

OUTCOMES OF TEENAGE PREGNANCY AT BENGHAZI MEDICAL CENTER 2019-2020

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Abstract

Background: Teenage pregnancy and childbirth to women less than 20 years old continues to be a major global public health concern, affecting more than 16 million girls and young women worldwide. Teenage pregnancy, has been considered to have a higher risk than pregnancy in an adult, because of biological immaturity of the teenager. As teenage pregnancy is one of the major contemporary issues confronting most countries in the world today. The rate of pregnancy among adolescents is increasing, especially in developing countries, with higher adverse health outcomes such as preterm labour, intrauterine growth retardation and low birth weight; neonatal death, obstructed labour and maternal mortality. We aimed in this study to assess the risk factors, complications and outcomes among teenage pregnancy at Benghazi Medical center which is a governmental delivery hospital (tertiary hospital) and it is a teaching hospital at Benghazi city in Libya. **Subjects and Methods:** An observational descriptive case series study were conducted at Benghazi medical center- Libya. The data of this retrospective during one year period 2019 -2020, the data was taken from medical records at the statistical department at Benghazi Medical Center (BMC). A convenience sample of 150 of teenage pregnancies was taken. Demographic and personal characters, age, gender, residency, level of education (primary, secondary school or still student in college), occupation of women. The clinical characteristics such as date of admission to Hospital, gestational age at the time of delivery, parity, gravity, past obstetric history, past medical history, mode of delivery (normal vaginal delivery or cesarean section C/S). The complications during this pregnancy if there any of these complications such as (preeclampsia or eclampsia, abruption placenta, gestational diabetes mellitus, urinary tract infections, or postpartum hemorrhage or obstructed labor, birth injury and any other complications). The outcomes of pregnancy either delivered alive babies. Data relevant to fetal distress or immediate neonatal morbidity or mortality also taken. Moreover, birth weight of the newborns, if multiple pregnancy and stillbirth or intrauterine fetal death and if the mothers handed their babies immediately or transfer to Neonatal Intensive care unit (NICU) for any reason finally, were recorded, any sign related to neonatal distress such as Meconium staining or fetal distress by cardiotomography CTG. The duration of stay at the NICU and neonatal death within 48hours were recorded. Ethical Considerations for collection of the data was taken. Statistical analysis on study results was performed by the application of the statistical package social science software version 17 (SPSS). **Results:** The socio-demographic state including the mean age was 18.13years with SD 0.745, the minimum age was 16 years. 58.6% of teenage girls had primary level of education. Regarding obstetric history 91.3% of the studied population were primigravida. The majority of girls delivered by C/s. The complications of teenage pregnancies included; Pre term deliveries in 14 % of teenage pregnancies, Preeclampsia 8.6%, anemia in 6.6%, obstructed labor in 5.3%, abruption placenta 4% of the study sample. Perinatal outcomes, such as low birth weight, preterm babies, perinatal death, cephalopelvic disproportion. Early neonatal death < 48 hours in 9.3 8% of neonates the causes of death were prematurity, fetal distress or birth asphyxia or congenital anomalies. The positive indicator in this study no maternal mortality were recorded. The relationship between mode of delivery of teenage mothers, and outcomes of newborn babies was highly significantly. **Conclusions:** Our results seemed to confirm the outcomes of previous studies for teenage pregnant women, mainly regarding the increased risks of preterm deliveries, hypertensive pregnancy induced disordered, obstructed labor abruption placenta and the higher incidence of C/S delivery. Furthermore, the risk factors including poor education of mothers unemployment, anemia and infections. In general, the teenage pregnancy resulted in a number of negative maternal and neonatal consequences due to the incomplete development of genital tract and the musculoskeletal system of pregnant adolescents predispose them to worse overall obstetrical outcomes. The positive indicator of this study no maternal mortality were recorded. **Recommendations:** Firstly, appropriate and adequate counselling on different antenatal services. Increase awareness of family about complications of teenage pregnancy and their impact on mother child and society, and encourage of females to complete high school. Secondly, future studies using larger sample sizes and the need for a prospective study of the obstetric performance of teenage mothers in community and possible comparison of the pregnancy outcome between the younger and older teenagers. Thirdly, encourage doctors to complete the medical records. Finally, teenage pregnancy needs to be tackled as a priority to ease the burden of socioeconomic and health problem.

Keywords: Adolescent, Teenage pregnancy, Complications, Outcomes.

INTRODUCTION

Teenage pregnancy and childbirth to women less than 20 years old continues to be a major global public health concern, affecting more than 16 million girls and young women worldwide (WHO, 2014). Teenage pregnancy is highly associated with abortions, infant and maternal mortality, high rate of unemployment, school failure and drop-outs and limited future career opportunities⁽¹⁾.

Maternal and neonatal mortality is an important reproductive health indicator that can show the health care delivery system of a country.⁽²⁾ Due to the relationship between such indicators and adolescent pregnancy, the rate of pregnancy among young women (15–19 years old) is considered an important health care indicator of a country.⁽²⁾ Teenage pregnancy is a global phenomenon. Worldwide, teenage pregnancy rates range from 143 per 1000 in some sub-Saharan African countries to 2.9 per 1000 in South Korea. Save the Children found that annually, 13 million children are born to women aged under 20 worldwide, more than 90% in

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developing countries. ⁽³⁾ The W.H.O's contribution to meet the Millennium Development Goals (MDGs) gave priority to the issues pertaining to the management of adolescent pregnancy. ⁽³⁾ The percentage of childbearing adolescent women highly varies by region depending on cultural, religious, political, economic and other factors. Every year, an estimated 21 million girls aged 15 to 19 years and 2 million girls aged below 15 years become pregnant in developing regions. Approximately 16 million girls aged 15 to 19 years and 2.5 million girls under age 16 years give birth in developing regions. The global adolescent birth rate has declined from 65 births per 1000 women in 1990 to 47 births per 1000 women in 2015. Despite this overall progress, because the global population of adolescents continues to grow, projections indicate the number of adolescent pregnancies will increase globally by 2030, with the greatest proportional increases in West and Central Africa and Eastern and Southern Africa. ⁽⁴⁾ Adolescent is a period of the transition from childhood to adulthood. Pregnancy in a girl aged between 10-19 years is adolescent or teenage pregnancy. ⁽³⁾ By WHO definition adolescent or teen is defined as when aged 15-19 years. Adolescent birth rate is one of the expanded indicators of Millennium Development Goal in addition to the maternal mortality ratio, delivery by skilled birth attendant, contraceptive prevalence rate and antenatal care coverage. ⁽³⁾ In healthy, well-nourished girls, menarche normally takes place around the ages twelve or thirteen. The transition from childhood to adulthood referred as adolescence 'or _teenage', which has been defined by the World Health Organization (WHO) as the period between 10-19 years. This is the period when structural, functional, mental and psychosocial developments occur in a child to prepare her for assuming the responsibility of motherhood. The needs of wellbeing of girls in this age group, in India, however are neglected. ⁽⁵⁾ Teenage pregnancy, has been considered to have a higher risk than pregnancy in an adult, because of biological immaturity of the teenager. ⁽⁶⁾

In developing countries have distinctly different incidences of teenage pregnancy. In developed regions, teenage mothers tend to be unmarried, and adolescent pregnancy is seen as a social issue whereas, in developing countries, such pregnancies mostly occur in married teenagers, and their pregnancy is most often welcomed by family and society. ⁽⁷⁾ However, in these societies, early pregnancy may combine with malnutrition and poor healthcare to cause medical problems. ⁽⁷⁾ In addition, the United Nations Children Fund (UNICEF), **defines** teenage pregnancy as a teenage girl, usually within the ages of 13-19, becoming pregnant and refers to girls who have not reached legal adulthood, which varies across the world.

