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The Influence of Social Activities on Seasonal Variation in Birthrates in Makurdi Town, Benue State, Nigeria

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ABSTRACT

To examine the influence of social activities on birth rates in Makurdi town of Benue State Nigeria, a total of 23,000 recorded births from the year 2006 to 2015 were collated from six renown hospitals purposively selected based on issuance of ethical clearance and availability of data. With the use of secondary data, descriptive analysis was implored using tables and graphs. The result shows that births in Makurdi are characterized with two major peaks and two troughs. There is the March to June peak and the September to October peak. Alternatively, there is also the July to August trough and the December to January trough. Males generally dominate March births while females dominate December births. More pregnancies are conceived in the cool dry season which marks wedding celebrations, Christmas and New Year festivities while the hot dry season marking the Easter festivity and farming activities records the least conceptions. The implication is that conception is higher during festive periods that fall within months of low temperature. Therefore, the Ministry of health and other stake holders in Makurdi town should carry out awareness campaign on effective family planning during periods of high social activities or festivities to address the issue of high birth rates and over population in our society; Schools managements in Makurdi town should educate the students during festive periods to avoid teenage pregnancy.

Key Words: Birthrates, Makurdi Town, Seasons, Nigeria

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Introduction

The world population of about 7.3 billion is increasing at an unprecedented rate without corresponding availability of food, space and renewable energy. The current population of Nigeria as the 7th most populous country of the world, is estimated at 184,784,875 million with a yearly growth rate of 2.627% and daily increase of 13,111 (United Nations, Department of Economic and Social Affairs, Population Division, 2015). The 13,111 projection of daily births is alarming; therefore, requiring serious study and planning.

Amongst different countries of the world, it is observable that birth rates varies within seasons of the year. From one continent to the other, this variation in human procreation is never similar. For instance, in some European countries, high birth rates are recorded during spring (within March and May) while low birth rates are recorded during autumn (within October and November). On the other hand, a sharp disparity exist in the United States of America where birth rates peaks during summer and early autumn (July to September), and hit the lowest point during spring (March to May). (Lam & Miron, 1994).

Albeit, while a number of researches have made attempts in advancing the causes of these seasonal variations in birth rates, the social indicators are often ignored. This is evident in the emphasis placed on physical and environmental causes such as, temperature and light as put forward by Roenneberg and Aschoff (1990), Lam and Miron (1991, 1996). For them, temperature and light greatly alters human hormones, which may distort the efficacy of semen, coital frequency and menstrual cycle. Of course, these are body anatomies and physiologies underlying any conception, and if altered, could result to variation in conceptions, as well as birth rates. But human social activities such as work, available foods, celebrations and merriments may strongly supplement temperature and light as causes of seasonal variations in birth rates.

Studies at regional levels shows that seasonal variation in birth rates can also be attributed to differences in temperatures. This has been observed in different regions of the world including Nigeria. As contained in Olusola (1985) study of Igbo Ora, an agrarian society in Western Nigeria, on births variation between 1965 and1975, 12,708 registered births were investigated using regression as a statistical tool. Birth rates in this region usually attain zenith around May and hit bottom low in November. In his study, the extent of the seasonal variation above and below the annual mean was about 7%. There was no prominent change in the period of high birth and the differential gap within the 11-year period of study. For Olusola, this pattern of variation is owing to climatic conditions such as unstable temperature, as well as, socio-cultural patterns of life in terms of farming activities as observed in agrarian societies.

In Benin City, southern Nigeria, Enabudoso, Okpighe, Gharor and Okpere (2011) observed that birth rates at this part of the world reach climax around April to May and make swift jump to October, while its trough around July to August, and skip to December. The months of April, May and October recorded high margins birth rates than the monthly average delivery rate, while the other way round was the case for July, August and December at 99% confidence level. In northern Nigeria, Zemba (2003) discovered a relationship between birth rates and temperature in Yola, North-Eastern part of Nigeria. The study observed that, the rate of conception among women generally increased during relatively low temperature seasons.

Based on the fact that no relationship has been established between births and seasons in the central part of Nigeria such as Benue State, coupled with the fact that researchers often ignore social factors as correlates of birth rates, this research sought to explore these factors. Hence, the purpose of this research was to explore seasonal variation in birth rates in Makurdi town as a correlate of jubilant festive activities. If positive correlates are found, these correlates would provide useful information for effective family planning, avoidance of teenage or unwanted pregnancies, and adequate parental guidance of those of childbearing age.

Health and cultural factors influencing human birth seasonality

For Jongbloet (1983), Centola and Eberly (1999), foetal mortality is eminent in birth variation. This factor point to human health, and the implication of intentional and unintentional contraceptives. Apart from some health complications and intentional contraceptives that can terminate foetus, social anxiety, jubilant and strenuous celebrations/merriments often seen during festive periods can also lead to foetal mortality.

