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# Statistical Analysis of Maternal and Infant Mortality in Sagamu Ogun State (A Case Study of Olabisi Onabanjo University Teaching Hospital: 2001-2010)

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## Abstract

This analysed maternal and child mortality in Ogun State using age structure of women of childbearing age (15-49 years) by examining their mortality and fertility trend using descriptive statistics. In this study, emphasis is on maternal mortality rate, infant mortality and the fertility rate putting age into consideration and line graph is used to analyze and illustrate the data using the data record department of Olabisi Onabanjo University Teaching Hospital, Sagamu, Ogun State from 2001 to 2010 as a case study. The result obtained reveal that the maternal mortality rate was high in all the years, but higher in 2010 (7480.32/100,000), 2006 (6437.77/100,000) and 2002 (6352.46/100,000). The number of women in age group 30-34 was higher in all the years compared to other age group (e.g. 147 women in 2001) and the Age Specific Death Rate was lower in this age group (e.g. 20.41), also for all the years compared to most cases. The expected death of mothers was very high in age group 30-34 (e.g. 11 women in 2009) for all the years. Stillbirth Mortality Rate had lower rate than Neo-natal Mortality Rate for all the years (e.g. in 2001 Stillbirth Mortality Rate is 182.74 while Neo-natal Mortality Rate is 261.42). Peri-natal mortality rate, generally was too high (e.g. 444.16 in 2001) and the fertility rate was very high for all the age groups in all the years (e.g. in age group 25-29 in 2004, Age Specific Fertility Rate is 1000.00).

## Keywords

Mortality, Fertility, Maternal, Infant, Childbearing Age

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## 1. Introduction

All over the world, 2010 was the year of maternal mortality estimates. In April, the Lancet published maternal mortality figures developed at the Institute for Health Metrics and Evaluation (IHME), an academic institution based at the University of Washington, Seattle, USA (Hogan, et.al, 2010). In September, a different set of numbers was issued by UN agencies UNICEF, UNFPA, World Bank and World Health Organization, working in collaboration with technical experts from the University of Berkeley, California, USA (WHO, 2010). Both sources included data for nearly all countries (IHME 181, UN 174), along with regional and global totals. Both covered similar time spans (IHME 1980–2008, UN 1990–2008).

However, maternal and child mortality is not an uncommon event in several parts of the developing world. Mothers and children are at the highest risk for disease and death. While motherhood is often a positive and fulfilling experience, for too many women, it is associated with ill–health and even death (Olatoye, 2009). The death of a woman during pregnancy, labour or pueperium is a tragedy that carries a

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huge burden of grief and pain, and has been described as a major public health problem in developing countries like Nigeria (Ogunjimi, Ibe, and Ikorok, 2012). Women have an enormous impact on their families' welfare. Deaths of infants/children under five are peculiar and closely related to maternal health. One million children die each year because their mother dies, while the death rate of children less than five years doubles if mothers die in childbirth. More than 25,000 children die every day and every minute and every minute a woman dies at childbirth. Worldwide, every year about 500,000 women die due to childbirth and over 9 million children under age five die mostly from preventable and treatable diseases (WHO, 2003).

World Health Organization (WHO, 2006) defines maternal death as the death of women while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy from any cause related to, or aggravated by the pregnancy or its management but not from accidental or incidental causes. Child mortality on the other hand, is the death of a child under five years, while infant mortality is the death of a child under 1 year. Maternal mortality is a multidimensional problem which does not only affect the family involved but has a great effect on the society as a whole. When a mother dies, the children's chances of reaching adult life decreased. This is majorly due to lack of everyday care and security. Younger children may have to take care of themselves and this may in turn affect their school attendance. Lack of proper education may in turn weaken the child's chances of reaching better life standards.

Available evidence indicates that Africa accounts for the highest burden of mortality among women and children in the world (Udofia & Okonofua, 2008; Prata et al., 2008). This unhealthy trend has become a matter of great concern, calling for a concerted approach from all and sundry. The Millennium Development Goals (MDGs) by the global community focus attention, resources, and action on improving the well-being of all peoples. Two of the goals (MDGs 4 and 5) were to reduce the childhood mortality rate and maternal mortality ratio, by two-thirds and three quarters (75%), respectively between 1990 and 2015. It is expected that decline in child/maternal mortality must accelerate substantially in the period to 2015, if any country is to reach these goals.