Although it is considered a serious public health and social problem globally, approximately, 95% occur in developing countries. Teenage girls aged 15-19 years are twice more likely to die during pregnancy and childbirth compared to women in their twenties, whereas those under the age of 15 years are five times more likely to die. ⁽⁸⁾ According to the World Health Organization (WHO), most of the pregnancies and childbirth are not planned and wanted, although a few are planned and wanted associated with teenage pregnancy include: preterm labour, intrauterine Some of the complications growth retardation and low birth weight; neonatal death, obstructed labour, genital fistula and eclampsia. Furthermore, their reproductive health is affected by unsafe abortion, sexually transmitted infections, sexual

violence and limited access to medical services. ⁽⁸⁾ The rate of pregnancy among adolescents is increasing, especially in developing countries, with higher adverse health outcomes. More than 11 percent of births globally were because of adolescent mothers. More than one fourth (27%) of women aged 20-24 in developing countries (approximately 12 million) start childbearing at an early age (less than 18 years old). ⁽²⁾ The recent WHO estimate showed that the rate of adolescent pregnancy will grow by the end of 2030, and a major increase in adolescent pregnancy is projected to be in Africa. Adolescent pregnancy is a major public health problem, particularly in Sub Saharan African countries. ⁽²⁾ Problems associated with adolescent pregnancy were considered as the leading causes of death among adolescents aged 16-19. It is one of the leading causes of maternal and child morbidity and mortality, and the main reason for poor health and poverty in low and middle-income countries. ⁽²⁾ Moreover, it is associated with increased risks of adverse pregnancy and childbirth outcomes compared to non-adolescent women. For example, mothers aged 10 to 14 years were five times at higher risk of death than mothers aged 20 to 24 due to pregnancy and childbirth complications, attributing to more than 70,000 adolescent girls death every year. ⁽²⁾ Complications from pregnancy and childbirth are the leading cause of death among girls aged 15-19 years in many low- and middle-income countries. Stillbirths and newborn deaths are 50% higher among infants born to adolescent mothers than among those born to mothers aged 20-29 years. Infants of adolescent mothers are also more likely to have low birth weight, which can have a long-term impact on their health and development. ⁽⁹⁾ Therefore, in this study we aimed to assess the complications and outcomes among teenage pregnancies that may will help to design strategies via policy efforts to promote and achieve the goal of health of all by reducing adverse health outcomes of adolescent pregnancy in Benghazi – Libya.

REVIEW OF LITERATURE

Definitions of adolescents or teenage

Teenage pregnancy is defined as pregnancy after menarche to age of nineteen. This period corresponds to a time when there is a gradual transition from childhood to adulthood with potential conflict between biological and social factors. There is also a concurrent physical, psychological, emotional, and social development. Among many identifiable factors contributing to the high risk of teenage pregnancies are early menarche, early onset of coital activity, early marriage, overpowering effect of the partners, inadequate parental support, single- parent factors, lack of education, poor socioeconomic background and unemployment. ⁽¹⁰⁾ Adolescent pregnancy is also defined as the occurrence of pregnancy in girls aged 10-19 years. ^(4, 11) Teenage pregnancy worldwide, as any pregnancy occurring in a young woman who has not reached her 20th birthday is considered as a teenage pregnancy. ^(4, 11) Teen age is the modern definition of adolescent that means period of life (11-19 yrs) during which care free child become responsible adult. ⁽¹²⁾ In recent years incidence of teen pregnancy increasing due to early onset of puberty, sexual activities in girls and relative lack of education on contraceptive methods. ⁽¹²⁾ Teenage pregnancy is a worldwide problem bearing serious social and medical implications relating to maternal and child health. Adolescents or teenage have specific health and development needs, and

many face challenges that hinder their wellbeing, they are often thought of as a healthy group. Nevertheless, many adolescents die prematurely due to accidents, suicide, violence, pregnancy related complications and other illnesses that are either preventable or treatable. ^(4, 11) About 16 million women 15–19 years old give birth each year, about 11% of all births worldwide. Ninety-five per cent of these births occur in low- and middle- income countries and more than 90% of such births occur in developing countries. ^(4, 11) Adolescence, according to WHO refers to the period between the ages of 10 and 19 years in which the individual progresses from the initial appearances of secondary sexual characteristics to full sexual maturity and during which psychological and emotional processes develop from those of a child to those of an adult. It also represents a transition from the state of socio-economic dependence to one of relative. Adolescent pregnancy is defined as gestation in women before having reached the full somatic development. The percentage of childbearing adolescent women highly varies by regionally depending on cultural, religious, political, economic and other factors. ⁽¹³⁾

WHO response ⁽¹⁴⁾

During the early part of the MDG era, prevention of adolescent pregnancy and related mortality and morbidity and prevention of human immune deficiency virus (HIV) and HIV related mortality in adolescents and young people were not given the attention needed due to competing priorities. ⁽¹⁴⁾ During this period, WHO worked with partners to advocate for attention to adolescents, to build the evidence and epidemiologic base for action, to develop and test programme support tools, to build capacity, and to pilot initiatives in the small but growing number of countries that recognized the need to address adolescents. ⁽¹⁴⁾ In the later years of the MDG, adolescents have moved to the center of the global health and development agenda. While WHO continues its work on advocacy, evidence generation, tool development and capacity building, the focus has now shifted to strengthening country-level action. In conjunction with partners, WHO works with government ministries and departments as well as nongovernment partners to support countries to address adolescent pregnancy effectively in the context of their national and subnational programmes. ⁽¹⁴⁾ WHO is working closely with partners within and outside the United Nations system to contribute to the global effort to prevent children becoming wives and mothers through strengthening the epidemiologic and evidence base for action, and to supporting the application of the evidence through well designed and well executed programmes. For example, WHO works closely with the UNICEF/UNFPA/ UN Women Global Programme to Accelerate Action to End Child Marriage, and with Family Planning 2020 a global partnership which works with a range of stakeholders to enable 120 million more women and girls use contraceptives by 2020. ⁽¹⁴⁾

Epidemiology

Teenage pregnancy has traditionally been considered high-risk pregnancy, especially in developing countries. According to World Health Organization data, about half of the world's population is under 25 years old,

