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Orginal Article

Determinants of Birth Spacing Practice Among Parous Mothers

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Abstract

Birth spacing is the interval between a live birth and a subsequent pregnancy, which is recommended to be at least two years. This study aimed to identify the determinants of birth spacing practices among parous mothers attending antenatal clinics in Port Harcourt, Nigeria. A cross-sectional study was conducted among 410 parous mothers aged 15–49 in Port Harcourt, Nigeria, from June to October 2024. A multistage sampling procedure was used to select the respondents, and data was collected using a semi-structured, interviewer-assisted questionnaire. Frequency tables were generated, and a binary logistic regression model was used to identify the determinants of birth spacing practices at a 5% significance level. The respondents' mean age was 35.2 ± 3.9 years. The prevalence of birth spacing practice was 36.6%, with condoms (13.7%) being the most commonly used contraceptive method. Determinants such as attaining secondary education (OR = 1.9; 95% CI = 3.6–11.8; P = 0.00), tertiary education (OR = 1.5; 95% CI = 2.6–7.6; P = 0.00), employment status (OR = 2.4; 95% CI = 1.4–4.1 ; P = 0.00), knowledge of birth spacing (two-year interval (OR = 3.5; 95% CI = 1.6–7.4; P = 0.00), knowledge of the benefits of birth spacing (OR = 2.6; 95% CI = 3.7–46.4 P = 0.00), and spouse consent (OR = 3.8; 95% CI = 2.5–5.8; P = 0.00) significantly contributed to the practice of birth spacing among parous mothers.

Keywords: Birth spacing practice, Pregnancy, Parous mothers, Contraception, Contraceptive methods, Port Harcourt.

INTRODUCTION

Birth spacing is the time interval between two successive live births [1]. It is suggested to be a minimum of two years or thirty-three months, depending on the situation, between a live birth and the next live birth or pregnancy [2]. An estimated 2.6 million stillbirths occur each year worldwide [1]. Maternal and child health effects including low birth weight, stillbirth, uterine rupture, neonatal mortality, child malnutrition, and maternal haemorrhage, are linked to poorly spaced pregnancies [1]. In addition, mothers and the family as a whole bear a financial burden, as well as psychological and mental health issues [3].

The total fertility rate (TFR) is one of the variables that might influence birth spacing practices [4,5]. About 200 million women of reproductive age in low- and middle-income countries need to space out or limit their pregnancies, but family planning is not widely available, especially in many developing nations [6,7]. Conversely, women who have adequate birth intervals are better able to recover from macro- and micro-nutrient depletion caused by pregnancy and nursing [6,7]. As a result, this enhances the children's health and future pregnancies [2,3]. It is projected that every year, 1.6 million deaths of children under five could be avoided if births were spaced out by at least 33 months [6]. According to the findings of a study done among 378 reproductive-age women in Kogi State, North Central Nigeria, 80.4% of the women knew about the birth spacing technique, but only 26.2% of them used it [8,9].

Globally, the adoption of birth spacing initiatives has shown encouraging progress in improving mother and child survival in a variety of multifaceted ways, mostly through reducing the

likelihood of unplanned, closely spaced pregnancies and the associated complications [4]. Since 2000, the global population has increased by 80 million, surpassing 7.7 billion in 2019 [10]. Reproductive rates are still high in low- and lower-middle-income nations, with an average of 4.6 births per woman in low-income nations and 2.7 births per woman in lower-middle-income nations [2].

Sub-Saharan Africa, which contains the world's poorest countries, is predicted to experience most of the world's population growth, making population management crucial [10]. Specifically, 19 of the 20 nations including Nigeria with the fastest rates of population growth are found in sub-Saharan Africa [10]. According to the Organisation for Economic Co-operation and Development, the overall fertility rate in affluent countries has dropped to 1.7, but it has climbed to 4.6 in sub-Saharan Africa, which includes Nigeria [10].

In eastern Nigeria, a study revealed high fertility prevalence connected to people's conceptions, beliefs, and behaviors regarding birth spacing [11-18]. The present study aims to evaluate the perceptions of reproductive-age women in Port Harcourt toward birth spacing. Due to its significant impact on fertility and potentially dangerous effects on the health of mothers and children, the length of birth spacing has drawn attention in research on demography and public health. Birth intervals of less than 17 months or more than 5 years may result in several health complications for both mother and child [16]. The current study will only focus on one city in Nigeria. As evidenced by the literature, birth spacing is highly affected by a variety of demographic and socioeconomic characteristics of women, such as household wealth status, residence, maternal education, husband education, contraceptive use, media exposure, women's healthcare decision-making autonomy, religion, mother occupation, breastfeeding duration, parity, and maternal age [19].