Among cultural factors, the age of women entrant into marriages, as well as being ripe for conception is determined by cultural and religious practices of any given society. For instance, the culture and religion of Hausa-Fulani of Northern Nigeria allows child marriages while the Christian tribes of Southern Nigeria forbid such marriages. This variation in cultural or religious differences in marriages alters the population of women who are prone to pregnancies, therefore, bringing about seasonal and regional changes in birth rates. According to Fialova (1995), this variation in birth rates has been proven across different traditional populations of the world. In modern societies, however, the chances of getting pregnant strongly depends on the choice of when to conceive (this is related to the application of contraceptives) rather than on climate or time of entrant into marriage. This means that, an individual could dictate the time of conception, although temperature may still play an important role in determining the birth sex ratio.

Across the globe, important cultural and religious festivities correspond with the calendar of annual subsistence activities. Condon and Scaglion (1982), were of the view that, cultural alignment of gestations that exist in agrarian or subsistence societies is knit to environmental constraints. This means that, seasons bedeviled by harsh atmospheric conditions and tedious subsistence activities usually records low birth, while seasons with favorable weather conditions and less strenuous cultural or religious activities records high birth rates.

The cultural pattern of agricultural activities in pre-literate societies like Makurdi follows the dictate of the atmospheric weather conditions which determines available food for intake and work to be done. To this regard, climatic and energetic factors has a lot to do with seasonal variation in birth rates in this region. For example, the severe heat periods in Makurdi around March to April characterized by perspiration, exhaustion, weakness and overtiredness may deter romance as well as coital frequency, and even the female hot body temperature may not be able to accommodate male spermatozoa. So also is the culture of exhaustive farming activities and over anxiety of the harvest seasons causes human seasonality in birth rates (Stoeckel & Chowdhury, 1972). Based on the postulations of Thompson and Robbins (1973), Malina and Himes (1977) and Ayeni (1986), it is not very imperative to see cultural and social factors of birth rates as mutually exclusive. Rather, we may look at the cultural factors to be related to subsistence ecology that may influence the seasonality of conception.

Social factors influencing human birth seasonality

According to Ellison, Valeggia, and Sherry (2005), social celebrations that creates jolly atmosphere for intercourse among humans determines cyclic occurrences of conceptions, and as such, influence the differences in birth rates. This is in unison with National Center for Health Statistics (1966), who asserted that conceptions usually hit peaks around celebrative religious holidays. For instance, during Christmas and New year seasons in the USA and August vacation in France, conception often reach the all time high, (Huntington 1938, Udry & Morris 1967). In Makurdi Town, major religious festivities such as Wedding celebrations, as well as the euphoric Christmas and New year celebrations is characterized by windy cozy harmattan weather and high ecstasy which guarantee sexual intercourse. Besides, it is a period when young boys give expensive clothing and gifts to their girlfriends who invariably offer sex following the principle of reciprocity. All these factors contribute to the often high rate of conceptions recorded within and around these periods. For Rajan and James (2000), seasonal variation in birth rates amongst different ethnic and religious groups emanate from the celebrations of religious or ethnic festival activities.

For James (1971), Chaudhury 1972), and Warren and Tyler (1979), seasonal variation in birth rates occurs as a result of differences in social class. This means that, in underdeveloped societies or societies with a high population of the poor, birth rates is expected to be high, while the developed societies tend to trim down their birth rates. It is obviously owing to the fact that, family planning mechanisms and awareness on appropriate use of contraceptives often lack in poor families and countries. Besides, the poor who do not give much credence to child spacing, birth control and best practice child up-bringing will always peak on conceptions with a superstitious belief that children are divine gifts. It is even a pride to have numerous children without corresponding care because the more you have, the more fame you have among peers, and the more hands to offer labour in farm work. This is quite evident in Makurdi town. Wealthy families tend to tie conception and child birth to amount of available income, while poor families rely on divinity, fame, and support in farming activities. Albeit, the occurrence of this variation in birth rates is not identical in all societies. However, these socio-demographic factors of social class and status determines seasonal and regional variations. But what happens in societies that are characterized by

caste, estate or slavery systems of stratification? There, social mobility is rigid, and class differentiation is constant and sacrosanct. It means that the "haves", "lords" and "slave owners" will always have less conceptions, while the "have not", "serfs" and "slaves" will always peak in conceptions.

In the views of Danubio and Amicone (2001), socially determined seasonal patterns of conception in developed countries are seen separate from other imperative environmental causes. In simple agrarian societies, marriage boom which is an indices of conception occurs mainly during or after the peak of farming activities. This is because families are the core unit of labour for agricultural activities. In this case, conceptions are on the increase in view of the coming farming seasons. For populations that are moving from one location to the other, including those migrating seasonally for agricultural purposes, they go through what is known as seasonal dispersion and aggregation, so marriages and conception attain optimum height during periods of aggregation, (Menken, 1979), (Condon 1982) and (Huss-Ashmore, 1988).

If we fashion out an understanding on the social indices of conception frequency as emanating from human environmental and agricultural activities, then we may be able to see some pattern of phylogenetic continuity. The larger or smaller a population of species can determine the mating opportunity, as can be observed among the apes communities, (Ellison et al., 2005). Also, where population size is determined by environmental or agricultural factors, seasonality of mating opportunity can result. Again, when populations of species indulge in collective activities like the mammoth fruiting patches of Chimpanzees, then, mating frequency is guaranteed, (Wrangham, 2000) and (Knott, 2001).