- Billion are aged 10 - 25 years, and 88% live in the developing world. ⁽¹⁵⁾ Teenage pregnancy is a worldwide social problem: an estimated 16 million girls between the

ages of 15 and 19 give birth every year, with 95% of these births occurring in developing countries. This number represents 11% of all births worldwide. Seven countries account for half of all adolescent births: India, Bangladesh, Brazil, the Democratic Republic of the Congo, Ethiopia, Nigeria and the United States of America. The role of teenage pregnancy regarding the possible risks for mothers and their babies is not well defined. ⁽¹⁶⁾

Epidemiological data from USA: The pregnancy rate among teenagers in USA was 67.8 pregnancies per 1000 women aged 15-19 in 2008. The teenage birth rate in the United States is highest in the developed world and the teenage abortion rate is also high. In 2010 the birth rate in USA was 34.3 births per 1000 women aged 15-19. ⁽³⁾ When compare **United States** and **Thailand**, the incidences of adolescent pregnancy in 2003 were 41.7 births per 1000 women and 107 births per 1000 women, respectively. ⁽¹⁷⁾

In the United States of America, about 1 million teenagers or 5–8% of the teenage population become pregnant each year. The teenage pregnancies represent about 1/8th of all live births and ½ of all births to unmarried women. Half the teenage pregnancies proceed to delivery with about 20% of the babies being placed for adoption. The teenage pregnancy rate in the US is one of the highest among industrialized nations, twice as high as England, France and Canada, and nine times as high as the Netherlands and Japan. ⁽¹⁷⁾

In 1990, it was anticipated that about 1/10th of the live births in the US would be from teenagers. The first year medical and welfare benefits cost 17,724 dollars per live birth in women aged 15–17 years. Over a span of 20 years, the infants born to teenagers will cost 45.2 billion dollars. However, some experts reported that adolescent pregnancies are linked to higher risk of cesarean deliveries, ectopic pregnancies, pregnancy induced hypertension, prolonged obstructed labour, low birth weight babies, sepsis, poverty, divorce and dropping out of schools. However, not all experts support these predictions. ⁽¹⁷⁾ Epidemiological data from United Kingdom (UK): In the UK, one in 30 women aged less than 20 had a child in 1998. This means that about 13 percent of twenty-years old women were expected to have a child in their teens (UNICEF, 2001). These rates, which were (and still are) three times as high as the European average, place the UK at the top of the teenage fertility table in Europe, and, among rich nations worldwide, second only to the United States where 22 percent of twenty-year old women are expected to become mothers in their teens. ⁽¹⁸⁾ Whereas, the in the last twenty years, in **Italy**, the age of first intercourse for girls has decreased gradually to around 16 years. Early sexual intercourse increases the risk of teenage pregnancy. ⁽¹⁶⁾

The epidemiological data from Asia and Africa and Arab countries reported that the birth rate in Malaysia for 15 - 19-year-old girls in 2008 was an alarming 12.7/1 000 population. ⁽¹⁵⁾ also reported the teenage pregnancy rate in South Asian countries like Bangladesh, Nepal and India are 35%, 21% and 21% respectively. Latest data suggests that teen pregnancy in India is high with 62 pregnant teens out of every 1000 women. The rate of early marriage and pregnancy has decreased sharply in Indonesia and Malaysia. In the industrialized Asian nations such as South Korea and Singapore, teenage birth rates are among the lowest in the world. ⁽³⁾

The data from India, there are over 10 million pregnant teenagers and teenage mothers in India, with one in six girls age 13-19 years beginning child bearing. But these girls are prepared neither physically nor emotionally for pregnancy and motherhood. Teenagers who marry between aged 15-19 years could bear on average 6-7 children over the course of their lives. ⁽⁵⁾

In Nigeria, the incidence of teenage pregnancy is 25%. In other words, one in five teenage women is a mother. Furthermore, there is a 50% likelihood that a second pregnancy would occur 2 years after the first. The adolescent maternal mortality rate accounts for 33% of all maternal deaths in **Nigeria**. However, all agreed that the young pregnant adolescent is at risk and that prenatal care and socio-economic status are important determinants for outcome. ⁽¹⁷⁾

Uganda has one of the highest rates of teenage pregnancies in sub-Saharan Africa, estimated at about 25%. Within the same country there are differences in the proportion with Lira District having the highest rate in Northern Uganda. ⁽⁸⁾

In Egypt and other northern African countries and in Arab countries teenage pregnancy is common (65 per 1000). Consequences of early pregnancy can include morbidity and mortality attributable to low access to skilled antenatal, childbirth and postnatal care as well as unsafe abortions. Teenage mothers lack knowledge and understanding of health and family planning. Early marriage often leads to a higher total number of lifetime births due to a longer period of exposure to the risk of pregnancy. ⁽¹¹⁾

According to a demographic and health surveys (DHS) that done in **Morocco, Egypt and Turkey**, slightly more than 10 percent of adolescent women age 15-19 are ever-married. The proportion of ever-married adolescent women who have begun childbearing (or are pregnant with a first child) is 6.4 percent in Morocco, 9.4 percent in Egypt and 7.5 percent in Turkey. In all three countries the proportion of adolescent women starting to have children increases rapidly after age of 17 year. ⁽¹¹⁾

The predisposing factors and the causes to teenage pregnancies ⁽¹⁴⁾

Several factors contribute to adolescent births In many societies, girls are under pressure to marry and bear children early. In low- and middle-income countries, over 30% of girls marry before they are 18 years of age; around 14% before the age of 15. Early marriage generally leads to early child bearing, in accordance with social norms. In many places girls choose to become pregnant because they have limited educational and employment prospects and given that motherhood is valued, marriage/union and child bearing may be the best of the limited options they have. ⁽¹⁴⁾ Adolescents who may want to avoid pregnancies may not able to do so because they have knowledge gaps and misconceptions e.g. where to obtain contraceptive methods and how to use them. They may also be unable to obtain contraceptives, and to use them correctly. ⁽¹⁴⁾ Estimates suggest that approximately half of pregnancies to girls aged 15-19 in developing regions are unintended. Another cause of unintended (and unwanted) pregnancy is sexual violence, which is widespread. For example, more than a third of girls in some countries report that their first sexual encounter was coerced. ⁽¹⁴⁾

The emergence of this adolescent problem has been attributed to various factors including early menarche, early marriage, social permissiveness (favoring early exposure to casual sexual activity), unmet needs for contraceptives, maternal deprivation and pre-existing psychosocial problems in the family. Over powering effect of the partners, inadequate parental support, single-parenting factors, lack of education, poor socioeconomic background, unemployment and general non-functioning family unit could also contribute. ⁽⁴⁾ In many developing countries, lack of resources makes contraception and reproductive advice inaccessible and this situation may be exacerbated by religious beliefs that disapprove of artificial birth control methods. As a result, many adolescents both married and unmarried would find it difficult to locate or even seek help about sexual matters. ⁽⁴⁾ Furthermore, there may be few facilities offering such support, particularly in remote rural areas where the poorest often lack the resources to travel to these facilities and any fees charged for the services on offer would push them even further out of reach. And predisposing factors to teenage pregnancies. ⁽⁴⁾ Other factors that may contribute to this problem are lack of education and information about reproductive and sexual health, lack of access to ways to prevent pregnancy, adolescent sexual behavior, and even certain customs and traditions. ⁽¹⁵⁾ The underdeveloped pelvis in younger adolescents can mean that they have more difficulties in childbirth than adults or mature adolescents, who have fully developed bone structure. ⁽¹⁵⁾