Nigeria is the most populous country in Africa with 140 million people, including 75 million children (Ogbonaya and Aminu, 2009) and has the maternal mortality rate of 280 to 1150 per 100,000 live births (Onwumere, 2010). The child and maternal mortality rate in this country is very significant and has implications for the attainment of the MDGs. It has been noted that Nigeria is lagging behind in achieving universal coverage of key maternal and child health intervention and will unlikely meet the target of the MDGs. According to UNICEF Executive Director, Ann Veneman, "midway to 2015 deadline for MDGs, Nigeria continues to record unacceptably high maternal, newborn and child mortality". Nigeria ranks as one of the 13 countries in the world with the highest maternal mortality rate and is still not listed among the 10 countries seem to have made rapid progress to meet the goals.

Monitoring maternal mortality is difficult due to poor reporting and lack of proper methods to measure actual death rates. Estimating the real figure is difficult as only 31% women deliver in health facilities (Lindros and Lukkainen, 2004). The gap of maternal deaths between rich and poor countries is wide with 99% of these deaths occurring in the developing world. Out of the 49 countries which record highest maternal deaths, 34 of these countries are in Sub – Saharan Africa, where 1 woman in 16 dies from pregnancy or childbirth compared to 1 in 2800 in the developed world (Amankwah, 2009).

According to UNICEF 2006 report, every year nearly 10 million children under five die globally. About 4 million newborns (40% of under-five deaths) die in the first four weeks of life. Although, Africa accounts for only 22% of births globally, half of the 10 million child deaths annually occur on the continent. Africa is the only continent that has seen rising numbers of deaths among children under five since the 1970s. It is estimated that about 4.6 million (46%) under five deaths is in Africa and 98% of these deaths occur only across 42 developing countries. The greatest number of under-five deaths in the world occurs in Sierra Leone, Angola and Afghanistan, where between 257 and 270 children die for every 1000 live births. The lowest death rate in the developing world occurs in Cuba, Sri Lanka and Syria, where between 7 and 14 children die for every 1000 live births (Global Action for Children, 2008). UN estimates that one in every six children dies from childhood related illness before age five. Under-five mortality in Nigeria is estimated at 191 per 1000 live births. Almost one million children die in Nigeria more than any other country in Africa, largely from preventable diseases (Ogunjimi, Ibe, and Ikorok, 2012).

The persistent high rate of maternal and child mortality in the country as noted by Ogunjimi, Ibe, and Ikorok (2012) negates the achievement of the 4th and 5th Millennium Development Goals (MDGs). Nigeria, which constitutes just 1% of the world's population, accounts for 10% of the world's maternal and under-5 mortality rates. Many researches have been carried out in the past on the subject till the present moment yet there is still a dearth of research on maternal and child mortality in Ogun State, while such has been carried out in other States like Delta and Oyo. Therefore, this research is set out to statistically analyse mortality and

fertility measures in Ogun State, using Olabisi Onabanjo University Teaching Hospital medical records for a ten year period (2001-2010).

**Table 1.** Population Dynamics in Nigeria, 1991 and 1999.

| ITEM | 1992+ | PRB 1999++ |
|---|---|---|
| Total Population (million) | 88.99 | 113.8 |
| Birth per 10,000 | 44.6 | 43 |
| Deaths per 1000 | 14 | 13 |
| Natural Increase (Annual %) | 3.06 | 3 |
| Infant Mortality Rate | 93 | 73 |
| Population doubling time (in Years) at current growth rate | 23 | 23 |
| Total Fertility Rate | 5.88 | 6.2 |
| % of population aged 0-15 years | 44.9 | 45 |
| % of population aged 65+ | 2.8 | 3 |
| Life Expectancy at birth (both sexes) | 52.6 | 54 |
| Life Expectancy (Males) | 53.2 | 53 |
| Life Expectancy (Females) | 53.8 | 55 |

+ Adjust figures derived from the 1991 population census and the post Enumeration Survey (PES) data of Nigeria
++ Population Reference Bureau (1991)

## 2. Research Questions

i. Is there high rate in years of mortality in 2001 to 2010 in Sagamu town?

ii. Is there any difference in the Age Specific Death Rate (ASDR) and trend in Expected Death of Mothers (EDM) among Sagamu town women?

iii. Is there any decline in the infant mortality rate between 2001 and 2010 in Sagamu town?

iv. Is there high in the Total Fertility Rate (TFR) in tren od ASFR and Gross Reproduction Rate of the reproductive women's age range 15-49 years in Sagamu town.

## 3. Methodology

*Research Design*: A descriptive survey research design of an ex-post factor type was adopted for this study. This is so because it enables the researcher to collect data, analyse and make necessary inference from those data for achievement evaluation of a variable objective without manipulating any of the variable of the study.

