

Postpartum Depression and Physical Activity among Women Attending Immunization and Postnatal Clinics in a Tertiary Hospital in Ibadan

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Abstract

Background

Depressive disorders are listed as one important public health issue among women of reproductive age. Postpartum depression is a mental health disorder occurring after childbirth and has disabling effect on mother and child. Amongst other alternative treatment methods, physical activity has been proposed as beneficial especially for mild postpartum depression. Therefore, this study sought to determine the prevalence of postpartum depression, and the association between postpartum depression and physical activity among women in a tertiary hospital in Ibadan.

Methods

The cross-sectional study was conducted among 401 women attending immunisation and postnatal clinics at the University College Hospital Ibadan. The data was collected using a self-administered questionnaire containing; a self-developed socio-demographic section, Edinburgh postnatal depression scale to measure postpartum depression and International physical activity questionnaire (short type) to assess physical activity. Analysis was done using chi square and a multivariate analysis to determine independent factors. Significance was set at 0.05.

Results

More than a third of the respondents (37.8%) had postpartum depression. Physical activity level was high (72.1%). High levels of physical activity had 1.25 the odds (unadj) of postpartum depression as compared to lower levels (95% CI=0.797-0.97). Gender of child, relationship satisfaction, age of child, were independently associated with postpartum depression.

Conclusion

This study shows that prevalence of postpartum depression is greater than previously reported in past studies in southwest Nigeria and high levels of physical activity may increase the risk of postpartum depression.

Keywords: Edinburgh postpartum depression scale; Nigeria; Physical activity; Postpartum depression

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SPSS: Statistical Package for Social Science

CI: Confidence Interval

Introduction

Among all common mental health disorders depression is the most common illness affecting people and by the year 2020 is expected to be second most prevalent health problem in general [1]. In 2004, the World Health Organisation estimated that 10% of the over 150 million people living with depressive disorders were in Africa. Among women of reproductive age depressive disorders lead universally [2]. Due to the greater prevalence of depression among females as compared to males, maternal mental health has become a vital public health issue and poses a challenge across the globe. The most common mental health challenge post childbirth is postpartum depression, an overwhelming illness that impairs maternal behavior [3]. Postpartum Depression (PPD) is classified as a major depressive episode that begins within 4 or 6 weeks of childbirth by the Diagnostic and Statistical Manual of Mental Disorders and 10th edition of the International Classification of Diseases respectively [4]. Although onset must be within 4-6 weeks, it is believed that women remain exposed to the risk of PPD even up to 14 months after delivery [5,6].

Reported as affecting around 1 in 10 women at some time in the first year [7], studies have shown a diverse range of prevalence. Halbreich & Karkun (2006) in a review of literature reports a prevalence of about 0% to almost 60% from one continent to another [8]. A literature review on lower-middle-income countries have placed the prevalence of PPD at approximately 20% [9]. According to studies conducted in Nigeria, about 10-30% of women attending primary care have PPD [10] while Abiodun (2006) in similar population reported a prevalence of 18.6% in developing society [11].

Several factors; psychological, biological, and social have been fingered in the etiology of PPD and have shown positive association.

Abbreviations

PPD: Postpartum Depression

PA: Physical Activity

IPAQ-SF: International Physical Activity Questionnaire-Short Form

EPDS- Edinburgh Postpartum Depression Scale

MET: Metabolic Equivalent of Time

Psychosocial risk factors such as history of depression, poor relationship with spouse, weak social support, stressful periods/events prior to birth, poor social status, stress of childcare and complications during birth have been strongly associated with postpartum depression [3,4,12]. General treatment of PPD includes medication and psychotherapy. Side effects of these drugs however are relatively unknown especially as it relates to its effects in breast milk [13,14] coupled with reports on relapses and other adverse effects [15] hence non-pharmacologic approaches have come highly recommended. Conversely, studies have shown that participation in some form of physical activities (leisure time activity or moderate to vigorous activity) improves PPD symptom [16-19]. Seeing as postpartum depression has proven negative effect on both the woman, infant and family, any effective treatment should therefore explore all available options of treatment including physical activity. To the best of my knowledge, no study has explored the relationship between physical activity and postpartum depression in Nigeria hence prompting this study whose main aim was to determine the prevalence of postpartum depression and the relationship between physical activity and postpartum depression. Other objectives included determining other risk factors in postpartum depression.