From the literature a study in Uganda revealed that the factors contributing to teenage pregnancy are multifactorial, ranging from individual- behavior, traditional, and socio-cultural to religious in nature. Low socio- economic status, limited education, and early sexual activity can perpetuate teenage pregnancy. Additionally, weak implementation of the Penal Code Act (which criminalizes sexual intercourse with girls below 18 years) and the Uganda National Adolescent Reproductive Health Policy by government institutions and a lack of community, social support and poverty are some of the determinants of teenage pregnancy. ⁽⁸⁾ Furthermore, increased accessibility to social media and pornographic sharing, cross cultural influences, and decreased supervision by adults, have led to early initiation of sexual activity by teenagers. ⁽⁸⁾

A second study conducted by **Tuyiragize1 et al** study in **Uganda** 2016. The study showed that teenage pregnancy and childbearing is a serious social problem that is linked to the spread of HIV/ AIDS, sexual abuse, neglect, and abortions as well as infant and maternal mortality. Their results showed that teenage pregnancy was influenced by generation, region, highest educational level, socio-economic status and cultural factors of contraception among teenagers in Uganda. Their findings show that the key predictors were age at first birth, history of previous birth, current age, place of residence, education and socioeconomic status. ⁽¹⁾ The study concluded that there was great need to address barriers to use of contraception among young people. Use of contraception and improving access to the services is highly recommended to avert some of the unplanned births among these females. ⁽¹⁾ In 2016, the Eastern and East Central regions showed the highest rates of teenage pregnancy in Uganda with 30.1% and 31.6% respectively which is higher than the national figure. This is as a result of unsafe sexual practices. In addition to the unwanted/ early/ teenage pregnancies, these young people are also at a high risk of HIV infection and infection from other sexual transmitted infections (STIs) ⁽¹⁾.

There is need for an integrated approach to curb teenage pregnancy. lack basic needs like shelter, food and security. They also face relational problems with families, partners and the community. ⁽¹⁾ Several social factors such as religious beliefs, idleness and economic factors have been identified as factors contributing to early pregnancy and marriage). ⁽¹⁾

Nutrition and Weight in Pregnant Adolescent

Nutrition is pivotal for fetal growth and is directly related to maternal anthropometry and placental volume. Low maternal weight and body mass index at conception or delivery, and poor weight gain during pregnancy have been associated with low birth weight, prematurity and maternal delivery complications. Teenage mothers are at nearly three times higher risk of having anaemia. Anaemia is of great obstetric concern as the condition is associated with several complications including low birth weight and increased risk of preterm delivery. ⁽³⁾

Complications of teenage pregnancy

Pregnancy in teenagers are often complicated by hyperemesis gravidarum, miscarriage, anaemia, preeclampsia, eclampsia, and prematurity. Labour and delivery may also be complicated by obstructed labour due to fetopelvic disproportion, rupture uterus, stillbirth, obstetric fistulae, prolonged labour, instrumental delivery, caesarean section, and death. This trend is common in some parts of Africa due to socio-cultural, geographical, and financial constraints.⁽¹⁰⁾ Gestation during adolescence is associated with higher rates of low birth weight (LBW), preterm delivery, respiratory diseases, and birth trauma, besides a higher frequency of neonatal complications and infant mortality. Teenage pregnancy continues to be a challenging public health issue around the world, mainly in developing countries. ⁽¹⁹⁾ Adolescent pregnancy are at increased risk for neonatal complications as prematurity, low birth weight, Intrauterine Growth Retardation (IUGR) neonatal mortality and stillbirth. The maternal complications like preeclampsia, perineal tear and episiotomy are also common among adolescents. However, caesarean section, antepartum haemorrhage and postdated were not found significantly associated with adolescent pregnancy. Preterm labor has been associated with a number of factors including genital tract infection, extragenital chronic inflammation, stress and lifestyle factors which may be stronger determinants in pregnant adolescents than in adult pregnant women. In adolescents anatomical characteristics of the cervix (Specially the short cervix) would favour preterm delivery.⁽³⁾

A major problem for the pregnant teen relates to her own body, and degree of both physical and emotional development achieved during the pubertal process. The incomplete development of genital tract and the musculoskeletal system of pregnant adolescents predispose them to worse overall obstetrical outcomes. There are high rates of spontaneous abortion, preterm delivery and low birth weight among adolescent girls as compared to older women aged 20- 29. ⁽³⁾ Furthermore complications of pregnancy lead to twice many deaths in adolescent compared to adult women. In addition to the increased maternal mortality rates, pregnancy can induce tremendous psychological stress on the adolescents, particularly with undesired pregnancies.⁽³⁾ The associated psychological and emotional burdens are economic responsibilities, adjustment in lifestyle and changes in family

dynamic. Due to negative medical and social outcome, it is pertinent to launch interventions to avoid teenage pregnancies. Identification of the risk factors that influence the occurrence of teenage pregnancies is the basis on which effective preventive programmes should be developed. ⁽³⁾

Many studies in Nigeria among teenage pregnancies one of them conducted by **Ayuba and Gani** study 2012 stated that in Africa countries the complications of teenage pregnancies include anemia from malaria, infection and inadequate nutrition, spontaneous abortions, preterm labor and deliver, pre-eclampsia and eclampsia, antepartum hemorrhage and fetopelvic disproportion with its attendant risks of high operative intervention rates, obstructed labor and its sequelae notably genital fistulae. ⁽¹³⁾

Furthermore, the researchers found the complications of teenage pregnancies in the puerperium, puerperal sepsis, anemia and other complications resulting from obstructed labor are common. Furthermore, it has been found that infant mortality among their babies is sometimes two times higher than among those of old peers. ⁽¹³⁾ A stronger likelihood of low birth –weight in the infants has been recorded among adolescent mothers than their counterparts and this has been mainly associated with poor maternal nutrition. ⁽¹³⁾ Low birth-weight babies are 5- 30 times more likely to die than babies of normal weight. If a mother is under 18, her baby's chance of dying in the first year of life is 60 per cent higher than that of a baby born to a mother older than 19. Part of this heavy toll has more to do with poor socio-economic status and lack of ante-natal and obstetric care than physical maturity alone. ⁽¹³⁾

Moreover, cervical carcinoma, which has been increasing in incidence and presenting at a younger age, is directly linked to the age of first intercourse and to the number of partners, and the spread of infection by human immunodeficiency virus (HIV) has also been linked to number of sexual partners. ⁽¹³⁾ Regarding the risk of abortion were recorded in the study **Adeyinka et al** 2009 where the teenage girl who is pregnant has 40% chance of carrying it to term and 42% chance of induced abortion. The risk of death from abortion in women age 15–19 years is