According to Knott (1997), the Orangutans species are a typical example of how seasonal environmental activities influences mating frequency. Among these species, during mast periods the food trees increases in density of both female and male orangutans which creates higher encounter rates between potential mating partners, and as such, increases mating frequencies than can be seen during non-mast periods.

Methodology

A total of 23,000 recorded child births from the year 2006 to 2015 were obtained from six major hospitals in Makurdi; the Federal Medical Centre Makurdi, Bishop Murray Medical Centre, Sandra Hospital, Madona Hospital, Family Support Programme Clinic and General Hospital North Bank. The hospitals were purposively selected based on issuance of ethical clearance and availability of data. Available monthly birth records were collated from the delivery registers of each hospital and later summed into one record. The data is therefore presented on graphs for easy scientific explanation.

A normal pregnancy span between 38 – 40 weeks which can be averaged as nine months. Based on oral tradition, Gynecologists usually determine Expected Date of Delivery (EDD) by adding seven days to the beginning of the last menstrual period, then count nine calendar months. For instance, if the last menstrual period began on December 10, the EDD will be September 17. To this regard, this study made use of the same procedure to arrive at the month of conception using the month of delivery. The essence for knowing the month of conception is to identify the season of conception and the nature of social activities associated with the season.

Graphical presentation of monthly births in Makurdi town from 2006 to 2015 and discussion of findings

The monthly number of births recorded in 2006 is shown in figure 1

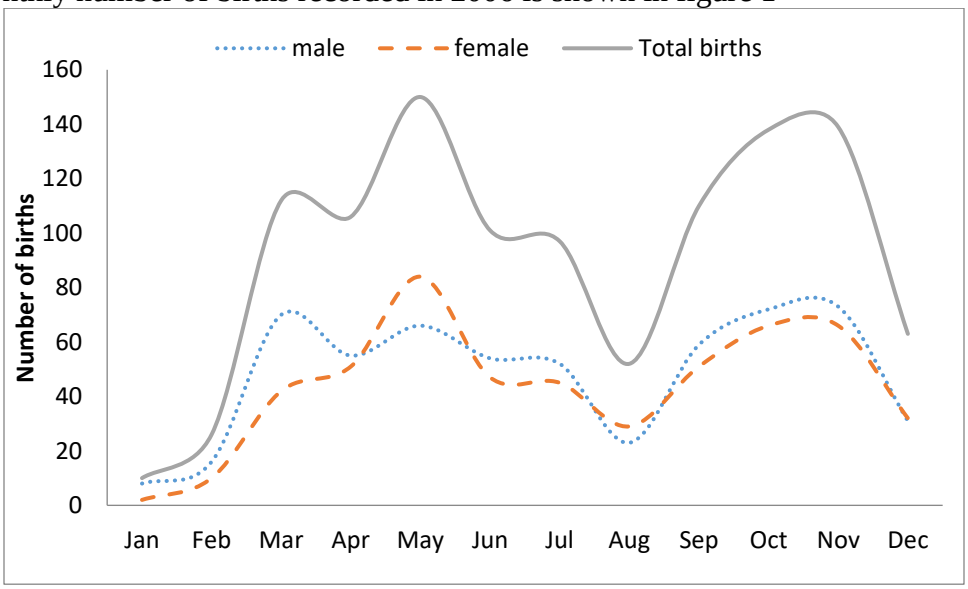

FIG. 1: Recorded births in Makurdi for the year 2006

The result on Figure1 shows births with double maxima in the months of April to June and September to November, with a corresponding trough in December to February and July to August for both sexes. Mean monthly births for the year was 92. The highest number of deliveries was from September to November. These births were conceived between December 2005 and February 2006. The lowest deliveries were between December and February. These births were conceived between March to April 2006 and May 2005 respectively.