Numerous factors were linked to birth intervals in studies on birth spacing. Certain factors, like being sexually active, using contraceptives, being infertile after giving birth, having an abortion, or being sterile, may be direct factors. Indirect factors, on the other hand, may be sociocultural factors. Factors such as household wealth, residence, husband's education, maternal education, contraceptive use, media exposure, women's autonomy in healthcare decisions, religion, maternal occupation, breastfeeding duration, parity, and maternal age are significant predictors of birth spacing [1,11,12].

Unfavorable pregnancy outcomes continue to be a global public health concern in numerous nations [6]. Different outcome variables for the mother, infant, and kid are influenced by birth spacing [14]. In high- and moderate-income nations, maternal insufficient birth intervals are a major public health concern that has short- and long-term effects on human capital [15]. Shorter birth intervals may increase the risk of adverse outcomes such as underweight, stunting, low birth weight, preterm birth, early neonatal death, intellectual disabilities, and developmental delays [15].

Shorter birth spacing may be linked to delayed cognitive and behavioral development in preschoolers as well as a higher risk of autism spectrum disorder in children under five, according to recent research from high-income nations [2]. One of the most important aspects of reproductive health is birth spacing, which is the technique of timing pregnancies to provide the best possible results for the mother and child [17]. Birth spacing data sheds light on patterns of birth spacing, which influence fertility and the mortality rates of mothers, newborns, and children [16]. Mare et al. highlighted that women with experience are more likely to practice birth spacing due to their greater knowledge [4]. However, there is a notable lack of education and information to promote effective birth spacing[18].

Furthermore, women's decisions about birth spacing are also influenced by cultural and societal standards. Certain cultures may put pressure on women to have children quickly, which can result in shorter childbearing intervals and higher health risks for the mother and child [20]. Improving birth spacing practices among parous mothers requires addressing cultural barriers and raising awareness about the health benefits of birth spacing. Therefore, this study aimed to identify the determinants of birth spacing practice among parous mothers attending antenatal clinics in Port Harcourt, Nigeria.

MATERIAL and METHODS

Port Harcourt is the capital and largest city in Rivers State, Nigeria. It is the fifth most populous

city in Nigeria. The 2006 census recorded a population of 541,115. The population was projected from this figure to be 963,373 in 2010, assuming linear growth and an average annual growth rate of 5.2%. The city has 110 functional hospitals and clinics. The study was conducted among parous mothers attending antenatal clinics in Port Harcourt, Nigeria. A cross-sectional study design was used for this research, focusing on parous mothers aged 15-49 years who are currently married and have at least one child from a previous pregnancy.

Data Collection

Data was collected using a semi-structured questionnaire with two research assistants. The questionnaire was divided into four sections: socio-demographic characteristics of the respondents, respondents' knowledge and perceptions of birth spacing, respondents' sexual behavior, and respondents' reproductive health behaviors. Sample Size Determination: The sample size was determined using the Leslie Kish formula for estimating single proportion

$$n = \frac{Z^2 \alpha P q}{d^2},$$

where, n= Minimum sample size

Zα = Standard normal deviate corresponding to 2-sided 5% level of significance = 1.96

p = 20.0% (Proportion of women of reproductive age that practice birth spacing in Nigeria 2)

q = 1 – p

d = Precision; 5% level of significance = 0.05

$$n = \frac{1.96^2 \times 0.2 \times (1 - 0.2)}{0.5^2} = 246$$

Adjustment for 10% non-response rate;

New sample size = $\frac{246}{1-0.1} = 273$

Effect Adjustment

Design effect of 1.5, adjust the non-response adjusted sample size (n adjusted) using the formula

Final (n) = n adjusted x design effect = 273 x 1.5

= 409.5 approximately 410.

The final adjusted sample size, considering both non-response and a design effect, is approximately 410 participants.

Statistical Analysis

Data was entered into the computer and analyzed using SPSS version 26. Errors were checked and corrected. Relevant frequencies, proportions, percentages, and means of variables were generated and a logistic regression model was used to identify statistically significant predictors of birth spacing practice at a 5% level of significance.

RESULTS

The response rate for this study was 100%, with a total of 410 participants drawn from 18 public and 18 private antenatal clinics in Port Harcourt, Nigeria.

Socio-Demographic Characteristics of Respondents

Table 1. presents the sociodemographic characteristics of respondents. The age of the respondents ranged from 15 to 49 years with a mean age of 35.2 ± 3.9 years. More than half of the respondents (82.4%) were aged between 31 to 46 years and 80.7% of them were married. 100.0% of the respondents had obtained a tertiary education, 42.0% were self-employed, 58.3% were Ijaws and 90.2% were Christians.