- Per 100,000. The number of pregnancies among adolescents is increasing throughout the world. This is especially so in industrialized nations. Until recent, teenage pregnancy was considered to be a problem of the nonwhite and lower income teenager. ⁽¹⁷⁾ Globally, 15 million girls aged 15–19 have babies yearly. Hence, adolescent's account for approximately 10% of all births worldwide while 5 million abortions take place among adolescent girls (25% of all unsafe abortions globally).⁽¹⁷⁾

A Hospital-based cross-sectional, observational type conducted in India by **Mukhopadhyay et al**, 2006-2007 with two groups cases teenage and comparison_pregnancy and their outcomes and complications compared to older (20-29 years) primigravida mothers. ⁽⁷⁾ It was found that the teenage mothers were from a socioeconomically- disadvantaged background with lower levels of education and used lesser antenatal healthcare services. They developed more perinatal complications, such as preterm births, stillbirths, and neonatal deaths, and delivered babies with low-birth weight compared to the older mothers. ⁽⁷⁾ The adverse outcomes of teenage pregnancy could be attributed not only to lower maternal age

but also to their relatively disadvantaged socioeconomic background.⁽⁷⁾ A systematic review and Meta-analysis conducted by Kassa *et al*, in 2018 reported that globally, the declining age at menarche and better nutrition and healthier lifestyles of younger generations are the main factors for high rate of adolescent pregnancy global.⁽⁹⁾ World Health Organization (WHO) 2014 report showed that the global adolescent birth rate was 49 per 1000 girls aged 15 to 19 years old. Adolescent pregnancy is a major public health problem, particularly in Africa. The meta-analysis also found that the adolescent pregnancy is associated with high maternal and child morbidity and mortality and affects the socio-economic development of a country. It is linked to an increased risk of adverse pregnancy and childbirth outcomes compared to older women. More than 70,000 adolescent girls die every year because of these complications mainly in developing countries.^(9, 20)

In **Brazil**, during the period from 2000 to 2006, the Live Birth Information System (SINASC, *Sistema de Informação sobre Nascidos Vivos*) recorded a decline in participation of births in mothers aged 15 to 19 years. However, the proportion of liveborns whose mothers were not in the age group under 14 years of age remained stable.⁽²¹⁾ From the biological point of view, among the consequences of pregnancy in adolescence are the high rates of hypertensive disorders of pregnancy, anemia and gestational diabetes, delivery complications, determining an increase in maternal and fetal mortality. It is important to note that some studies showed an increased trend of prenatal, intrapartum, and postpartum inter current events among pregnant adolescents.⁽²¹⁾ As to problems with the newborn, gestation during adolescence is associated with higher rates of low birth weight (LBW), preterm delivery, respiratory diseases, and birth trauma, besides a higher frequency of neonatal complications and infant mortality.⁽²¹⁾

A study conducted in **Ethiopia** in 2017 showed that the adolescent women were less likely to receive antenatal care follow-ups, have a lower mean age at first pregnancy, and less likely to receive iron and folic acid supplementation during pregnancy than adult women.⁽²⁾ The common forms of adverse neonatal outcomes associated with adolescent pregnancy were low birth weight (LBW) and preterm birth.⁽²⁾ In addition, higher percentage of babies born from adolescents had two or more adverse neonatal outcomes compared to babies of adult women. Addressing the sexual and reproductive health needs of adolescent girls is central to reduce the high rate of child morbidity and mortality in Ethiopia. Prevention of adolescent pregnancy using school and community-based sexuality education and family planning information and service provision programs should be the main focus of health care planners.⁽²⁾ Socio-cultural and religious norms promote abstinence until marriage. However, as in many other societies, a double standard concerning sexuality is prevalent whereby girls are expected to be modest, tender, submissive and passive, while boys are encouraged to engage in behaviours that assert their masculinity, autonomy, and ambition.⁽⁸⁾

The **Uganda** national adolescent reproductive health policy (2004) pledges commitment to advocate for the review of existing legal, medical and social barriers to adolescents' access to information and health services. In addition to ensuring protection of the rights of adolescents to health, provision of legal and social protection against all forms of abuse and harmful traditional practices, promotion of gender

equality and provision of quality care for adolescent sexual and reproductive health issues. In spite of the implementation of available policies and other related laws, teenage pregnancies remain quite high in Uganda.⁽⁸⁾

Shirin *et al*, study entitled adolescent pregnancy: risk factors, outcome and prevention reported that the complications of pregnancy and childbirth are the leading causes of mortality among women aged 15-19 in such areas. Highest risk of maternal death in young girls was shown in Africa, Afghanistan, Bangladesh, Guatemala, Haiti, Nepal, Nicaragua and Yemen.⁽³⁾

A study **Kheir *et al***, conducted in Sudan 2017 recorded highly variable rates of teenage pregnancies in South Sudan is among the top ten countries with highest prevalence of teenage pregnancy, the others being Burkina Faso, Central African Republic, Chad, Guinea, Malawi, Mali, Mozambique, Niger and Bangladesh.⁽¹⁹⁾ A survey of National Family Health Survey (NFHS)-3 in India revealed that 16% of women, aged 15-19 years, have already started childbearing. In India, teenage pregnancy is an important public-health problem, although the national policy of the Government of India advocates the minimum legal age of marriage for girls to be 18 years.⁽⁷⁾ A substantial proportion of young married girls is already malnourished. Nearly 47% of adolescent women have body mass index of less than 18.5, 11.4% are stunted, and half of them have anaemia.⁽⁷⁾ While there is a growing realization of the need to promote adolescent reproductive health, work done in this field is often inadequate. Teenage pregnancy occurs when women aged less than 20 years become pregnant.⁽⁷⁾ This is of serious concern because maternal age plays a significant role in adverse outcome and complications of pregnancy.⁽⁷⁾ Teenage pregnancies represent a high-risk group in reproductive terms because of the double burden of reproduction and growth. Complications of pregnancy and childbirth are the leading cause of mortality among girls aged 15-19 years in developing countries.⁽⁷⁾

The combination of poor nutrition and early child bearing expose young women to serious health risks during pregnancy and childbirth, including damage to the reproductive tract, pregnancy related complications, such as anaemia, pregnancy induced hypertension, preterm labour, cephalopelvic disproportion, maternal mortality, perinatal and neonatal mortality, and low birth weight.⁽⁷⁾