*Population of the Study*: The study populations were the administered patients registered at Olabisi Onabanjo University Teaching Hospital, Sagamu. Basically, expunge of record of delivery mothers of record of delivery mothers, mother's death, infant's death both the male and female including the still birth.

*Sample and Sample Techniques*: The research data were secondary data, which comprised of data from the registered patients of Olabisi Onabanjo University Teaching Hospital, Sagamu from 2001 to 2010. The data collected to achieve the objectives of the study, while the data contained a population of 11,539 from year 2001 to 2010 comprises of 4,956 women in childbearing age group, 4,594 Livebirth child, 609 Stillbirth, 1,159 Neonatal death and 221 Maternal death.

*Method of data analysis*: The collected data were calculated by the use of standard formula for proper estimating of the variables to measure the maternal and infant mortality measure for all the years (2001 to 2010). Also effort was made to investigate and examine the age distribution of different measures of fertility and mortality. The measure of mortality used in this research was maternal mortality, infant mortality rate and age specific death rate. Also for fertility measures, the following measures were used:

- Age specific fertility rate,
- Total fertility, and
- The Gross reproduction rate.

These above rates, which are used to study the dynamics of change were carried out using the following:

## 4. Measures of Mortality

*Maternal mortality Measure*: The number of maternal deaths was calculated from three components: the number of Women of Reproductive Age, age group 15–49 (WRA);

General Fertility Rate (GFR): births per year per 1,000 women of reproductive age; and the Maternal Mortality Ratio (MMR): the number of maternal deaths per 100,000 live births. The first two, multiplied together, generate the number of births, which is then multiplied by the MMR to give the number of maternal deaths.

- Maternal Mortality Rate (MMR)

MMR = (Maternal deaths in a population /population of women in ages 15–49 years (or woman years lived in the age group 15–49 years)) x 100,000

Thus MMR = (Di / Pi) x 100,000

Where Di = Maternal death due to childbirth and complications of pregnancy in a year

Pi = Population of women in the age group 15-49 years or woman live from 15 to 49 years.

## 5. Focus on Number of Deaths

Deaths = WRA x GFR x MMR–WRA: women of reproductive age (15-49)–GFR:

General fertility rate (births/year/1000 WRA)–MMR: the maternal mortality ratio i.e.

- Age Specific Death Rate (ASDR)

Several sub-groups are considered in studying the risk of mortality. The age specific rates for both sexes, together or separately, are the commonly used specific rates.

ASDR = Total deaths in specified aged Group / Total population in the same specified age group x 1,000

- Expected number of deaths

The actual number of deaths in one section of the total population is compared with the number of deaths expected in that section, if the mortality rates of the total population were to apply.

Expected death for women = ASDR x Total women population for each age group/ 1,000

## 6. Infant Mortality

Infant mortality measures mortality between 0 and 1 year of age. The infant mortality rate will be expressed as the number of infant deaths in a given period per 1000 live births during the same period. The total calendar year mortality rate for all infants under 1 year can be separated according to ages at death. These include:

- Neo-natal mortality measure

The first 4 weeks or 1 month was found to have a very high risk and infant deaths during this period is termed as Neo-natal mortality and the rate is defined as :

*Neo-natal mortality rate* = (infants deaths under 4 weeks (under 28 days) / live birth) x 1000

- Foetal death measure

There is a close association between late foetal and neo-natal death, and so, at times foetal deaths are studied separately. The ratio of foetal deaths to the number of births in a year is called foetal death ratio.

*Foetal death ratio* = (Number of still births during a year/ live birth) x 1000

- Peri-natal or infant mortality measure

Death during the neo-natal period is combined with foetal deaths and related to livebirth, they yield what is known as the peri-natal mortality rate.

*Peri-natal mortality rate* = Latefoetal deaths (stillbirth) + (Infant death under 4 weeks (neo-natal) )/ Livebirth x 1000

(Number of resident infant deaths/Number of resident live births) x 1,000

## 7. Measures of Fertility

*Age specific fertility rate (ASFR)*: Within the age range of 15-49 years, there are marked differences in the fertility of women of different ages. For this reason it is customary to calculate fertility rates for each age or age group. In most analyses, five years age group will be used to calculate Age Specific rates. ASFR for age group = number of births to women of 1,000 x age group x,x+n / midyear population of women in age group specific age group x, x+ n) X 1,000

*Total Fertility Rate (TFR)*: The TRF is defined as the sum of the ASFR for women, it is usual to sum rates for five years age groups and to assume that the ASFR for each single year are accurately summarized by the average rate for the five year age group. TFR is the average number of live births among 1,000 women exposed throughout their childbearing years to the schedule of ASFR, assuming no woman died during the childbearing years.