Methods

Participants

The cross-section study was carried out at the University College Hospital which is a multidisciplinary tertiary hospital in Ibadan attending to a mix of patients from all over. The target population for the study were infant nursing mothers that came for immunization at the child welfare clinic of the Institute of child health and postnatal clinic at the University College Hospital, Ibadan. Mothers who had a delivery within the 12months preceding this study, who were at least four weeks post-delivery were included. Women who were pregnant were excluded.

Study design

Total sampling method was employed for this study. This was due to the number of women attending the child welfare and postnatal clinics which was about 300 women per month and the study duration which was scheduled for six weeks. All consenting respondent available during the six weeks' duration of this study were surveyed until the required study size was achieved. The study size was determined using the Leslie Kish formula,

$$n = \frac{Z\alpha^2 pq}{d^2}$$

Where P=30.6%; q=69.4%; Z α = standard normal deviate corresponding to 95% confidence interval, critical value of 1.96; d=0.05

Using a previously reported prevalence of 30.6% in a Nigerian study [20], the sample size was calculated to be 326. Using a 10% anticipated non-response rate, sample size was rounded up to 400. In totality 401 women participated in the study

Data collection

The questionnaire which was filled by the respondents was in English language and consisted of three sections.

- Socio-demographic section containing personal information (age, religion, tribe, educational status, marital status, family type, employment status, occupation), family and social history (number of children, ever lost a child, help with child, relationship satisfaction, agreement with partner on finance, decision making and finance), Child and obstetric history (age of present child, illness during pregnancy, mode of delivery, desired gender, complications during pregnancy, history of depression)
- B- The Edinburgh Postnatal Depression Scale (EPDS): The scale, which consists of 10 questions, asks the respondent how they have been feeling over the last one week. Responses are ranked from 0 to 3, according to severity, with an overall score of 30. This study used a score of 10 as it's cut off for PPD. This score has been suggested for the detection of mild depression [21]. As reported by Adewuya et al, (2005), "At cut-off score of 10 the EPDS was found to be the best for screening for both major and minor depression (sensitivity=0.867, specificity=0.915, Diagnostic Likelihood Ratio for a positive result =10.200)" [21].
- C- International Physical Activity questionnaire-SF (IPAQ): Consisting of seven questions that measures individuals' past 7-day levels of physical activity, this scale measure the various intensities of physical activity that people do as part of their daily activities and time spent sitting and estimates total physical activity in Metabolic Equivalent of Task (MET) per min/week and estimated sitting time. The types of activity assessed were walking, moderately intense activities and vigorous activities. Categorical scoring method classifies physical activity into low, moderate or high according to the number of hours and days spent in moderate or vigorous physical activities and walking. The examples of physical activities given in the IPAQ was fine-tuned to reflect activities that are common to this environment and was validated by a content expert (physiotherapy department). The activities were chosen from the compendium of physical activities and had the same Metabolic Equivalent of Task as the original activities given. Categorical scoring was graded as,

Low-No activity OR Some activity is reported but not enough to meet Categories 2 or 3.

Moderate- any of the following 3 criteria: 3 or more days of vigorous activity of at least 20 minutes per day OR 5 or more days of moderate-intensity activity and/or walking of at least 30 minutes per day OR 5 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 600 MET-minutes/week.

High- any one of the following 2 criteria: Vigorous-intensity activity on at least 3 days and accumulating at least 1500 MET-minutes/week OR 7 or more days of any combination of walking, moderate- or vigorous-intensity activities accumulating at least 3000 MET-minutes/week" (<http://www.ipaq.ki.se>).