Table 1. Distribution of socio-demographic characteristics of respondents

Variable	Frequency	Percentage
Age		
15 -30	72	17.6
31 - 46	338	82.4
≥ 47	0	0.0
Mean age [± SD]	35.2 (± 3.9)	
Marital Status		
Never married	60	14.6
Married	331	80.7
Widowed	19	4.6
Divorced	0	0.0
Level of Education		
Non-formal	28	6.8
Primary	118	28.8
Secondary	100	24.4
Tertiary	410	100.0
Occupation		
Employed	190	46.3
Unemployed	220	53.7
Ethnicity		
Ijaw	239	58.3
Igbo	106	25.9
Yoruba	25	6.1
Hausa	40	9.8
Religion		
Christianity	370	90.2
Islam	40	9.8
Tradition	0	0.0

The Birth Spacing Practice of Respondents

Table 2. shows the birth spacing practices of respondents. More than half (85.4%) of the respondents had attended family planning or contraceptive sessions. However, 63.4% of them had never used contraceptive methods for birth spacing, even before the current pregnancy, while 29.3% reported cultural/religious factors as influences on their decision. A majority (74.1%) of the respondents' spouses were aware of their choices, 61.2% had their spouse's consent, and 58.8% were willing to use any of the contraceptive methods before getting pregnant with another baby.

Table 2. Respondents' birth spacing practice

Variable	Frequency	Percentage
Ever attended any family planning or contraceptive use sessions		
Yes	350	85.4
No	60	14.6
Ever used any of the contraceptive methods for birth spacing		
Yes	150	36.6
No	260	63.4
Contraceptive methods ever used		
Condoms	56	13.7
Birth control pills	28	6.8
Injectable contraceptives	28	6.8
Intrauterine devices (IUD)	20	4.9
Traditional methods	18	4.4
No method used	260	63.4
Factors that influence the decision on birth spacing		
Health consideration	115	28.0
Economic factors	71	17.3
Personal preference	52	12.7
Spouse preference	52	12.7
Male child preference	0	0.0
Female child preference	0	0.0
Cultural/ religious beliefs	120	29.3
Spouse awareness of the method		
Yes	304	74.1
No	106	25.9
Spouse consent		
Yes	150	61.2
No	260	38.8
Ever used contraceptive methods before the current pregnancy		
Yes	251	36.6
No	159	63.4
Willingness to use any of the contraceptive methods before another pregnancy		
Yes	241	58.8
No	169	41.2

Determinants of Birth Spacing Practice Among Respondents

Table 3. shows the logistic regression model of the determinants of birth spacing practice among respondents. The determinants of birth spacing practice were the secondary and tertiary level of education attainment, being currently employed and self-employed, respondents knowledgeable of the meaning of birth spacing, accepting that birth spacing is beneficial for the child's health, and spouses consenting to the choice of contraceptive for birth spacing. Those who had attained a tertiary level of education (OR = 1.9; 95% CI = 3.6 - 11.8; P = 0.00) were more likely to practice birth spacing compared to those who had acquired a secondary level of education (OR = 1.5; 95% CI = 2.6 - 7.6; P = 0.00). Respondents who were currently employed (OR = 2.4; 95% CI = 1.4 - 4.1; P = 0.00) were more likely to practice birth spacing compared to those who were self-employed (OR = 0.4; 95% CI = 0.2 - 0.7; P = 0.00). Respondent's knowledge of the meaning of birth spacing (the woman being pregnant again after 2 years of previous pregnancy) (OR = 3.5; 95% CI = 1.6 - 7.4; P = 0.00), respondents who reported that birth spacing will give the child better health (OR = 2.6; 95% CI = 3.7 - 46.4; P = 0.00), and spouses consent to the choice of contraceptive for birth spacing (OR = 3.8; 95% CI = 2.5 - 5.8; P = 0.00) were more likely to practice birth spacing.

DISCUSSION

The study was conducted to determine the predictors of birth spacing among parity mothers attending antenatal clinics in Port Harcourt, Nigeria.

The results of this study showed that among the women of reproductive age who attend antenatal clinics in Port Harcourt, 36.6% of them practiced birth spacing. This was slightly lower than what Wegbom et al. [21] reported in Nigeria, who established that 40.1% of women of reproductive age practiced birth spacing. In contrast to these reports, a study conducted in Kogi State, North-Central Nigeria by Owoyemi and Haruna [9] reported that only 26.2% of women of reproductive age practised birth spacing. The same applies to a study by Barrow [22] in Gambia which reported a 30.4% prevalence of birth spacing practice among women of reproductive age, and 26.2% by Akamike et al. [23]

in Southeast, Nigeria. The differences in proportion could be a result of the disparity in the level of awareness and style of development experienced in these locations, capable of influencing the practice of birth spacing among parous mothers.