The monthly number of births recorded in 2007 is shown in figure 2

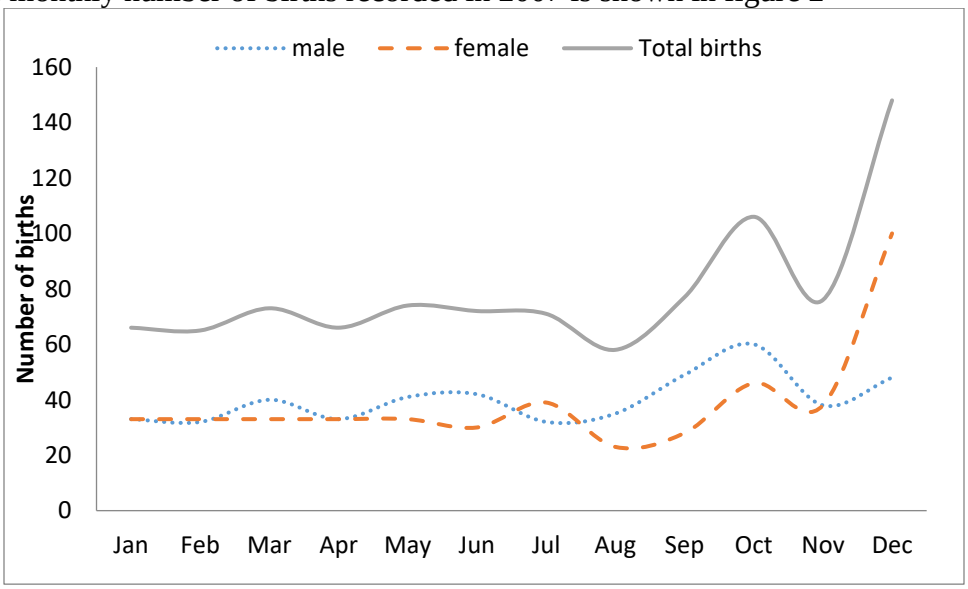

FIG. 2: Recorded births in Makurdi for the year 2007

From Figure 2, the year 2007 had a single peak graph with a female baby boom in December. The rest of the year had almost equal monthly births with most months having more males than females. Mean monthly births were 79. The births in December were conceived around March to April, 2007.

The monthly number of births recorded for 2008 is shown in figure 3.

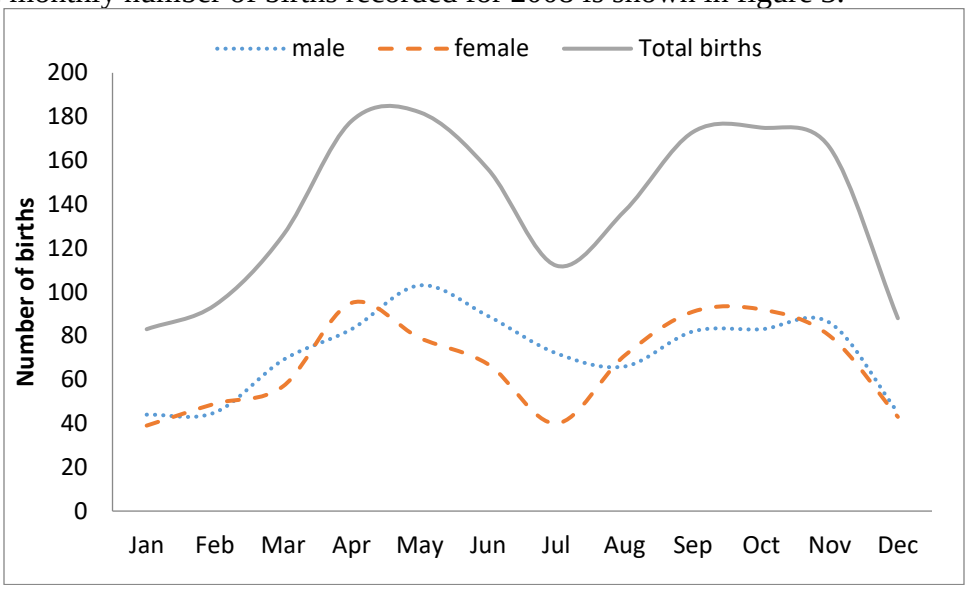

FIG. 3: Recorded births in Makurdi for the year 2008

The result in Fig. 3 shows peak births with double maxima in the months of April to June and September to November, with a corresponding trough in December to February and July to August for both sexes. Mean monthly births in this year was 139. The month of May recorded the highest births of one hundred and eighty two (182). These births were conceived in August 2007. The second peak was between September to November with a corresponding conception months of December 2007 to February 2008. The December, January trough was conceived in March 2008 and April 2007 respectively.