IPAQ has shown to be appropriate for use in developed or developing countries and has good evidence of test-retest reliability [22].

Data Analysis

Data were analyzed using SPSS version 20. Data collected at the end of each day was checked for errors and cleaned. Questionnaires with missing data were discarded. A research assistant was present to help with any difficulties the respondents encountered. Data was

categorised into women with EPDS scores above 10 as having symptoms of depression and below 10 as not having depressive symptoms. Physical activity was categorised as low, moderate or high. Descriptive statistics such as frequencies and percentages were used to summarize and present qualitative data. Relationship satisfaction was determined from three questions which were picked from the couple satisfaction index; in general, how often do you think things are going on well between you and your partner, do you feel like a team with your partner, does your partner meet your needs. Responses were ranked on a likert scale of 0-5 and summed up to 15. Relationship satisfaction was categorised as; poor (0-5), moderate (6-10) and good (11-15). Chi square test was used to determine the association between postpartum depression (dependent variable) and physical activity (independent variable). Bivariate analysis was also performed to explore the independent variables that were significantly associated with PPD at a significance level of 10%. Logistic regression was performed for all significant variables from the bivariate analysis to determine the odd ratio and 95%CI at a significance level of 5%.

Results

From a total of 600 women proposed to participate, 401 women willingly participated. Almost half of the women (43.1%) were within the age range of 30-34 while about 27% were above 35 years. The mean age of respondents was 31.8 ± 4.1 , with the age range of 20-50 years. Most were Yoruba (88%), the dominant ethnic tribe of south west, Christian (84%) and tertiary education (79.6%). Three quarter of the respondents had less than two children (76.5%) while 32.9% were between three months to six months. Half had some sort of support for childcare and almost all had their desired gender at birth (86.3%) and were in monogamous marriages (83.3%). Most of the respondents agreed with their partners on major decisions (87.3%), issues concerning finances (88%) and in-laws (79.8%). Most also reported having good relationship satisfaction with their partners (85.8%). Two-third of the respondents were healthy during pregnancy (78.6%) while almost all had no complications at birth (92.5%). About 59.7% of respondents had normal delivery and less than 10% had medical history of depression (Table 1).

| Variables | Frequency (N=401) | Percentage (%) |
|---------------------------|-------------------|----------------|
| Mother's age | | |
| <25 | 11 | 2.7 |
| 25-29 | 106 | 26.4 |
| 30-34 | 173 | 43.1 |
| ≥ 35 | 111 | 27.7 |
| Religion | | |
| Christian | 337 | 84 |
| Islam | 63 | 15.7 |
| Others | 1 | 0.3 |
| Ethnic group | | |
| Yoruba | 354 | 88.3 |
| Igbo | 20 | 4.8 |
| Others* | 27 | 6.9 |
| Educational status | | |
| Primary | 1 | 0.2 |
| Secondary | 29 | 7.2 |
| Tertiary | 319 | 79.6 |

| | | |
|---|-----|------|
| Others | 52 | 13 |
| Marital status | | |
| Single | 6 | 1.5 |
| Married | 395 | 98.5 |
| Family type | | |
| Monogamous | 334 | 83.3 |
| Polygamous | 54 | 13.5 |
| Single parenting | 13 | 3.2 |
| Employment status | | |
| Employed | 355 | 88.5 |
| Unemployed | 46 | 11.5 |
| Number of children living | | |
| Less than two children | 307 | 76.5 |
| More than two children | 94 | 23.5 |
| Age of present child | | |
| Less than 6weeks | 94 | 23.4 |
| 7weeks-3months | 99 | 24.7 |
| >3months-6months | 132 | 32.9 |
| >6months-9months | 61 | 15.3 |
| >9months-12months | 15 | 3.7 |
| Previously lost a child | | |
| Yes | 28 | 6.9 |
| No | 373 | 93 |
| Had support for childcare | | |
| Yes | 203 | 50.6 |
| No | 198 | 49.4 |
| Had desired gender at birth | | |
| Yes | 348 | 86.8 |
| No | 53 | 13.2 |
| Agreement with partner in making major decisions | | |
| Yes | 352 | 87.8 |
| No | 49 | 12.2 |
| Agreement with partner concerning family finances | | |
| Yes | 354 | 88.3 |
| No | 47 | 11.7 |
| Agreement with partner in ways of dealing with in-laws | | |
| Yes | 322 | 80.3 |
| No | 79 | 19.7 |
| Level of relationship satisfaction | | |
| Poor | | |
| Moderate | 6 | 1.5 |
| Good | 49 | 12.2 |
| | 346 | 86.3 |
| Illness during pregnancy | | |
| Yes | 85 | 21.2 |
| No | 316 | 78.8 |
| Complications at birth | | |
| Yes | 30 | 7.5 |

