, a similar community based study in India found pregnancy related problems among only 11% of the respondents.<sup>24</sup> The global changes in disease pattern has led to more women being affected by diabetes, hypertensive heart disease and other chronic non-communicable diseases.<sup>31</sup> An estimated 15-50 million women are affected by pregnancy related morbidities globally.<sup>5</sup> In Nigeria, the prevalence of hypertension among women is 25.2% and is projected to be on the rise<sup>32</sup> while the prevalence of gestational diabetes is 13.9% among urban women.<sup>33</sup> The prevalence of anaemia in pregnancy in a hospital-based study in Abeokuta, southwest Nigeria was 76.5%.<sup>34</sup> Given these findings in the literature, the proportion reporting complications in pregnancy in this study is not surprising. Having complications in pregnancy is often

associated with poor pregnancy outcomes and may lead to subsequent mental health problems such as depression or anxiety disorders.<sup>5</sup>

The prevalence of 53% reported for intimate partner violence (IPV) in this study is higher than the prevalence of 36.6% reported in Africa as a whole.<sup>4</sup> The prevalence from this study is also higher than the national prevalence of IPV reported in the NDHS 2013 which was 25%.<sup>8</sup> In Oyo State, where this study was conducted, the prevalence of IPV was only 16.1% in the NDHS 2013.<sup>8</sup> The high prevalence of IPV in this study could be due to cultural norms where abuse is justified as punishment for wrongdoing as reported in previous studies including one conducted in Ibadan.<sup>35, 36</sup> In this study, the odds of experiencing IPV reduced with increasing wealth. This may be due to a higher level of self-confidence which is often demonstrated with economic stability.<sup>37, 38</sup>

Previous literature has documented a hump-shaped (inverted "U") association between female education and experience of IPV where women with the least and the highest levels of education suffered less violence and those in the middle suffered more.<sup>39</sup> An explanation for this is that higher levels of education enables women to challenge norms better but may be associated with a risk of repercussions if the women are not sufficiently empowered.<sup>39, 40</sup> It has also been documented that increase in women's resources leads to a "violence backlash" where men resort to violence to counteract the increase in women's resourcefulness and reinstate their

dominance or in an attempt to extract resources from the women.<sup>39, 41</sup> This was however not confirmed in our study as the odds of IPV was lower among those with secondary education than among those who had tertiary education while those who had primary or no formal education had higher odds of IPV than those with tertiary education. It is possible that women with lower educational status hold the belief that IPV is culturally acceptable, hence their higher chances of reporting it. On the other hand, women with higher educational status may feel more of the stigma that encourages a culture of silence around IPV leading to the lower level of reporting among them.<sup>8, 42</sup>

Sexually transmitted infections were reported by about 41% of the respondents in this study compared with 99% in a similar study in India.<sup>24</sup> On the other hand, only 19% of the participants in a study conducted in Ghana<sup>43</sup> and 15% of the participants in the study in an urban region in Bangladesh reported STI symptoms.<sup>23</sup> The marked difference in findings could be due to the differences in operational definitions. Whereas the Indian study included vaginal discharge, lower abdominal pain and back pain as symptoms of STIs, the study in Bangladesh identified genital ulcers/sores, burning during urination and excessive bleeding as symptoms of STIs.<sup>23, 24</sup> Our study on the other hand included abnormal vaginal discharge, genital ulcers, persistent lower abdominal pain and burning sensation

while passing urine in the operational definition of STIs.<sup>1</sup>

### **Limitations**

The reproductive morbidities highlighted in this study were self-reported and this could have led to some overestimation or underestimation of the prevalence of morbidities due to recall or social desirability bias. To limit this recall of symptoms was limited to the 3 months preceding the study. Furthermore, comparison of our findings to existing research is limited as there is paucity of literature reviewing the prevalence of reproductive morbidities in a manner similar to what we have done in this study particularly in the West African sub-region.