According to **Undiyaundeye *et al*** (2015), in her book titled Introduction to Child studies: Help us to grow into our dreams! It is often that the teenage years are the best years of one's life! suggested that the girl-child gets misinformation highlighted in the beauty of the teenage years in her famous Quote: the four stages of human life are; infancy, childhood, adolescence and teenage (the condition of no longer being used or useful) in her opinion, life becomes useless after adolescence period if not properly reared by parents and other adults!⁽²²⁾ As true as this assertion may be, it is ironic to note that this is the only part of the picture. However, life for many teenagers is a painful tug of war fixed with mixed messages and conflicting demands from parents, teachers, friends, family and oneself.⁽²²⁾ Most maternal and child morbidity and mortality are related to hypertensive disorders of pregnancy, infections, low birth weight, and preterm delivery. Pregnancy among adolescent women has implications on the educational opportunity, population growth and ill-health of women. For this reason,

prevention of child marriage and reduction of adolescent pregnancy has long been the focus of attention by several governmental and non-governmental organizations.⁽²⁰⁾ Moreover, the reduction in the adolescent pregnancy birth rate since 1990 has resulted in the decline of maternal mortality rate among teenagers especially in developed nations.⁽²⁰⁾ Several studies have shown that the high level of maternal and perinatal morbidity and mortality can be reduced by lowering the high rate of adolescent pregnancy in developing countries.⁽²⁰⁾ Even though the identification of the distribution of adolescent pregnancy is important in designing proper interventions to reduce the problem, the small sample sizes and a limited number of available studies were the challenges in identifying the magnitude of the problem in Africa.⁽²⁰⁾ There is also the absence of the distribution of the problem in different geopolitical and administrative areas. Additionally, the available studies which assessed the factors associated with adolescent pregnancy in Africa showed inconsistent findings.⁽²⁰⁾ Previous studies have shown that adolescent pregnancy is associated with physical, social problems, and affects the economic status of girls, their families, and countries.⁽²⁾

In addition, previous reports have shown a conflicting idea in terms of the adverse neonatal outcomes of adolescent pregnancy. For example, a study conducted in Russia showed that there is a lower risk of adverse pregnancy outcomes like low birth weight (LBW), 5-minute Apgar score, and neonatal admission compared to adult women. A study conducted in Boston city hospital showed that younger age at pregnancy (less than 16 years old) doesn't predict the likelihood of poor neonatal outcomes (LBW and preterm birth).⁽²⁾ In addition, other studies showed a non-significant association between younger maternal age with risk of adverse perinatal outcomes like stillbirth, LBW, and preterm birth.⁽²⁾ On the other hand, studies conducted in Cameroon, and low-middle income countries showed a higher risk of LBW and preterm birth among babies born from adolescent compared to adult women. Some of the reasons for such difference, among others, can be the difference in the age group (among the study and control group), the difference in the definition of the outcome variables, and the use or non-use of variables to adjust the confounders for the adverse neonatal outcomes.⁽²⁾ Another case-control study in Nigeria conducted by Daniel. Adeyinka and his colleagues 2007-2008 reported that the complications that may contribute to the morbidity and mortality in adolescent pregnancy especially in low resource country. The appearance of these complications largely depends on the level of antenatal care service in the country. The researchers recommended to improving compliance with prenatal care could significantly reduce the frequency of adverse foetal outcomes in adolescent populations in Nigeria.⁽¹⁷⁾

In the event of an adolescent pregnancy, prenatal care must be provided in a special setting where non-judgmental professionals and staff members are interested and skilled in relating to pregnant teenagers as people rather than problems. Psychological, nutritional and social work services should be an integral part of obstetrical care.⁽¹⁷⁾ Another previous study seemed to report that the Hypertensive Disorders of Pregnancy, Pre-eclampsia, anemia, IUGR and LSCS were major maternal outcome; Low Birth Weight and NICU admission were major adverse fetal outcomes.⁽⁵⁾ Whereas, Azevedo *et al*, study in Brazil 2012 showed that

the main neonatal complications found were prematurity, low or very low birth weight, and perinatal mortality. Whereas the major maternal complications were hypertensive pregnancy disorders, abortion, urinary infections, and premature rupture of the fetal membranes. However, it is important to point out that the data are controversial as to the occurrence of pre-eclampsia.⁽²¹⁾ When compare our findings with Baldyga *et al*, 2020 study in Poland Entitled attitudes of teenage towards pregnancy and childbirth reported that the link of negative obstetric outcomes to poor living conditions of girls, risky health behaviors, inadequate prenatal care, and biological immaturity.⁽²³⁾ There is no controversy, however, over the observation that the younger the mother, the greater the risk of complications in her and her child. Pregnancy and childbirth are extremely important events. They initiate a new stage in the life of a woman and her family. Most women of reproductive age prepare for pregnancy and childbirth both physically and mentally.⁽²³⁾ In addition, the study demonstrated that the occurrence of pregnancy in a teenager disturbs the commonly accepted model of life, in which the first step is to obtain an education, take up a job and become financially independent, and only then start a family. It has an adverse effect on the personal sphere of life (health and emotional stability), as well as on the social aspect of life.⁽²³⁾ Teenagers are standing on the threshold of adult life with no life stabilization in terms of job security, own habitation, and financial and economic independence. They face difficulties in continuing education, are dependent on their parents who exercise custod, and have a harder start on the labor market.⁽²³⁾ It is less likely for a pregnant teenager or a teenage mother to get employed; they are offered fewer working hours and lower salaries in comparison to women who gave birth to their first child in adulthood.⁽²³⁾

Futhermor, from the literatures Bangladesh study conducted by Nessa *et al*, demonstrated that the social factors and familial factors of teenage pregnancies: Recorded that teenage from socially disadvantaged background characterized by poverty, welfare dependence, academic under-achievement and low parental educational aspirations are at an increased risk of becoming pregnant at an early age. So, teenage pregnancy should be addressed as high risk and factors responsible for this must be removed.⁽¹²⁾

Ochen *et al*, study, the researchers reported the demographic factors that became significantly associated with teenage pregnancy were: older age of respondents (15–19 years), living in rural areas and school attendance. Behavioral factors associated with teenage pregnancy included: irregular contraceptive use, having multiple partners and frequent sex by teens.⁽⁸⁾ Familial factors significantly associated with teenage pregnancy were: being in a household with low socio-economic status, domestic violence, physical neglect and parental separation/divorce. Marital status was found to be an effect modifier other than independent predictor. Meanwhile social factors comprised of: peer pressure, sexual abuse, lack of control over sex and lack of awareness on adolescent sexual and reproductive health.⁽⁸⁾ A same study stated that a adolescent pregnancy is a significant problem in the world. A lot of effort is being put in to reduce adolescent pregnancies through empowering the youths through education, the community, economic, and policy interventions. Educational empowerment is commonly applied.⁽²⁴⁾ However, a combination of empowerment initiatives would seem beneficial, and further research should be conducted to clarify

their role in reducing adolescent pregnancy. ⁽²⁴⁾ Pregnancy among adolescent is both a medical and a public health concern which may negatively impact the social and physical development of mother and affect reproductive quality within a given society. ⁽³⁾ Increased age, rural residence, secondary or higher education level, occupation, and socio-economic status were found to be statistically significant predisposing factors of teenage pregnancy in Uganda ⁽¹⁾