| | | |
|--|-----|------|
| No | 371 | 92.5 |
| Mode of delivery | | |
| Vagina | 235 | 57.9 |
| C/S | 164 | 40.6 |
| Forceps | 2 | 1.5 |
| Medical history of depression pre-pregnancy | | |
| Yes | 30 | 7.5 |
| No | 371 | 92.5 |

Table 1: Descriptive data for Socio-demographic factors.

Note:

*Others include Edo, Hausa, Delta

< (less than), > (greater than), ≥ (greater than or equal to)

Prevalence of postpartum depression and physical activity

Prevalence of PPD was 37.8%. Mean postpartum depression score was 8.15 (\pm 4.7) with scores ranging from 0- 26. Suicidal ideation was reported by 31 women (7.7%) who answered above 1 in the 10th question of the EPDS scale.

Physical Activity (PA) was generally high. Among the women, 41.2% had moderate levels of physical activity and 30.9% had higher levels of physical activity. In general, 72.1% of respondents were physically active while 27.9% had low physical activity.

Postpartum depression and physical activity

There was no statistically significant association between PPD and physical activity ($p=0.327$), but those with higher physical activity had an increased risk of having PPD (OR=1.255, 95% CI=0.797-0.977) (Table2).

| Variable | PPD | | Unadj OR | 95% CI | p-value |
|-----------------------|------------|------------|----------|------------|---------|
| Physical activity | Yes | No | | | |
| Physical activity | 116 (40.1) | 173 (59.9) | | | |
| Low physical activity | 39(34.8) | 73(65.2) | 1.255 | 0.797-0.97 | 0.327 |

Table 2: Association between postpartum depression and physical activity.

Note:

*physical activity included high and moderate scores.

Postpartum depression and other variables

Family type ($p<0.001$), age of child ($p=0.025$), number of children living ($p=0.019$) and desired gender ($p=0.026$) were statistically associated with postpartum depression. Maternal age ($p=0.912$), support for childcare ($p=0.220$), previously lost a child ($p=0.413$) and marital status ($p=0.156$) were not statistically associated with postpartum depression (Table 2). Medical history of depression pre-pregnancy was significantly associated with postpartum depression ($p=0.086$). Agreement with partner on family finances ($p=0.026$), ways to deal with in-laws ($p=0.008$), decision making ($p=0.008$) and relationship satisfaction ($p<0.001$) were also significantly associated with postpartum depression (Table 3).