### **Conclusion**

Most of the study participants had experienced at least one reproductive morbidity in the three months preceding the study. Gynaecologic morbidities had a higher prevalence than obstetric morbidities and IPV. Compared with women who were less than 30 years old, the odds of experiencing obstetric morbidity was lower among women aged 30 to 39 years while the odds of gynaecologic morbidities was higher among women who were 40 years and above. The odds of experiencing IPV was higher among women in their thirties and lower among women who were 40 years and above than among women less than 30 years. Increasing wealth status was also associated with reduction in odds of IPV. Community reproductive health needs assessment should be routinely incorporated into reproductive health

service delivery to ensure that interventions are targeted towards the prevalent reproductive health issues and at those who are most at risk in each community. In addition, there is a need for greater alertness to IPV in women of reproductive age and additional resources to help older women prevent and manage morbidities need to be made available.

**Conflict of interest:** The authors declare that there were no conflicts of interest.

## REFERENCES

1. World Health Organisation. Guidelines for the management of sexually transmitted infections. Switzerland; 2004.
2. Bhatnagar N, Khandekar J, Singh A, Saxena S. The silent epidemic of reproductive morbidity among ever married women (15-49 years) in an urban area of Delhi. *J Community Health*. 2013 Apr; 38(2): 250-256.
3. AbouZahr C, Vaughan JP. Assessing the burden of sexual and reproductive ill-health: Questions regarding the use of disability-adjusted life years. *Bull World Health Organ*. 2000; 78(5): 655-666.
4. Ezeh A, Bankole A, Cleland J, Garcia-Moreno C, Temmerman M, Ziraba AK. Burden of Reproductive Ill-Health. In: Black R, Laxminarayan R, Temmerman M, Walker N, editors. *Disease Control Priorities, Third Edition (Volume 2): Reproductive, Maternal, Newborn, and Child Health*. 3rd ed. The World Bank; 2016. p. 25-50.
5. Koblinsky M, Chowdhury ME, Moran A, Ronsmans C. Maternal morbidity and disability and their consequences: Neglected agenda in maternal health. *J Heal Popul Nutr*. 2012; 30(2):124-130.
6. Murray CJL, Barber RM, Foreman KJ, Ozgoren AA, Abd-Allah F, Abera SF, et al. Global, regional, and national disability-adjusted life years (DALYs) for 306 diseases and injuries and healthy life expectancy (HALE) for 188 countries, 1990-2013: quantifying the epidemiological transition. *Lancet*. 2015 Nov; 386(10009): 2145-2191.
7. Mishra SK, Mukhopadhyay S. Socioeconomic correlates of reproductive morbidity among adolescent girls in Sikkim, India. *Asia-Pacific J Public Heal*. 2012 Jan 1; 24(1): 136-150.
8. National Population Commission [Nigeria], ICF International. *Nigeria Demographic and Health Survey 2013*. Abuja, Nigeria and Rockville, Maryland, USA; 2014.
9. DeJong J, Bahubaishi N, Attal B. Effects of Reproductive Morbidity on Women's Lives and Costs of Accessing Treatment in Yemen. *Reprod Health Matters*. 2012; 20(40): 129-138.
10. Sekoni AO, Odukoya OO, Onajole AT, Odeyemi KA. Sexually transmitted infections: prevalence, knowledge and treatment practices among female sex workers in a cosmopolitan city in Nigeria. *Afr J Reprod Health*. 2013; 17(1): 94-102.
11. Mmari KN, Oseni O, Fatusi AO. STI Treatment-Seeking Behaviors Among Youth in Nigeria: Are There Gender Differences? *Int Perspect Sex Reprod Health*. 2010; 36(2): 72-79.
12. Edith M, Ovaioza AM. Awareness of Sexually Transmitted Infections (STIs) Including HIV/AIDS among Undergraduate Students of University of Abuja, Nigeria. *Br J Appl Sci Technol*. 2014 Jan 10;4(4): 705-717.
13. Aliyu AA, Dahiru T, Ladan AM, Shehu AU, Abubakar AA, Oyefabi AM et al. Knowledge, Sources of information, and Risk Factors for Sexually Transmitted Infections among Secondary School Youth in Zaria, Northern Nigeria. *J Med Trop*. 2013; 15(2): 102-106.
14. Titilayo A, Agunbiade OM, Banjo O, Lawani A. Menstrual discomfort and its influence on daily academic activities and