$$TFR = 5 \sum 5fx \text{ X } 1,000$$

Where $\sum$ = means one should add up ASFR

Fx = ASFR for age group x, x+1

*Gross Reproduction Rate (GRR)*: This is the average number of daughter a woman will have or bear will have or bear with no allowance for mortality over her reproductive age or period i.e. (15-49) years. The GRR is the sum from ages 15-49 of the ASFR calculated for women during their complete life time. It is similar in calculation to the TFR. But because it is limited to one sex, it is about half the size of TFR. It is a good index for measuring changes in future fertility potentials. Because with a high GRR, it implies a high number of women in the entire population; it is given by the formula: GRR = TFR

## 8. Results

**Table 2.** The Maternal Mortality Rate of Women of Childbearing Age.

| Years | Population of mothers | Deaths of Mothers | Maternal mortality |
|---|---|---|---|
| 2001 | 448 | 15 | 3348.21 |
| 2002 | 488 | 31 | 6352.46 |
| 2003 | 526 | 26 | 4942.97 |
| 2004 | 468 | 18 | 3846.15 |
| 2005 | 501 | 19 | 3792.42 |
| 2006 | 466 | 30 | 6437.77 |
| 2007 | 484 | 13 | 2685.95 |
| 2008 | 650 | 21 | 3230.77 |
| 2009 | 671 | 29 | 4321.91 |
| 2010 | 254 | 19 | 7480.32 |

Source: Olabisi Onabanjo University Teaching Hospital, Sagamu, 2013

Table 2 shows the maternal mortality rate, i.e. the mortality rate of women of childbearing age due to childbirth and

complications in pregnancy, from this table we observe that the maternal mortality rate was very high in these three years in 2010 (7480 out of 100,000), 2006 (6438 out of 100,000) and 2002 (6352 out of 100,000). This indicates that the maternal death is very high in these three years compared to other years. This may be due to many factors like poor health service, industrial strike action, and the pre-natal care is not well attended by the women in pregnancy. Some of these factors may have been corrected because a decline in the maternal mortality rate was also observed in 2003 (4943 out of 100,000) to 2005 where we have (3792 out of 100,000), and also decline from 2007 (2686 out of 100,000) where we have least records on maternal death and rise up little by little till 2009 (4321 out of 100,000) record of maternal death. Population of women shown in table 2, from 2001 till 2005 the population increases, reduces from 2006 and this implies that introduction of family planning affect the population of the women that particular year, and rise from 2007 till it reduces again in 2010.

**Table 3.** The Age Specific Death Rates and Expected Death of Mothers for all the Years.

| Years | Age of Mothers | Women population | No of women who died | A.S.D.R | Expected death |
|---|---|---|---|---|---|
| 2001 | 15-19 | 16 | 1 | 62.50 | 1 |
| | 20-24 | 61 | 5 | 81.97 | 5 |
| | 25-29 | 132 | 3 | 22.73 | 3 |
| | 30-34 | 147 | 3 | 20.41 | 3 |
| | 35-39 | 76 | 2 | 26.32 | 2 |
| | 40+ | 16 | 1 | 62.50 | 1 |
| 2002 | 15-19 | 13 | 3 | 230.77 | 3 |
| | 20-24 | 65 | 7 | 107.70 | 7 |
| | 25-29 | 165 | 9 | 54.55 | 9 |
| | 30-34 | 154 | 5 | 32.47 | 5 |
| | 35-39 | 77 | 7 | 90.91 | 7 |
| | 40+ | 14 | 0 | 00.00 | 0 |
| 2003 | 15-19 | 20 | 3 | 150.00 | 3 |
| | 20-24 | 77 | 4 | 51.95 | 4 |
| | 25-29 | 142 | 10 | 70.42 | 10 |
| | 30-34 | 176 | 3 | 17.05 | 3 |
| | 35-39 | 95 | 5 | 52.63 | 5 |
| | 40+ | 16 | 1 | 62.50 | 1 |
| 2004 | 15-19 | 52 | 2 | 38.46 | 2 |
| | 20-24 | 70 | 1 | 14.29 | 1 |
| | 25-29 | 98 | 6 | 61.23 | 6 |
| | 30-34 | 114 | 5 | 43.86 | 5 |
| | 35-39 | 88 | 3 | 34.09 | 3 |
| | 40+ | 46 | 1 | 21.74 | 1 |
| 2005 | 15-19 | 10 | 1 | 100.00 | 1 |
| | 20-24 | 60 | 3 | 50.00 | 3 |
| | 25-29 | 163 | 4 | 24.54 | 4 |
| | 30-34 | 159 | 5 | 31.45 | 5 |
| | 35-39 | 93 | 3 | 32.26 | 3 |
| | 40+ | 16 | 3 | 187.50 | 3 |
| 2006 | 15-19 | 10 | 1 | 100.00 | 1 |
| | 20-24 | 39 | 5 | 128.21 | 5 |
| | 25-29 | 152 | 7 | 46.05 | 7 |
| | 30-34 | 167 | 5 | 29.94 | 5 |
| | 35-39 | 85 | 7 | 82.35 | 7 |
| | 40+ | 13 | 5 | 384.62 | 5 |
| 2007 | 15-19 | 16 | 1 | 62.50 | 1 |
| | 20-24 | 54 | 1 | 18.52 | 1 |
| | 25-29 | 151 | 6 | 39.74 | 6 |
| | 30-34 | 156 | 4 | 25.64 | 4 |
| | 35-39 | 82 | 1 | 12.20 | 1 |
| | 40+ | 25 | 0 | 0 | 0 |
| 2008 | 15-19 | 30 | 1 | 33.33 | 1 |
| | 20-24 | 65 | 0 | 0 | |
| | 25-29 | 200 | 4 | 20.00 | 4 |
| | 30-34 | 226 | 6 | 26.55 | 6 |
| | 35-39 | 95 | 6 | 63.16 | 6 |
| | 40+ | 34 | 4 | 117.65 | 4 |
| 2009 | 15-19 | 35 | 0 | 0 | 0 |
| | 20-24 | 70 | 5 | 71.43 | 5 |
| | 25-29 | 204 | 6 | 29.41 | 6 |
| | 30-34 | 230 | 11 | 47.83 | 11 |