Table 3. Logistic regression model of determinants of birth spacing practice among respondents

Variable	OR	95% Confidence Interval (CI)	p-Value
Level of education			
Non-formal	-		
Primary	2.0	0.0 - 1.0	0.99
Secondary	1.5	2.6 - 7.6	0.00*
Tertiary	1.9	3.6 - 11.8	0.00*
Occupation			
Employed	2.4	1.4 - 4.1	0.00*
Unemployed	-		
Definition of birth spacing			
Pregnant again after 1 yr birthday of first baby	-		
Pregnant again after 2 yrs birthday of first baby	7.9	1.6 - 7.4	0.00*
Benefits of birth spacing			
Better maternal health	-		
Better child's health	2.6	3.7 - 46.4	0.00*
Spouse consent			
Yes	3.8	2.5 - 5.8	0.00*
No	-		
Willingness to have a choice of number of children with the practice of birth spacing			
Yes	-		
No	0.7	0.4 - 1.0	**0.06**
Preferred number of children			
2	-		
3	0.7	0.2 - 2.9	0.61
4	0.5	0.1 - 1.7	0.25

*Significant variable at 5% level of significance

The contraceptives used for birth spacing among the respondents in this study were condoms (13.7%), birth control pills (6.8%), injectable contraceptives (6.8%), IUDs (4.9%) and traditional methods (4.4%). This was lower than what was reported by Akamike et al. [23] in Southeast, Nigeria who reported 57% traditional method use, 32.7% condom use, 27.3% implant use, 23.6% injectable use and 16.4% contraceptive use. The same applies to a study by Barrow [22] in Gambia which reported 58.5% injectable use and 44.0% contraceptive pills use. The differences in proportion could be explained by the fact that the studies were conducted in different locations and sample sizes which may have significantly influenced the results.

At the multivariate level, this study found statistically significant determinants of birth spacing practice among parous mothers in Port Harcourt, Nigeria, they were; having attained a secondary level and tertiary level of education, being currently employed, being currently self-employed, defining birth spacing as a woman being pregnant again after 2 years of previous pregnancy, accepting that birth spacing is beneficial for the child's health, and spouse consenting to choice of contraceptive for birth spacing. This agreed with the results of a previous study by Akamike et al [23] in rural communities in Southeast, Nigeria, which reported a minimum secondary level of education for respondents and their husband/partner as statistically significant determinants of birth spacing practice. In accordance, education level and family income were reported by a previous study conducted in Bayelsa State, South-South, Nigeria [24]. In the same vein, educational level and socioeconomic level were reported in Africa [25]. Also, educational status; primary education, secondary and higher, working, classified as rich wealth index level, preferred waiting time two years and above to give birth, and community level education were reported in sub-Sahara Africa [26]. The similarity could be explained by the fact that Africa still lags in terms of good and sustainable education for its citizens and the poor work done on the education of girl children and women. This may have been the reason for the strong influence of educational level on birth spacing practice among parous mothers plus employment status that accounts for socioeconomic status. In contrast to the results of a similar study conducted by Gelagay et al. [3] in Northwest Ethiopia who reported antenatal clinic follow-up, husband occupation, and history of abortion as statistically significant determinants of birth spacing practice.

In the same vein, not attending formal education, family planning utilization for less than 3 years, being poor, breastfeeding for fewer than 24 months, having more than 6 children and waiting time ≥30 minutes in Southern Ethiopia [27]. Similarly, being younger (15-24 years), not planning to have another pregnancy, not deciding together with husband when to have the next child, not always using contraceptives before the next pregnancy, and

lack of influence of husband on when to have the next child were reported by a previous study conducted in Uganda [28]. Similarly, this disagreed with a previous study that reported rural residence, non-exposure to media, younger maternal age, non-use of contraception, unmet need for family planning, higher birth order, and desire to have at least six in sub-Saharan Africa [29]. The disparity could be an explanation of the difference in the studies' locations that may have significantly influenced what factors could affect birth spacing practice.

CONCLUSION

The study shows that the proportion of parous mothers attending antenatal clinics in Port Harcourt, Nigeria that practice birth spacing is still below average. More than half were willing to use any of the contraceptive methods for birth spacing after the current pregnancy and continue use to achieve their desired number of children. Factors established from this study that predict birth spacing practice were sociodemographic characteristics, level of knowledge about the meaning of birth spacing, importance and benefits of birth spacing, spouse involvement, having ever used contraceptives before current pregnancy, willingness to continue use, duration of birth spacing, and desired number of children. Further intervention studies should be carried out to ascertain the effective ways of increasing the prevalence of birth spacing practice among parous mothers.

Conflict of Interest

The authors declare they have no conflicting interests.

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