- psychosocial relationship among undergraduate female students in Nigeria. *Tanzan J Health Res.* 2009; 11(4): 181-188.
15. Nwankwo TO, Aniebue UU, Aniebue PN. Menstrual Disorders in Adolescent School Girls in Enugu, Nigeria. *J Pediatr Adolesc Gynecol.* 2010; 23(6): 358-363.
  16. Fourchard L. The Case of Ibadan, Nigeria. *Understanding Slums: Case Studies for the Global Report on Human Settlements.* 2003.
  17. National Bureau of Statistics. *Annual Abstract of Statistics.* Abuja, Nigeria; 2011.
  18. Kish L. *Survey Sampling.* New York: John Wiley and Sons, Inc; 1965.
  19. Murray N, Winfrey W, Chatterji M, Moreland S, Dougherty L, Okonofua F. Factors related to induced abortion among young women in Edo State, Nigeria. *Stud Fam Plann.* 2006; 37(4): 251-268.
  20. Abramson JH. WINPEPI updated: computer programs for epidemiologists, and their teaching potential. *Epidemiol Perspect Innov.* 2011; 8(1): 1.
  21. Garefalakis M, Hickey M, Johnson N. Gynecological Morbidity. In: *International Encyclopedia of Public Health.* Elsevier; 2008. p. 88-101.
  22. National Population Commission [Nigeria], ICF Macro. *Nigeria Demographic and Health Survey 2008.* Abuja, Nigeria; 2009.
  23. Kabir H, Saha NC, Wirtz AL, Gazi R. Treatment-seeking for selected reproductive health problems: behaviours of unmarried female adolescents in two low-performing areas of Bangladesh. *Reprod Health.* 2014 Jan 17; 11(1): 54.
  24. Bhanderi MN, Kannan S. Untreated reproductive morbidities among ever married women of slums of Rajkot City, Gujarat: the role of class, distance, provider attitudes, and perceived quality of care. *J Urban Health.* 2010 Mar; 87(2): 254-263.
  25. Onarheim KH, Iversen JH, Bloom DE. Economic Benefits of Investing in Women's Health: A Systematic Review. Pawluski J, editor. *PLoS One.* 2016 Mar 30; 11(3): e0150120.
  26. Dean S V, Lassi ZS, Imam AM, Bhutta ZA. Preconception care: promoting reproductive planning. *Reprod Health.* 2014; 11(Suppl 3): S2.
  27. Brown W, Ahmed S, Roche N, Sonneveldt E, Darmstadt GL, Foundation MG. Impact of family planning programs in reducing high-risk births due to younger and older maternal age , short birth intervals , and high parity. *Semin Perinatol.* 2015; 39(5): 338-344.
  28. Tehrani F, Simbar M, Abedini M. Reproductive morbidity among Iranian women; issues often inappropriately addressed in health seeking behaviors. *BMC Public Health.* 2011; 11(1): 863.
  29. Harlow SD, Campbell OMR. Epidemiology of menstrual disorders in developing countries: a systematic review. *Br J Obstet Gynaecol.* 2004; 111: 6-16.
  30. Tellier S, Hyttel M. Menstrual Health Management in East and Southern Africa: a Review Paper. In: *Menstrual Health Management Symposium.* 2018. p. 1-47.
  31. Abouzahr C. Progress and challenges in women's health: An analysis of levels and patterns of mortality and morbidity. *Contraception.* 2014; 90(6): S3-13.
  32. Adelaye D, Basquill C, Aderemi A V., Thompson JY, Obi FA. An estimate of the prevalence of hypertension in Nigeria. *J Hypertens.* 2015; 33(2): 230-242.
  33. Macaulay S, Dunger DB, Norris SA. Gestational diabetes mellitus in Africa: A systematic review. *PLoS One.* 2014; 9(6): 1-11.
  34. Idowu OA, Mafiana CF, Dapo S. Anaemia in pregnancy: A survey of pregnant women in Abeokuta, Nigeria. *Afr Health Sci.* 2005 Dec; 5(4): 295-299.