| Years | Age of Mothers | Women population | No of women who died | A.S.D.R | Expected death |
|---|---|---|---|---|---|
| | 35-39 | 97 | 1 | 10.31 | 1 |
| | 40+ | 35 | 6 | 171.43 | 6 |
| 2010 | 15-19 | 3 | 1 | 333.33 | 1 |
| | 20-24 | 24 | 1 | 41.67 | 1 |
| | 25-29 | 86 | 3 | 34.88 | 3 |
| | 30-34 | 94 | 8 | 85.11 | 8 |
| | 35-39 | 38 | 5 | 131.58 | 5 |
| | 40+ | 9 | 1 | 111.11 | 1 |

The table 3 above show the Age Specific Death Rate (ASDR) for all the years, observing the age specific that the women's death more in all the years. For about 4 years from all the 10 years records, age group 30-34 was low in the year 2001, 2002, 2003 and 2006. This was due to the fact that women at that age still found child bearing easy because they were not too old to give birth to children.

Also, 4 years from all the 10 years records, age group 25-29 was low in 2005, 2008, 2009 and 2010. While age group 35-39 was low in 2004 and age group 20-24 was low in 2007.

Generally observation is made in age group 30-34 has highest records of population of mothers for all the years except in the 2002 and 2005 that 25-29 age group was high, while age group 25-29 has high records of population of mothers for all the years and age group 30-34 was found 26 numbers higher different in population than, but age group 15-19 and 40+ was found relatively low in the record.

**Table 4.** The early childhood mortality per 1000 livebirths.

| Years | No of stillbirth | No of Neonatal Deaths | No of Live births | Stillbirth Mortality rate | Neonatal Mortality rate | Peri-Natal Mortality rate |
|---|---|---|---|---|---|---|
| 2001 | 72 | 103 | 394 | 182.74 | 261.42 | 444.16 |
| 2002 | 66 | 122 | 440 | 150.00 | 277.27 | 427.27 |
| 2003 | 66 | 137 | 480 | 137.50 | 285.42 | 422.92 |
| 2004 | 63 | 132 | 430 | 146.51 | 306.98 | 453.49 |
| 2005 | 69 | 102 | 454 | 151.98 | 224.67 | 376.65 |
| 2006 | 52 | 86 | 432 | 120.37 | 199.07 | 319.44 |
| 2007 | 52 | 113 | 442 | 117.65 | 255.66 | 373.30 |
| 2008 | 80 | 149 | 604 | 132.45 | 246.69 | 379.14 |
| 2009 | 56 | 154 | 634 | 88.33 | 242.90 | 331.23 |
| 2010 | 33 | 61 | 284 | 116.20 | 214.79 | 330.99 |