The monthly number of births recorded for 2009 is shown in figure 4

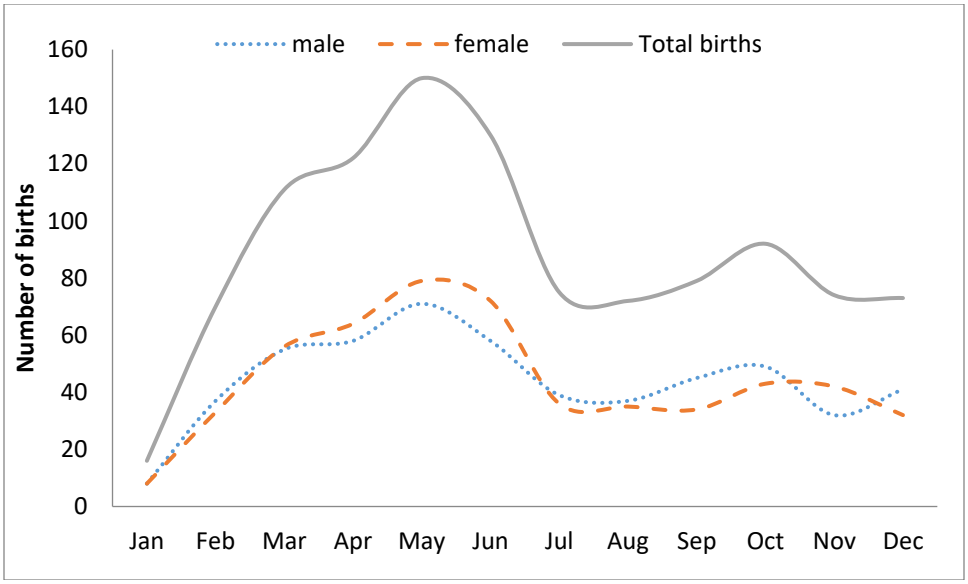

FIG. 4: Recorded births in Makurdi for the year 2009

Figure 4 shows that births in 2009 peaked around March to June with the month of May having the highest of one hundred and fifty (150) births for both sexes. January had the least of sixteen (16) births. Mean monthly births for the year was 89. Majority of births in the year were females. The May –June peak was specifically dominated by females. The may –June births were conceived in August-September 2008. While the January trough had a corresponding month of conception in April 2008.

The monthly number of births recorded for 2010 is shown in figure 5

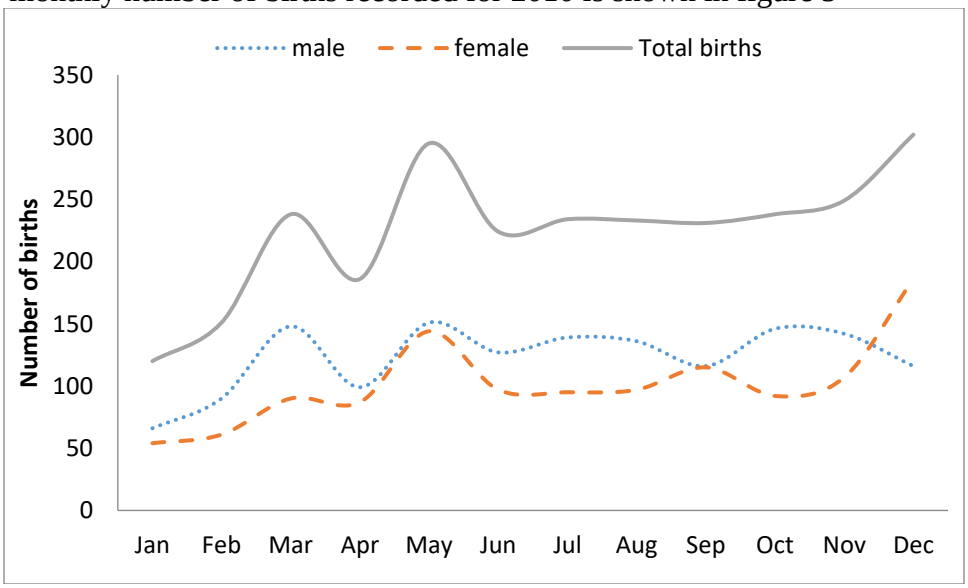

FIG. 5: Recorded births in Makurdi for the year 2010

It was observed from figure 5 that births progressively increased from January with one hundred and twenty (120) births to December with three hundred and two (302) births. More males were delivered in the months of March, June, July, August and October. Mean monthly

births was 222. The January trough births were conceived in April of the previous year, while December peak births were conceived around March of 2010.

The monthly number of recorded births for 2011 is shown in figure 6.

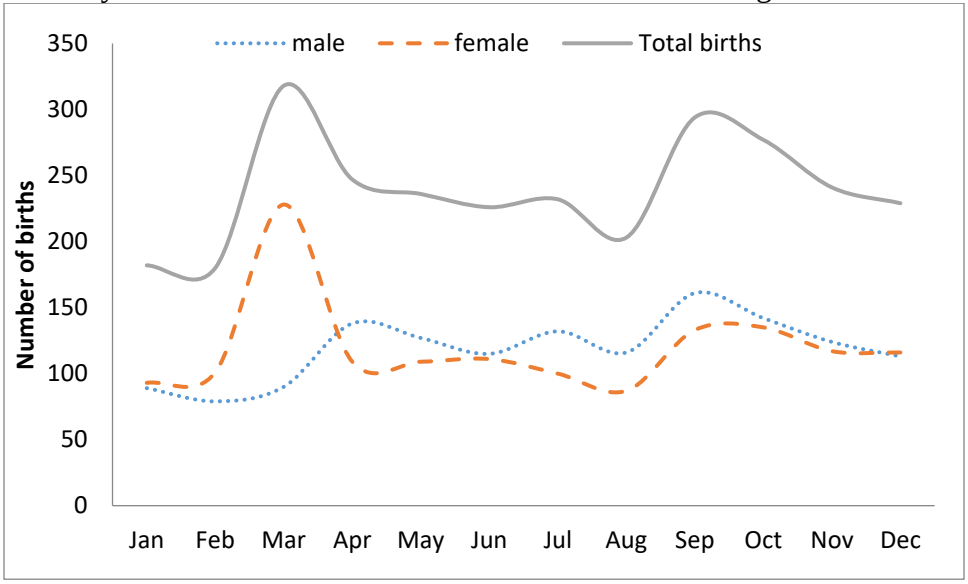

FIG. 6: Recorded births in Makurdi for the year 2011

The 2011 births record depicted in figure 6 shows a double peak in March and September. March had three hundred and eighteen (318) births while September had two hundred and ninety four (294) births. The March births were mostly females at a ratio of 2:5 against the males. February had the least births of one hundred and eighty (180) followed by January with one hundred and eighty two (182). Mean monthly births was 239. The March and September peak births were conceived in June, 2010 and December, 2010 respectively, while the February and January births trough had corresponding months of conception in May and April of the year 2010.