35. Aihie O. Prevalence of domestic violence in Nigeria: implications for counselling. *Edo J Couns.* 2010; 2(1): 1-8.
36. Fawole OI, Aderonmu AL, Fawole AO. Intimate Partner Abuse: Wife Beating among Civil Servants in Ibadan, Nigeria. *Afr J Reprod Health.* 2005; 2: 54-64.
37. Aremu O. The influence of socioeconomic status on women's preferences for modern contraceptive providers in Nigeria: A multilevel choice modeling. *Patient Prefer Adherence.* 2013; 7: 1213-1220.
38. Ahmed S, Creanga AA, Gillespie DG, Tsui AO. Economic Status, Education and Empowerment: Implications for Maternal Health Service Utilization in Developing Countries. Shea BJ, editor. *PLoS One.* 2010 Jun 23; 5(6): e11190.
39. Cools S, Kotsadam A. Resources and Intimate Partner Violence in Sub-Saharan Africa. *World Dev.* 2017; 95: 211-230.
40. Jewkes R. Intimate partner violence: causes and prevention; Violence against women III. *Lancet.* 2002; 359: 1423-1429.
41. Krug EG, Dahlberg LL, Mercy JA, Zwi AB, Rafael L, editors. *World report on violence and health.* Geneva: World Health Organization; 2002; 372.
42. Igbokwe CC, Ukwuma MC, Onugwu KJ. Domestic violence against women: Challenges to health and innovation. *J Res Natl Dev.* 2013; 11(2): 27-35.
43. Adanu RMK, Hill AG, Seffah JD, Darko R, Anarfi JK, Duda RB. Sexually Transmitted Infections and Health Seeking Behaviour among Ghanaian Women in Accra. *Afr J Reprod Health.* 2008; 12(3): 151-158.

**Table 3: Correlates of reproductive morbidity among the study population**

Socio-demographic factors	Total reproductive morbidity	Odds Ratio (95%CI)	p- value	Gynaecologic morbidity	Odds ratio (95%CI)	p- value	Obstetric morbidity	Odds ratio (95%CI)	p- value
<b>Age (years)</b>									
<30	100 (90.9)	1	ref	86 (78.2)	1	ref	53 (48.2)	1	ref
30–39	146 (96.7)	<b>0.27 (0.08–0.89)</b>	<b>0.023</b>	119 (78.8)	0.96 (0.53–1.75)	0.903	127 (84.1)	<b>0.18 (0.10–0.31)</b>	<b>&lt;0.001</b>
40 and above	103 (86.6)	1.55 (0.68–3.57)	0.299	74 (62.2)	<b>2.18 (1.22–3.90)</b>	<b>0.008</b>	82 (68.9)	<b>0.42 (0.25–0.72)</b>	<b>0.001</b>
<b>Marital status</b>									
Married	272 (91.6)	1	ref	210 (70.7)	1	ref	226 (76.1)	1	ref
Single	77 (92.8)	0.85 (0.34–2.13)	0.727	69 (83.1)	<b>0.85 (0.75–0.96)</b>	<b>0.025</b>	36 (43.4)	<b>1.75 (1.36–2.26)</b>	<b>&lt;0.001</b>
<b>Level of Education</b>									
Tertiary	83 (91.2)	1	ref	65 (71.4)	1	ref	60 (65.9)	1	ref
Secondary	207 (93.2)	0.75 (0.31–1.83)	0.531	167 (75.2)	0.82 (0.48–1.42)	0.486	154 (69.4)	0.85 (0.51–1.43)	0.553
None/Primary	59 (88.1)	1.41 (0.50–3.93)	0.517	47 (70.1)	1.06 (0.53–2.12)	0.861	48 (71.6)	0.77 (0.39–1.51)	0.446
<b>Wealth quintiles</b>									
Lowest	56 (87.5)	1	ref	40 (62.5)	1	ref	43 (67.2)	1	ref
Second	79 (89.8)	0.80 (0.29–2.18)	0.661	59 (67.0)	0.82 (0.42–1.60)	0.562	59 (67.0)	1.01 (0.51–1.99)	0.985
Middle	89 (89.0)	0.87 (0.33–2.27)	0.770	69 (69.0)	0.75 (0.39–1.44)	0.390	62 (62.0)	1.25 (0.65–2.42)	0.500
Fourth	82 (97.6)	<b>0.17 (0.04–0.83)</b>	<b>0.015</b>	72 (85.7)	<b>0.28 (0.13–0.61)</b>	<b>0.001</b>	65 (77.4)	0.60 (0.29–1.24)	0.167
Highest	43 (97.7)	0.16 (0.02–1.32)	0.059	39 (88.6)	<b>0.21 (0.07–0.61)</b>	<b>0.003</b>	33 (75.0)	0.68 (0.29–1.62)	0.382