Table 4 above review the early childhood mortality rate (infant mortality rate) for each years, it measure the child mortality between 0 and 1 years of age in a given period per 1000live births. The survey recorded 10 years, show that the Neo-natal Mortality Rate is higher than the Stillbirth Mortality Rate (SMR) for all the group years. This implies that Neo-natal Mortality Rate which can be caused by sickness or diseases, probably by the death of the mothers. The Perinatal Mortality Rate is the sum of the number of Stillbirths Mortality Rate and Neonatal Mortality rate divided by the number of live births multiply by 1000. The perinatal mortality rate is too high with the lowest having 319 deaths out of 1000 live births and this is due to the very high rate of Neonatal. The Perinatal mortality rate is a useful indicator of the state of delivery services, in terms of both their utilization and their quality, i.e. the degree to which complications arising during childbirth and the immediate postpartum are not able to prevented or managed effectively.

**Tables 5.** Age Specific Fertility rates for all years.

| Years/Age | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|
| 15-19 | 1000.00 | 846.15 | 750.00 | 807.69 | 800.00 | 600.00 | 812.50 | 766.67 | 942.86 | 666.67 |
| 20-24 | 868.85 | 815.38 | 844.16 | 842.86 | 783.33 | 974.36 | 888.89 | 923.08 | 957.14 | 1000.00 |
| 25-29 | 886.36 | 903.03 | 950.70 | 1000.00 | 950.92 | 927.63 | 913.91 | 930.00 | 906.86 | 1104.65 |
| 30-34 | 877.55 | 922.08 | 943.18 | 956.14 | 911.95 | 916.17 | 923.08 | 867.26 | 886.96 | 1085.11 |
| 35-39 | 881.58 | 948.05 | 873.68 | 863.64 | 881.72 | 952.94 | 926.83 | 1084.21 | 1082.47 | 1342.11 |
| 40+ | 750.00 | 857.14 | 1000.00 | 1000.00 | 1062.50 | 1000.00 | 920.00 | 1058.82 | 1142.86 | 1111.11 |
| Total | 5264.34 | 5291.83 | 5361.72 | 5470.33 | 5390.42 | 5371.10 | 5385.21 | 5630.04 | 5919.15 | 6309.65 |
| Total X5 = Total Fertility Rate | 26322 | 26459 | 26809 | 27352 | 26952 | 26856 | 26926 | 28150 | 29596 | 31548 |

Table above show the Age Specific Fertility Rates for all the years, and the rate was very high for all the age group in all the years as shown above, The year 2001 has lowest Total Fertility rate (with 26 child per woman) and the highest (32 child per woman) in 2010, this implies a very high level of fertility rate, as the year go on the number of fertility rate increases.