| Variables | PPD (≥10) | | p-value |
|----------------------------------|-----------|------------|---------|
| | Yes | No | |
| Maternal age | | | |
| 25 | 4 (34.6) | 7(63.6) | 0.912 |
| 25-29 | 38 (35.8) | 68 (64.2) | |
| 30-34 | 69 (39.9) | 104 (60.1) | |
| ≥35 | 44 (39.6) | 67 (60.4) | |
| Education | | | |
| Secondary | 14(48.3) | 15(51.7) | 0.54 |
| Tertiary | 121(37.9) | 198(62.1) | |
| Others | 20(38.5) | 32(61.5) | |
| Employment | | | |
| Employed | 138(38.9) | 217(61.1) | 0.802 |
| Unemployed | 17(37) | 29(63) | |
| Family type | | | |
| Polygamous | 34(63) | 20(37) | 0.000* |
| Monogamous | 115(34.4) | 219(65.6) | |
| Single parenting | 6(46.2) | 7(53.8) | |
| Religion | | | |
| Christian | 124(36.8) | 213(63.2) | 0.105 |
| Islam | 30(47.6) | 33(52.4) | |
| Marital status | | | |
| Married | 4(66.7) | 2(33.3) | 0.156 |
| Single | 151(38.2) | 244(61.8) | |
| Had support for child | | | |
| Yes | 72(35.6) | 130(64.4) | 0.22 |
| No | 82(41.6) | 115(58.4) | |
| Number of children living | | | |
| Less than 2 | 109(35.5) | 198(64.5) | 0.019* |
| More than 2 | 46(48.9) | 48(51.1) | |
| Have you previously lost a child | | | |
| Yes | 14(53.8) | 12(46.2) | 0.413 |
| No | 231(61.9) | 142(38.1) | |
| Age of present child | | | |
| <6weeks | 33(35.1) | 61(64.9) | 0.025* |
| 6weeks-3mths | 29(29.3) | 70(70.7) | |
| >3mths-6mths | 59(44.7) | 73(55.3) | |
| >6mths-9mths | 24(39.3) | 37(60.7) | |
| >9mths-12mths | 10(66.7) | 5(33.3) | |
| Had Desired child gender | | | |
| Yes | 72(20.8) | 274(79.2) | 0.026* |
| No | 18(34.6) | 34(65.4) | |
| Illness during pregnancy | | | |
| Yes | 39(46.4) | 45(53.6) | 0.183 |
| No | 121(38.4) | 194(61.6) | |
| Mode of delivery | | | |
| Yes | 91(39.2) | 141(60.8) | 0.717 |
| No | 61(37.4) | 102(62.6) | |
| Complication at birth | | | |

| | | | |
|--|-----------|-----------|---------|
| Yes | 15(50) | 15(50) | 0.176 |
| No | 138(37.5) | 230(62.5) | |
| Medical history of depression pre-pregnancy | | | |
| Yes | 15(53.6) | 13(46.4) | 0.086** |
| No | 137(37.2) | 231(62.8) | |
| Agreement with partner concerning family finances | | | |
| Yes | 128(36.3) | 225(63.7) | 0.026* |
| No | 24(53.3) | 21(46.7) | |
| Agreement with partner in ways of dealing with in-laws | | | |
| Yes | 112(35) | 208(65) | 0.008* |
| No | 40(51.3) | 38(48.7) | |
| Agreement with partner in decision making | | | |
| Yes | 128(36.6) | 222(63.4) | 0.008* |
| No | 24(50) | 24(50) | |
| Relationship satisfaction | | | |
| Poor/ moderate | 33(63.5) | 19(36.5) | 0.000* |
| Good | 118(34.2) | 226(65.7) | |

Table 3: Association between Postpartum depression and socio-demographic factors.

Note: *Significant level 0.10

Multiple regression

Age of child was statistically associated with postpartum depression. Mothers with child between 6weeks-3months were independently associated with postpartum depression (OR=0.24; 95% CI=0.06-0.89). Women with children between 6weeks-3months are at less risk to have PPD than women with children above 9months. Family type had a statistically independent significant association with postpartum depression. Women who were in polygamous marriages were three times more likely to have postpartum depression than those that were in monogamous family (OR=3.49; 95% CI=1.83-6.65) and single parents were less likely (OR=0.66; 95% CI=0.14-3.06). Women who reported having the desired gender were also less likely (OR=0.47; 95% CI=0.24-0.93) to report postpartum depression symptoms than those who did not have their desired gender. Relationship satisfaction was independently associated with postpartum depression (OR=2.664; 95% CI=1.317-5.390). Those with poor/ moderate relationship satisfaction were twice as likely to have postpartum depression than those in a good relationship with partner (Table 4).