*ref = Reference; Statistically significant values highlighted in bold*

**Table 4a: Socio-demographic factors and reproductive morbidities among the study population**

Socio-demographic factors	Menstrual problems	Odds Ratio (95%CI)	P-value	Sexually Transmitted Infections	Odds Ratio (95%CI)	P-value	Intimate Partner Violence	Odds Ratio (95%CI)	p-value
<b>Age (years)</b>									
<30	85 (77.3)	1	ref	32 (29.1)	1	ref	51 (46.4)	1	ref
30–39	116 (76.8)	1.03 (0.63–1.67)	0.932	62 (41.1)	<b>0.59 (0.35–0.99)</b>	<b>0.047</b>	97 (64.2)	<b>0.48 (0.29–0.79)</b>	<b>0.004</b>
40 and above	72 (60.5)	<b>2.22 (1.25–3.95)</b>	<b>0.006</b>	20 (16.8)	<b>2.03 (1.08–3.81)</b>	<b>0.027</b>	37 (31.1)	<b>1.92 (1.12–3.28)</b>	<b>0.018</b>
<b>Marital status</b>									
Married	205 (69.0)	1		82 (27.6)	1	ref	146 (49.2)	1	ref
Single	68 (81.9)	<b>0.49 (0.27–0.90)</b>	<b>0.021</b>	32 (38.6)	<b>0.61 (0.37–1.01)</b>	<b>0.054</b>	39 (47.0)	1.09 (0.67–1.77)	0.727
<b>Level of Education</b>									
Tertiary	62 (22.7)	1	ref	22 (24.2)	1	ref	38 (41.8)	1	ref
Secondary	164 (60.1)	0.76 (0.44–1.29)	0.303	76 (34.2)	0.61 (0.35–1.06)	0.081	120 (54.1)	0.61 (0.37–1.00)	0.048
None/Primary	47 (17.2)	0.91 (0.46–1.80)	0.786	16 (23.9)	1.02 (0.39–2.67)	0.966	27 (40.3)	1.06 (0.56–2.01)	0.854
<b>Wealth quintiles</b>									
Lowest	38 (59.4)	1	ref	10 (15.6)	1	ref	19 (29.7)	1	ref
Second	56 (63.6)	0.84 (0.43–1.61)	0.593	21 (23.9)	0.59 (0.26–1.35)	0.213	39 (44.3)	0.53(0.27–1.04)	0.067
Middle	68 (68)	0.69 (0.36–1.31)	0.260	27 (27)	0.50 (0.22–1.12)	0.089	53 (53)	<b>0.37 (0.19–0.72)</b>	<b>0.003</b>
Fourth	72 (85.7)	<b>0.24 (0.11–0.53)</b>	<b>&lt;0.001</b>	35 (41.7)	<b>0.26 (0.12–0.57)</b>	<b>0.001</b>	46 (54.8)	<b>0.35 (0.18–0.69)</b>	<b>0.002</b>
Highest	39 (88.6)	<b>0.19 (0.07–0.53)</b>	<b>0.001</b>	21 (47.7)	<b>0.20 (0.08–0.49)</b>	<b>&lt;0.001</b>	28 (63.6)	<b>0.24 (0.11–0.54)</b>	<b>&lt;0.001</b>