**Table 6.** Total Fertility and Gross Reproduction Rate.

| Years | Age of Mothers | Female population | Total Births | Female Births | A.S.F.R per 1000 of women | A.S.F.R per 1000 of Daughters only |
|---|---|---|---|---|---|---|
| 2001 | 15-19 | 16 | 16 | 6 | 1000.00 | 375 |
| | 20-24 | 61 | 53 | 29 | 868.85 | 475 |
| | 25-29 | 132 | 117 | 45 | 886.36 | 341 |
| | 30-34 | 147 | 129 | 54 | 877.55 | 367 |
| | 35-39 | 76 | 67 | 29 | 881.58 | 382 |
| | 40+ | 16 | 12 | 2 | 750.00 | 125 |
| | Total | | | | 5,264 | 2,065 |
| | X 5 | | | | 26,322 | 10,330 |
| 2002 | 15-19 | 13 | 11 | 4 | 846.15 | 308 |
| | 20-24 | 65 | 53 | 32 | 815.38 | 492 |
| | 25-29 | 165 | 149 | 75 | 903.03 | 455 |
| | 30-34 | 154 | 142 | 70 | 922.08 | 455 |
| | 35-39 | 77 | 73 | 36 | 948.05 | 468 |
| | 40+ | 14 | 12 | 9 | 857.14 | 643 |
| | Total | | | | 5,292 | 2,821 |
| | X 5 | | | | 26,459 | 14,110 |
| 2003 | 15-19 | 20 | 15 | 5 | 750.00 | 250 |
| | 20-24 | 77 | 65 | 34 | 844.16 | 442 |
| | 25-29 | 142 | 135 | 57 | 950.70 | 402 |
| | 30-34 | 176 | 166 | 77 | 943.18 | 438 |
| | 35-39 | 95 | 83 | 40 | 873.68 | 421 |
| | 40+ | 16 | 16 | 8 | 1000.00 | 500 |
| | Total | | | | 5,362 | 2,453 |
| | X 5 | | | | 26,809 | 12,270 |
| 2004 | 15-19 | 52 | 42 | 22 | 807.69 | 423 |
| | 20-24 | 70 | 59 | 28 | 842.86 | 400 |
| | 25-29 | 98 | 98 | 52 | 1000.00 | 531 |
| | 30-34 | 114 | 109 | 61 | 956.14 | 535 |
| | 35-39 | 88 | 76 | 36 | 863.64 | 409 |
| | 40+ | 46 | 46 | 26 | 1000.00 | 565 |
| | Total | | | | 5,470 | 2,863 |
| | X 5 | | | | 27,352 | 14,320 |
| 2005 | 15-19 | 10 | 8 | 2 | 800.00 | 200 |
| | 20-24 | 60 | 47 | 24 | 783.33 | 400 |
| | 25-29 | 163 | 155 | 75 | 950.92 | 460 |
| | 30-34 | 159 | 145 | 81 | 911.95 | 509 |
| | 35-39 | 93 | 82 | 38 | 881.72 | 409 |
| | 40+ | 16 | 17 | 12 | 1063.50 | 750 |
| | Total | | | | 5,390 | 2,728 |
| | X 5 | | | | 26,952 | 13,640 |
| 2006 | 15-19 | 10 | 6 | 4 | 600.00 | 400 |
| | 20-24 | 39 | 38 | 20 | 974.36 | 513 |
| | 25-29 | 152 | 141 | 70 | 927.63 | 461 |
| | 30-34 | 167 | 153 | 74 | 916.17 | 443 |
| | 35-39 | 85 | 81 | 41 | 952.94 | 482 |
| | 40+ | 13 | 13 | 8 | 1000.00 | 615 |
| | Total | | | | 5,371 | 2,914 |
| | X 5 | | | | 26,856 | 14,570 |
| 2007 | 15-19 | 16 | 13 | 6 | 812.50 | 375 |
| | 20-24 | 54 | 48 | 19 | 888.89 | 352 |
| | 25-29 | 151 | 138 | 75 | 913.91 | 497 |
| | 30-34 | 156 | 144 | 78 | 923.08 | 500 |
| | 35-39 | 82 | 76 | 35 | 926.83 | 427 |
| | 40+ | 25 | 23 | 17 | 920.00 | 680 |
| | Total | | | | 5,385 | 2,831 |
| | X 5 | | | | 26,926 | 14,160 |
| 2008 | 15-19 | 30 | 23 | 12 | 766.67 | 400 |

| Years | Age of Mothers | Female population | Total Births | Female Births | A.S.F.R per 1000 of women | A.S.F.R per 1000 of Daughters only |
|---|---|---|---|---|---|---|
| | 20-24 | 65 | 60 | 26 | 923.08 | 400 |
| | 25-29 | 200 | 186 | 100 | 930.00 | 500 |
| | 30-34 | 226 | 196 | 115 | 867.26 | 509 |
| | 35-39 | 95 | 103 | 44 | 1084.21 | 463 |
| | 40+ | 34 | 36 | 6 | 1058.82 | 176 |
| | Total | | | | 5,630 | 2,448 |
| | X 5 | | | | 28,150 | 12,240 |
| 2009 | 15-19 | 35 | 33 | 16 | 942.86 | 457 |
| | 20-24 | 70 | 67 | 25 | 957.14 | 357 |
| | 25-29 | 204 | 185 | 90 | 906.86 | 441 |
| | 30-34 | 230 | 204 | 100 | 886.96 | 435 |
| | 35-39 | 97 | 105 | 35 | 1082.47 | 361 |
| | 40+ | 35 | 40 | 14 | 1142.86 | 400 |
| | Total | | | | 5,919 | 2,451 |
| | X 5 | | | | 29,596 | 12,260 |
| 2010 | 15-19 | 3 | 2 | | 666.67 | 0 |
| | 20-24 | 24 | 24 | 9 | 1000.00 | 375 |
| | 25-29 | 86 | 95 | 47 | 1104.65 | 547 |
| | 30-34 | 94 | 102 | 50 | 1085.11 | 532 |
| | 35-39 | 38 | 51 | 28 | 1342.11 | 737 |
| | 40+ | 9 | 10 | 3 | 1111.11 | 333 |
| | Total | | | | 6,310 | 2,524 |
| | X 5 | | | | 31,548 | 12,620 |

Table 6 above show the Total Fertility and Gross Reproduction Rate for all the years, this tell us that the number of girl babies who would be born to a woman completing her reproductive life at current age-specific fertility rates, and the rate was very high for all the age group in all the years as shown above, The year 2001 has lowest Gross Reproduction Rate (with 10 /1000 livebirth baby girls would be women by the time their mothers pass the reproductive stage) and the highest (with 15/1000 livebirth baby girls would be women by the time their mothers pass the reproductive stage) in 2006, this implies a very high level of predict fertility rate of the woman, as the year go on the number of fertility rate will increases.