| Variable | Adjusted OR | 95%CI | p-value |
|--------------------------|-------------|--------------|---------|
| Child age | | | |
| <6weeks | 0.31 | 0.085- 1.128 | 0.050* |
| 6wks- 3mths ^a | 0.248 | 0.069-0.892 | 0.033* |
| 3mths-6mths | 0.450 | 0.130- 1.561 | 0.208 |
| 6mths-9mths | 0.438 | 0.120- 1.599 | 0.211 |
| >9months | 1 | | 0.143 |
| Family type | | | |
| Polygamy | 3.491 | 1.832- 6.650 | 0.000* |
| Single parenting | 0.66 | 0.143- 3.067 | 0.594 |
| Monogamy | 1 | | 0.001* |
| Desired gender | | | |
| Yes | 0.466 | 0.237-0.916 | 0.027* |

| | | | |
|---|-------|--------------|--------|
| No | 1 | | |
| Relationship satisfaction | | | |
| Poor/moderate | 2.776 | 1.366- 5.642 | 0.005* |
| Good | 1 | | |
| Physical activity | | | |
| Low | 1 | | 0.232 |
| Moderate | 0.728 | 0.412-1.288 | 0.276 |
| High | 1.144 | 0.625-2.096 | 0.663 |
| Do you agree with partner concerning family finances | | | |
| Yes | 1.289 | 0.562-2.956 | 0.549 |
| No | 1 | | |
| Do you agree with partner in making major decisions | | | |
| Yes | 0.583 | 0.274-1.240 | 0.161 |
| No | 1 | | |
| Do you agree with partner in dealing with in-laws | | | |
| Yes | 0.931 | 0.479-1.808 | 0.832 |
| No | 1 | | |
| Number of children living | | | |
| <2 | 0.64 | 0.378- 1.083 | 0.097 |
| >2 | 1 | | |
| Medical history of depression | | | |
| Yes | 1.492 | 0.610-3.647 | 0.381 |
| No | 1 | | |

Table 4: Multivariate analysis.

Note: *Significance set at 0.05

Discussion

This study showed a high prevalence of 37.8% which is comparable to some other Nigerian studies done in similar hospital setting [20,23]. In Nigeria varying rates from 10- 44% has been reported from different regions of the country [21,24-26]. This wide range prevalence is also reflected in Africa as well as other continents [27]. However, majority of developing countries have estimated prevalence rates higher than that those found in high-income countries [27-29]. This variability from country to country could be due to study design (diagnostic tool, cut off scores, period of assessment), cross cultural differences, socio-economic terrain, and perception of PPD/ mental health. This further indicates that a woman's susceptibility to postpartum depression is not based on geographical location but on social, economic, psychological and biological factors that thrive in enabling environments.

With three quarter of the women reporting moderate to high Physical Activity (PA), prevalence of physical activity was quite high (72.1%). Although there was no exact study measuring PA in postpartum women in Nigeria, however two Nigerian studies report 79% and 52.2% postnatal exercises engagement [30,31] with activity participation differing from this study. Other foreign studies have shown lower physical activity levels [16,32]. Though High PA in this study could be due to the economic terrain which necessitates a woman getting back to work shortly after whilst juggling home care, the high levels of PA could be because a one-year range was used. Physical activity was found to be lesser in the immediate postpartum period and increased constantly throughout the postpartum period. This may

also have influenced the high rate reported. The increasing levels of PA down the postpartum period may reflect the reduction in help and support earlier received and more women being comfortable participating in PA. This was similarly reported by Borodulin et al. (2009) [33]. Women think it unsafe to participate in physical activity earlier than three months postpartum [31].