ref = Reference; Statistically significant values highlighted in bold

**Table 4b: Socio-demographic factors and reproductive morbidities among the study population**

Socio-demographic factors	Delayed conception (n=338)	Odds Ratio (95%CI)	p-value	Pregnancy complications (n=338)	Odds Ratio (95%CI)	p-value	Delivery complications (n=338)	Odds Ratio (95%CI)	p-value
<b>Age (years)</b>									
<30	6 (7.7)	1	ref	43 (55.1)	1	ref	24 (30.8)	1	ref
30-39	35 (24.5)	<b>0.26 (0.10–0.64)</b>	<b>0.002</b>	106 (74.1)	<b>0.43 (0.24–0.77)</b>	<b>0.003</b>	60 (42.0)	0.61 (0.34–1.10)	0.102
40 and above	21 (17.9)	<b>0.38 (0.15–0.99)</b>	<b>0.042</b>	71 (60.7)	0.80 (0.45–1.70)	0.443	34 (29.1)	1.08 (0.58–2.02)	0.798
<b>Marital status</b>									
Married	55 (19.3)	1	ref	187 (65.6)	1	ref	99 (34.7)	1	ref
Single	7 (13.2)	1.57 (0.67–3.67)	0.293	33 (62.3)	1.16 (0.63–2.11)	0.639	19 (22.9)	<b>1.79 (1.02–3.15)</b>	<b>0.042</b>
<b>Level of Education</b>									
Tertiary	19 (23.8)	1	ref	49 (61.3)	1	ref	18 (22.5)	1	ref
Secondary	35 (17.9)	1.42 (0.76–2.67)	0.271	127 (65.1)	0.85 (0.50–1.44)	0.543	79 (40.5)	<b>0.43 (0.24–0.77)</b>	<b>0.005</b>
None/Primary	8 (12.7)	2.14 (0.87–5.25)	0.094	44 (69.8)	0.68 (0.34–1.37)	0.285	21 (33.3)	0.58 (0.28–1.21)	0.149
<b>Wealth quintiles</b>									
Lowest	18 (29.5)	1	ref	30 (49.2)	1	ref	17 (27.9)	1	ref
Second	10 (12.8)	<b>2.85 (1.21–6.70)</b>	<b>0.015</b>	52 (66.7)	<b>0.48 (0.24–0.96)</b>	<b>0.038</b>	22 (28.2)	0.98 (0.47–2.06)	0.965
Middle	14 (15.6)	<b>2.27 (1.03–4.99)</b>	<b>0.040</b>	50 (55.6)	0.77 (0.41–1.48)	0.441	29 (32.2)	0.81 (0.40–1.65)	0.568
Fourth	15 (20.5)	1.62 (0.74–3.55)	0.231	56 (76.7)	<b>0.29 (0.14–0.61)</b>	<b>0.001</b>	32 (43.8)	0.50 (0.24–1.02)	0.056
Highest	5 (13.9)	2.60 (0.88–7.64)	0.081	32 (88.9)	<b>0.12 (0.04–0.38)</b>	<b>&lt;0.001</b>	18 (50.0)	<b>0.39 (0.17–0.90)</b>	<b>0.028</b>

ref = Reference; Statistically significant values highlighted in bold