In addition, regarding to the socio-economic consequences of adolescent pregnancy from evidence based literatures found that the adolescent pregnancies constitute major socio-medical and socio-economic problems in both developed and developing countries and are becoming more prevalent in recent times. ⁽¹³⁾ The emergence of this adolescent problem has been attributed to various factors including early marriage, social permissiveness -favoring early exposure to casual sexual activity, unmet needs for contraceptives, maternal deprivation, pre-existing psychosocial problems in the family and general non-functioning family unit could be mentioned among others. ⁽¹³⁾ In many developing countries, lack of resources makes contraception and reproductive advice inaccessible and this situation may be exacerbated by religious beliefs that disapprove of artificial birth control methods. As a result many adolescents both married and unmarried would find it difficult to locate or even seek help about sexual matters. Furthermore, may be few facilities offering such support, particularly in remote rural areas where the poorest often lack the resources to travel to these facilities and any fees charged for the services on offer would push them even further out of reach. ⁽¹³⁾

In some cases, the antenatal clinic is the only place where a young woman can obtain reproductive advice, but pregnancy is a pre-condition. Contraception may not be offered to married women until they have borne a child. There is an urgent need for 'youth friendly' health services, as adolescents are unlikely to seek help about sexual matters from a service that is unsympathetic to their needs and anxieties. ⁽¹³⁾ From literature, the medical, psychological, socio-biological and legal point of view, the arrival of a new life, together with the whole period of pregnancy, childbirth, and puerperium, seems to be one of the most important events, which has an impact on the whole future of a woman, her child, and her family. ⁽²³⁾ Various factors of personal and social life have a significant influence on the final shape of the attitudes of contemporary women towards pregnancy and childbirth, especially among teenage mothers. ⁽²³⁾

The medical problems could also occur in addition to the risks of the pregnancy itself. Pregnancy-related deaths are the leading cause of mortality for 15-19 year-old girls (married and unmarried) worldwide where Mothers in this age group face a 20 to 200 per cent greater chance of dying in pregnancy than women aged 20 to 24. ⁽¹³⁾ Furthermore, the consequence include more unwanted pregnancies and out-of-wedlock children, greater marital instability, poor education, fewer assets and lower income later in life. The problems associated with adolescent pregnancy can be significantly reduced through sex education, provision of contraceptive counseling and services, education of women up to the University level and medical, social and psychological support for affected adolescents. In addition, provision of good antenatal, natal and postnatal care for these adolescents is also emphasized. ⁽¹³⁾ In most cases, of adolescent pregnancy they are unwanted, unplanned and out of wedlock. This group of women is

regarded as having high-risk pregnancy due to the effect of early motherhood on their physical and mental health, economic independence, education and social relationships. ⁽¹⁷⁾ Moreover, regarding the adverse effects and behavioral problems and poor cognitive abilities a similar study concluded that teenage pregnancy affects the educational, traditional, economic, psychological and personal social attainment of teenage girls. ⁽²²⁾ It is evident that there is no magic bullet for teenage pregnancy. Given the multiple levels of predisposing factors of teenage pregnancy, single intervention strategies by single sectors will not solve teenage pregnancy. ⁽²²⁾ A comprehensive approach that can incorporate the home, the school, the community, the healthcare setting as well as change at the structural level. Increasingly, given the educational, social, economic, and employment histories common among teenage parents, career development will also be a priority for helping teenagers to make the transition from adolescent to economic independence which can be in hand to reduce the number of unwanted pregnancy in the society. However, this early parents are in special need of psychological development life skills development, career awareness and job skills development respectively. ⁽²²⁾

Uganda study in 2016 revealed that the early childbearing carries particular risks, including dropping out of school, abandoning babies and obtaining illegal abortion that may result into death. ⁽¹⁾ Almost one-fifth of adolescent girls in Africa gets pregnant. ⁽²⁰⁾ Wide differences in rates were observed across the different sub-regions of Africa, the highest being in the Eastern African region. Countries should work towards preventing adolescent pregnancy through school and community-based family life education that promotes abstinence and safe sexual practice. Better access to contraceptive information and the use of contraceptive methods by adolescent girls to avoid unwanted pregnancy should be encouraged. Special focus should be given to the diverse sexual and reproductive health needs of adolescents by policymakers, population planners, researchers and healthcare workers. ⁽²⁰⁾ Adverse effects associated with teenage pregnancy include maternal anaemia, pregnancy induced hypertension, spontaneous miscarriage, low birth weight primarily due to preterm delivery and leading to a high perinatal and post neonatal morbidity and mortality, high maternal mortality, the mother finding it difficult to cope with the pregnancy, and behavioral problems and poor cognitive abilities and achievements in the child later on. ⁽⁶⁾ There has been a worldwide increase in the rates of teenage pregnancy during the last three decades. Teenage pregnancy is linked to poor education, poverty and social exclusion, and is a major worldwide public health problem. ⁽⁶⁾

Recently, several studies have suggested that young age itself does not carry a significantly higher risk of adverse pregnancy outcomes. However, they concluded that the cumulative effects of the associated social and economic deprivation and exclusion on the health of these mothers and babies is a serious public health problem. ⁽⁶⁾ From the previous studied demonstrated that the teenage pregnancy risk seen in younger sisters when older sisters had a teenage pregnancy appears based on the interaction with that sister and her child; the family environment experienced by the siblings is quite similar. ^(15,25) Much of the pregnancy risk among teenage daughters of mothers bearing a child before age 20 seems likely to result from the adverse environment often associated with early childbearing. Given that an older sister's teenage

pregnancy has a greater impact than a mother's teenage childbearing, social modeling may be a stronger risk factor for teenage pregnancy than living in an adverse environment. Furthermore, teenage pregnancy is an unresolved problem in developing countries, despite various forms of sexual education and contraceptive advice. ^(15,25) There were conflicting findings from previous studies as to whether the adverse pregnancy outcomes among adolescent mothers were caused by their biological immaturity or poor socio-environmental factors, especially for younger adolescents (i.e. ≤15 years), and the quality of medical services and women's social and cultural backgrounds. ⁽⁵⁾ Efforts need to be directed towards strict enforcement of laws prohibiting teenage marriage in India. For pregnant adolescents attending the antenatal clinic, extra care should be taken. Advice to healthy life style (take more rest and have adequate sleep to avoid premature births. Smoking, alcohol-use, and other addictions) should be strongly discouraged. ⁽⁷⁾ Early detection of complications, such as anaemia, preeclampsia, and intrauterine growth restriction and their management, and good intra-natal and postnatal care are essential. Steps should be taken to educate adolescent mothers about the health hazards of too early and repeated successive pregnancies. ⁽⁷⁾

The Benefits of Antenatal Care

Antenatal care provides an opportunity for pregnancy complications to be diagnosed early and appropriate intervention instituted. The safest mode of delivery for the mother is determined before labour or early in the course of labour as the case may be. In developed countries of America and Europe and some parts of the Middle East where pregnant teenagers receive adequate antenatal care, pregnancy and delivery complications are minimal. ⁽¹⁰⁾ Furthermore, majority of girls aged 15-19 without attending an antenatal clinic or receiving the help of a professional midwife, it is therefore essential to devise programs to reach girls in and out of marriage with reproductive advice and services. ⁽¹³⁾ Adolescents tended to have less antenatal care and to deliver smaller babies. Good family support, early booking and adequate antenatal care should improve the obstetric and perinatal outcome in teenage pregnancies. ⁽¹⁵⁾ With regard to health care for their infants, young mothers are more likely to seek regular care in emergent/urgent care settings and less likely to utilize preventive care visits. ⁽²⁶⁾