The monthly number of recorded births for 2012 is shown in figure 7

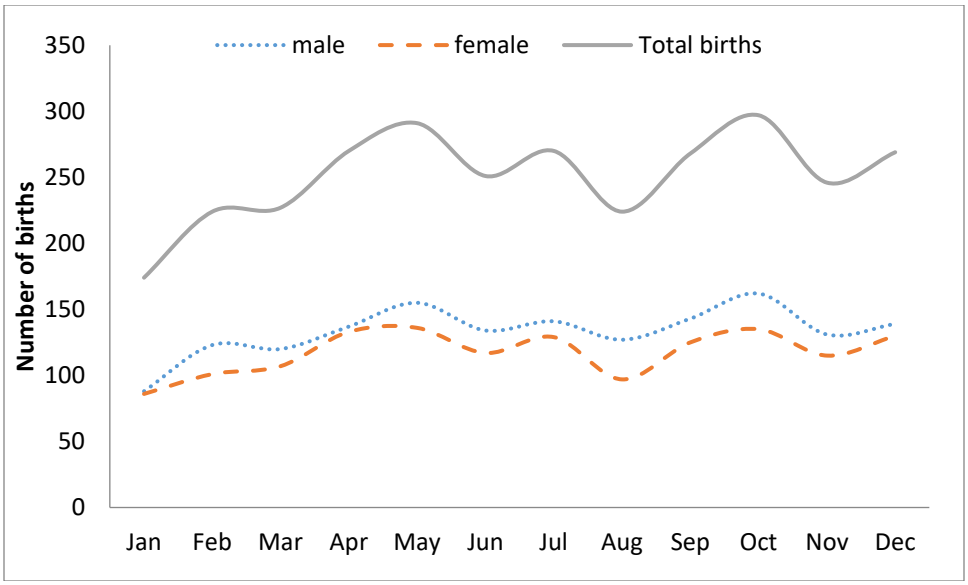

FIG. 7: Recorded births in Makurdi for the year 2012

As can be seen from figure 7, the 2012 births had a mild steep from January to March and kept oscillating to December. The highest births of two hundred and ninety seven (297) were recorded in October with January as the conception month. Mean monthly births for this year was 250. January had one hundred and seventy four (174) births, which is far below the mean monthly birth recorded for the year and these births were conceived in April, 2011.

The monthly number of recorded births for 2013 is shown in figure 8

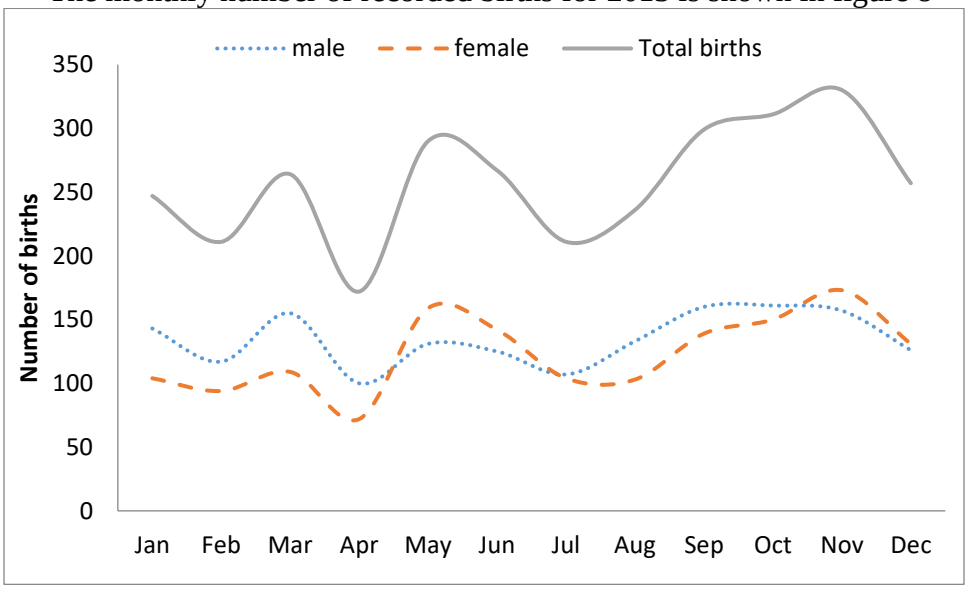

FIG. 8: Recorded births in Makurdi for the year 2013

Figure 8 shows that, the month of April, 2013 recorded the least births of one hundred and seventy two (172) which were conceived in July the previous year, while November had the highest births of three hundred and thirty (330) conceived in February the same year. More females were born in May, one hundred and fifty nine (159) and November, one hundred and

seventy three (173), while the males were more in January to April and August to October. Mean monthly births was 257.