There was no statistically significant association between postpartum depression and Physical Activity (PA) levels in this study. This was similarly reported by Daley et al. (2008) and Saligheh, et al. (2014) [7,34]. The latter was a cross sectional study assessing physical activity and postpartum depression amongst women from post puerperal to the first-year post delivery, similar with this present study. Other studies however report exercise to be effective in preventing and treating mild to moderate depression [18,19,35-38]. These studies were either experimental or a review of literature. Although there was no significant association, high PA increased the chances of developing PPD symptoms as compared to lower PA. This finding is buttressed by Demissie et al. (2011) who reported women who had high levels of PA had twice the risk of developing elevated depressive symptoms [17]. High PA in this study involved vigorous exercises which were household activities and walking than activities performed for leisure. It has been reported that leisure/outdoor physical activity reduces PPD as compared to activities due to childcare or household work [17,39].

Age of child which is illustrative of the postpartum period was significantly associated with postpartum depression. Mothers with younger babies were less likely to have postpartum depression compared with older babies. This finding is similar with those of Saligheh et al. (2014) and Shorey et al. (2018) [34,40]. Shorey et al. (2018) who reviewed the literature using healthy women noted a general increasing prevalence with age of child. Age of child, which is a proxy for postpartum period, was associated with an increase in prevalence of postpartum depression as the period progresses. Bugdayci, et al. (2004) reports PPD prevalence increased from 29% (0-2-month) to 36% (7-12months) and higher above 13 months [41]. This increase in PPD may account for higher outcomes of PPD in later postpartum periods than earlier ones [2,42]. With the significant waning of physical, financial, and emotional support from friends and family coupled with the mother's full participation in home activities, childcare, employment and/or business, one might see how this could account for increased PPD.

Most studies have found positive association between relationship satisfaction and PPD, this study wasn't any different. Whilst marital satisfaction has been suggested as a mild predictor of PPD, its effect is majorly based on the perceived level of support; physical, financial, and emotional the woman receives in the relationship [3,43,44]. This same perceived satisfaction can be connected to the effect family setting has on PPD. In this study family setting was independently associated with postpartum depression with polygamy conferring a three-fold increase in postpartum depression than women in monogamous marriage. This finding is similarly reported in other studies done in traditional societies [44,45]. In contrast, Ghosh & Goswami (2011) and Rahman et al. (2003) found women coming from nuclear family suffer more from PPD [46,47]. The quality of the relationship with the husband and type of support received could determine the impact of family setting on postpartum symptoms.

Gender of the child showed a positive risk factor for postpartum depression. This is similar to other studies done both in Nigeria [11]

and other traditional societies [43,48] where the husband's or even the wife's disappointment with the gender of the baby is significantly associated with developing postpartum depression, specifically if the baby is a girl. This is especially seen if the woman already had a female child. This preference most Africans have for male children as heirs and progenitor of family puts pressure on the woman. Comparably, in some western studies similar relationship did not exist between the gender of the child and postpartum depression [4,29].

Conclusion

Postpartum depression is prevalent here in Nigeria and is generally higher than the speculated 10-15%. It is a global health issue that should be taken seriously as it cuts across both low- and high- income countries and associated factors are dependent upon cultural and socio-economic terrain. It is no longer a myth that can be swept under the carpet but should be openly addressed and necessary systems put in place, especially in tertiary hospitals that attends to a mix of mothers in the society, in order to enable healthier, happier families. This study hopes to encourage further research in this direction.

Limitations

A standard scale was not used to assess relationship satisfaction therefore the result should be interpreted with caution. Also, as a cross sectional study I could not determine temporal association between postpartum depression and physical activity. In as much as the study population was a mix of people, the sample population may not reflect this diversity as most were educated, consequently a generalization must be carefully made.

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Declaration

Ethics and consent to participate: Approval for the study was sought from the University of Ibadan / University College Hospital Health Research Ethics Committee (UI/UCH/EC/16/0103). Permission was also sought from the authorities of the immunisation clinic (Institute of child health, UCH) and postnatal clinic (Obstetrics and gynaecology department, UCH) where the study was carried out. Written informed consent was obtained from respondents after informing them of the purpose, intent, voluntary and non-maleficence of the study. Confidentiality was maintained in the questionnaire by keeping them anonymous.

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