## 9. Summary and Findings

The following observation and findings were made from the results.

- The maternal mortality rate was high in the years 2010 (7480.32/100,000), 2006 (6437.77/100,000) and 2002 (6352.46/100,000) respectively.
- The ASDR was found low in the age group 30-34 for about 4 years (2001, 2002, 2003 and 2006). Also, for 4 years age group 25-29 was low in 2005, 2008, 2009 and 2010 while age group 35-39 was low in 2004 and age group 20-24 was low in 2007.
- Age group 30-34 has the highest population of mothers for all the years except in the years 2002 and 2005 where age group 25-29 was found to be higher.
- The neo-natal mortality rate is higher than the Stillbirth Mortality Rate (SMR) for all the years.
- The perinatal mortality rate was generally high with the lowest having 319 deaths out of 1000 livebirths.
- The year 2001 has a lower total fertility rate (with 26 child per woman) and year 2010 has the highest Total Fertility rate (32 child per woman).
- It was observed that the birth rate is very high in 2010 and that age group 35-39 has highest Age Specific Fertility rate (ASFR).
- The lowest Gross Reproduction Rate (GRR) was in 2001 while the highest was Gross Reproduction Rate (GRR) in 2006.

## 10. Discussion of Findings

The study revealed a trend of some mortality and fertility measures, considering the age groups of women of childbearing age in Ogun State, using Olabisi Onabanjo University teaching Hospital medical record of 10 years 2001 to 2010. The maternal mortality rate was high in all the years but higher in 2010 (7,480/100,000), 2006 (6,438/ 100,000) and 2002 (6,352/100,000). Year 2010 recorded the highest maternal mortality rate in Sagamu which compares with the Kano maternal mortality rate in 2007 (7,523/100,000), and these may be due to high cost of services and drugs has been shown to exert a strong negative impact on the use of health services by women, especially when their access to financial resources is limited. While in year 2007 experienced the lowest maternal mortality rate in Sagamu with 2,685/100,000.

The number of women in the age group 30-34 was higher in

all the years compared to other age group (e.g. 147 women in 2001) and the ASDR was lower in this age group (e.g. 20.41), also for all the years compared to most cases. The expected death of mothers was very high in age group30-34 (e.g. 11 women in 2009) for all the years. SMR had lower rates than NMR for all the years (e.g. in 2001 SMR is 182.74 while NMR is 261.42).

In year 2001 Perinatal Mortality was 444.16, but in 2002, it declined to 427.27, and dipped slightly in 2003 to 422.92, but it rose in 2004 to 453.49, however in 2005, it dipped to 376.65 which was a 76.84 decline. It further decline to 319.44 in 2006, and it rose little to 373.30 in 2007 and rose again to 379.14 in 2008, it however, started declining again from 2009 till 2010 331.23, 330.99 respectively. The fertility rate was very high for all the age groups in all the years (e.g. in the age group 25-29 in 2004, ASFR is 1000.00).

Total Fertility and Gross Reproduction Rate for all the years, this tell us that the number of girl babies who would be born to a woman completing her reproductive life at current age-specific fertility rates, and the rate was very high for all the age group in all the years as shown above, The year 2001 has lowest Gross Reproduction Rate (with 10 /1000 live birth baby girls would be women by the time their mothers pass the reproductive stage) and the highest (with 15/1000 live birth baby girls would be women by the time their mothers pass the reproductive stage) in 2006, this implies a very high level of predict fertility rate of the woman, as the year go on the number of fertility rate will increases.

## 11. Conclusion

It was therefore concluded that:

- The maternal mortality among Sagamu town women is high in the years 2010 (7480.32/100,000), 2006 (6437.77/100,000) and 2002 (6352.46/100,000) respectively which means that the hospital need to work more on maternal care.
- Age Specific Death Rate was observed to be high in the age group 30-34 and 25-29, while the Expected death of the mothers among Sagamu town women was found to be higher in the age group 30-34.
- The Total Fertility Rate, ASFR and Gross Reproduction Rate of the reproductive women's age range of 15-49 years in Sagamu town was very high in 2010 and that age group 35-39 has highest Age Specific Fertility rate (ASFR), this mean the women in this age group still have interest in given birth, whereas the Gross Reproduction Rate (GRR) recorded lowest rate in 2001 and very high in 2006.

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