The monthly number of recorded births for 2014 is shown in figure 9

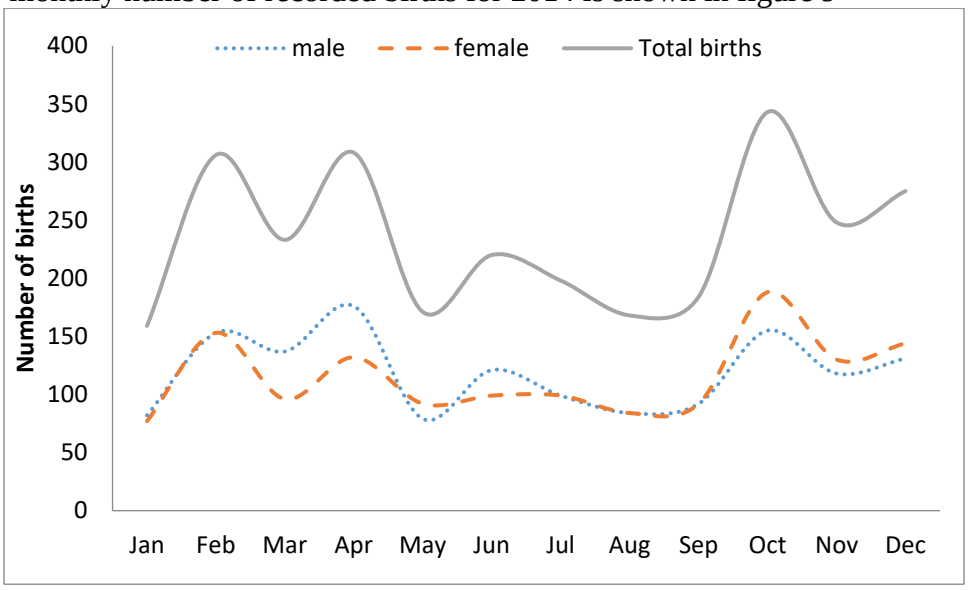

FIG. 9: Recorded births in Makurdi for the year 2014

From figure 9, the year 2014 witnessed two peaks birth record with a mean monthly birth of two hundred and thirty-four. The highest number of births was recorded in October with a corresponding month of conception as January the current year. The first peak witnessed in February and April were dominated by males and were conceived in May and July, 2013 while the October peak was dominated by females and were conceived as stated earlier.

The monthly number of recorded births for 2015 is shown in figure 10

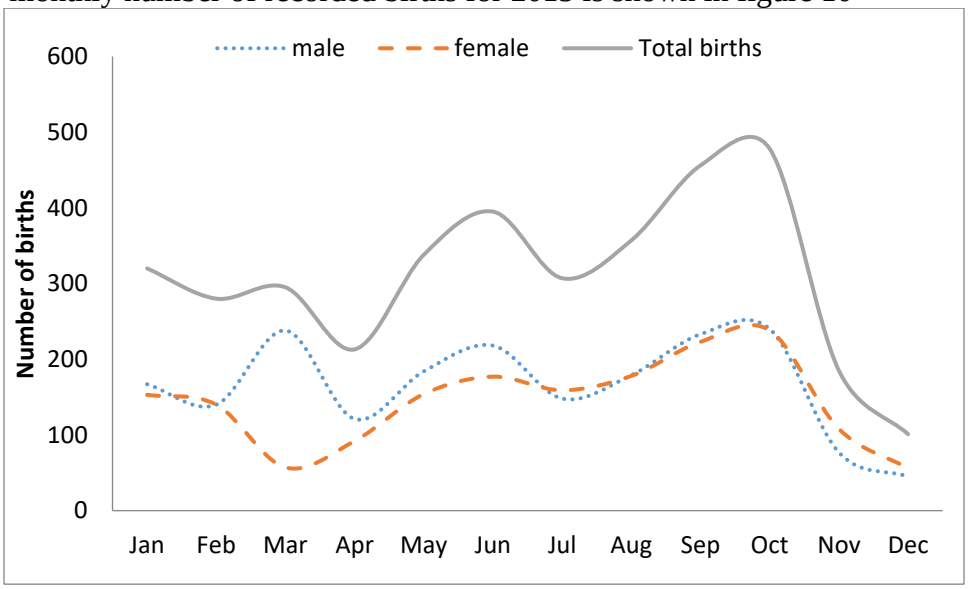

FIG. 10: Recorded births in Makurdi for the year 2015

The result in figure 10 shows that, there was an average of three hundred and ten monthly births for the year with a peak of four hundred and seventy eight (478) births in October, while the least births of two hundred and thirteen (213) were recorded in April. More males were born from March to June than females, while both females and males were almost at par in the second half of the year.

Mean monthly births in Makurdi from 2006 to 2015 is shown in figure 11

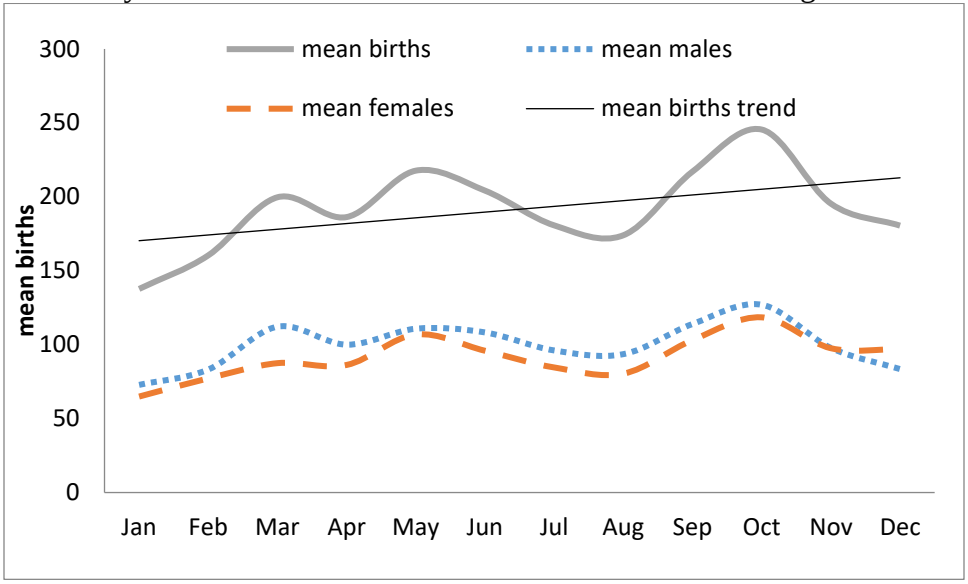

FIG. 11: Mean monthly births in Makurdi from 2006 to 2015

Table 1: Showing demographic information of the 23,000 delivered mothers in Makurdi town from 2006 to 2015.

Age	Not married (%)	Married (%)	Total (%)
15 - 19	6,349 (42.9)	189 (2.3)	6,538 (28.4)
20 - 24	2,975 (20.1)	205 (2.5)	3,180 (13.8)
25 - 29	2,131 (14.4)	845 (10.3)	2,976 (12.9)
30 - 34	1,510 (10.2)	1,328 (16.2)	2,838 (12.4)
35 - 39	918 (6.2)	1,574 (19.2)	2,492 (10.8)
40 - 44	607 (4.1)	2,001 (24.4)	2,608 (11.4)
45 - 49	310 (2.1)	2,058 (25.1)	2,368 (10.3)
Total	(100) 14,800(64.3)	(100) 8,200(35.7)	23,000 (100)

*The total number of responses to each item are as indicated while percentages are written in parenthesis.

Table 1 shows seven reproductive age brackets of 23,000 delivered mothers. It depict that the teenage age bracket of 15-19 years are the highest delivered mothers with 42.9% not married

(N=6,349) and 2.3% married (N=189). The implication is that, more teenage and unintended pregnancies occurred out of wedlock during periods of high social activities in Makurdi town. Also relevant from the table is that 64.3% (N=14,800) of births were from unmarried women while only 35.7% (N=8,200) were from married women. This implies that most births that occurred in Makurdi town during festive periods are out of "hit and damage" syndrome.

Summary and Conclusions

Generally, births in Makurdi town have been on an increase and are characterized with two major peaks and two troughs. There is the March to June peak conceived between June to September of the previous year and the September to October peak conceived between December the previous year and January of the current year. Alternatively, there is also the July to August trough conceived between October and November the previous year and the December to January trough conceived March and April respectively. Males generally dominate March births while females dominate December births.

The September to October peak is the highest and the births are conceived between December and January. This is the period associated with high level of social activities and festivities such as Christmas celebration, New Year and weddings. All these celebrations creates conducive atmosphere for sexual intercourse and conception as aftermath. This jolly period is also characterized by the cold harmattan weather which enables high rates of coital frequencies. It is also a period that witnessed high presentation of gift items from young males to their female counterparts who invariably offer sex to please the former. On the other hand, the December to January trough is the lowest and these births are conceived within the period of March to April. This is the Easter period, when many Christians as dominant in Markudi, fast and pray in commemoration of the passion of Jesus on the cross . It is also a period that marks the commencement of rainfall and high level of farming activities. Many couples therefore spend less time on leisure and sexual activities. These factors reduces coital frequencies, and as a result, decreases the number of conception during this period.

Recommendations

1. The Ministry of health and other stake holders in Makurdi town should carry out awareness campaign on effective family planning during periods of high social activities or festivities to address the issue of high birth rates and over population in our society.
2. Parents should provide adequate guidance on the girl child during these periods to avoid "hit and damage" pregnancy.
3. Schools managements in Makurdi town should educate the students during festive periods to avoid teenage pregnancy.

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