Iklaki et al, study found that the majority of teenage pregnancy mothers deliver without any form of antenatal care. These often render them vulnerable to various risks and hazards both to the mother and fetus. This dystocia sometimes result in stillbirth or maternal mortality. Antenatal care has been found to improve the obstetric outcome in these young women. ⁽¹⁰⁾ Teenage mothers were more likely to have low birth weight babies. In other respects, there were no significant differences between teenage and non-teenage mothers. Teenage pregnancy, despite being a strong predictor for low birth weight, the maternal and neonatal outcome can be improved with good antenatal and post-natal care and prenatal care is very imp to prevent mortality. ⁽¹⁹⁾

Tuyiragize et al, recommend that teenagers should be provided with sexual education for them to learn about the changes they go through and their sexual reproductive health rights. Other measures such as promoting household wealth creation and ensuring girls keep in school by providing them

with scholastic materials and other school requirements. Also, provision of teenage-friendly health services at health facilities that include a wide range of options, as well as medically accurate counselling and information could mitigate teenage pregnancy. ⁽¹⁾

Related Literature

A study **Nhoma et al 2020** on how girl empowerment influences pregnancy rates among girls between the ages of 10 and 19. The forms of girl empowerment include economic, educational, community. In general, economic empowerment affects adolescent pregnancy rates both directly and indirectly through, among other things, increased decision-making power structure in relationships, and access to contraceptives. ⁽²⁴⁾ The found evidence of a statistically significant causal effect of teenage motherhood on second generation education and fertility outcomes across Europe. ⁽²⁴⁾ A study in Africa recommended the government should formulate programmes and policies aimed at: retaining married and pregnant girls in schools; promoting sex education. ⁽⁸⁾ Teenage pregnancy needs to be tackled as a priority to ease the burden of Socioeconomic and health problem. ⁽³⁾

Harris et al, research 2014 entitled young mothers lacks plans to receive preventive care. Stated that the negative health impacts following teen pregnancy and the benefits of routine preventive health care are well known to health care providers. What remains unclear is whether young mothers are receiving preventive health care following their pregnancy, and if so, who is providing this care. ⁽²⁶⁾

Using data from the British Household Panel Survey, ⁽¹⁸⁾ **Marcon and Francesconi** 2007 study, they has estimated the relationship between several child outcomes measured in early adulthood and whether or not young adults were born to teenage mothers. The results when they compared children born to non-teen mothers, children of teen mothers have a lower chance of high educational attainment. Second, the key channel of transmission of this adverse effect is childhood family structure, which plays a more important role than family poverty during childhood. So growing up in a non-intact family tends to exacerbate the negative impact of having a teen mother on young adults 'outcomes. Third, a few adverse consequences of early childbearing are faced not only by children of teen mothers but also by children of other older mothers (who gave birth before their 24th birthday). ⁽¹⁸⁾

Recent analyses have raised questions about the causal linkages between the timing of fertility and young mothers 'later outcomes. Many have argued that research on teen childbearing has overstated its negative consequences for mothers by ignoring the fact that teenage parents are drawn disproportionately from the ranks of the socially and economically disadvantaged. ⁽¹⁸⁾

A scientific paper in Boon – Germany conducted by **Painayua and Walker** 2012 provide evidence of a statistically significant causal effect of teenage motherhood on second generation education and fertility outcomes across Europe that the probability of continuing school after compulsory education decreases when born to a teenage mother. ⁽²⁷⁾

OBJECTIVES OF THE STUDY

To assess the associated risk factors, complications and outcomes among teenage pregnancy.

MATERIALS AND METHODS

Study design & study settings: An observational descriptive case series study were conducted at Benghazi medical center-Libya. The data of this retrospective study was taken from medical records at the statistical department at Benghazi Medical Center (BMC) also some of data were taken from telephone administrated of their husbands of the teenage mothers because the telephone number of their husbands were recorded in the administration at Benghazi Medical center. Then, only the first 150 teenage cases were sampled and the intended data collected.

Study duration: The study was conducted during the period between 1st January 2019 to 1st January 2020.

Study population: Women attending labor room governmental delivery hospital in Benghazi – Libya.

Study sample: A non-probability sample. A convenience sample of 150 of teenage pregnancy was taken from the Statistical department at Benghazi Medical center. Our sample size was 150 of any pregnancy occurring in a young woman who has not reached her 20th birthday is considered as a teenage pregnancy was included to select the study sample.

Inclusion criteria: pregnant women not reach 20th birth day.

Data collection and variables of the study

Variables studied include the following; firstly, Demographic and personal characters, age, residency either from Benghazi city or outside- Benghazi, level of education (primary, secondary school or still student in college), occupation of women. Secondly, the clinical characteristics such as date of admission to Hospital, gestational age at the time of delivery, parity, gravity, past obstetric history, past medical history, mode of delivery (normal vaginal delivery or cesarean section C/S). Complications during this pregnancy (preeclampsia or eclampsia, abruption placenta, Gestational diabetes mellitus, urinary tract infections, postpartum hemorrhage or obstructed labor, birth injury and any other complications). The outcomes of pregnancy either delivered alive babies. Data relevant to fetal distress or immediate neonatal morbidity or mortality. Birth weight of the newborns, if multiple pregnancy and Stillbirth or intrauterine fetal death and if the mothers handed their babies immediately or transfer to Neonatal Intensive care unit (NICU) for any reason finally, were recorded. Any sign related to neonatal distress: Meconium staining or fetal distress by carditomography CTG. The duration of stay at the NICU and neonatal death within 48 hours were recorded.

Ethical Considerations: The study approved by ethical committee at BMC. After consent taking from the head of the Obstetrics and Gynecology and from head of the statistical department at Benghazi medical (Teaching Hospital). Confidentiality of data was guaranteed, and privacy of the data

and acknowledging co investigators and data collectors in the study were applied.

Statistical methods: Statistical analysis on study results was performed by the application of the statistical package social science software version 17 (SPSS). Data collected and then analyzed and expressed as frequency distributions and then computed in percentages an in tables and figures. Simple descriptive statistical parameters such as mean, standard deviation, minimum and maximum, mode and median were done. For categorical variables, chi-square test was applied for test of association P-value of less than 0.05 was considered statistically significant in all statistical analyses.

RESULTS

The total delivered during the year 2019 at Benghazi Medical were 10730 normal vaginal delivery and 5355 cesarean section S/C . (Total teenage were 800 out of them 500 normal delivery and 300 S/C. Our sample size was 150 teenage.

Table 1. Descriptive statistics of teenage pregnant girls in years.

| Parameters | Minimum | Maximum | Mean | Standard deviation | Total |
|-------------|---------|---------|-------|--------------------|-------|
| Age (Years) | 16 | 19 | 18.13 | 0.745 | 150 |

Mean age of patients was 18.13 years as shown in table 1.

The minimum age was 16years & maximum was 19 years as shown in figure 1.

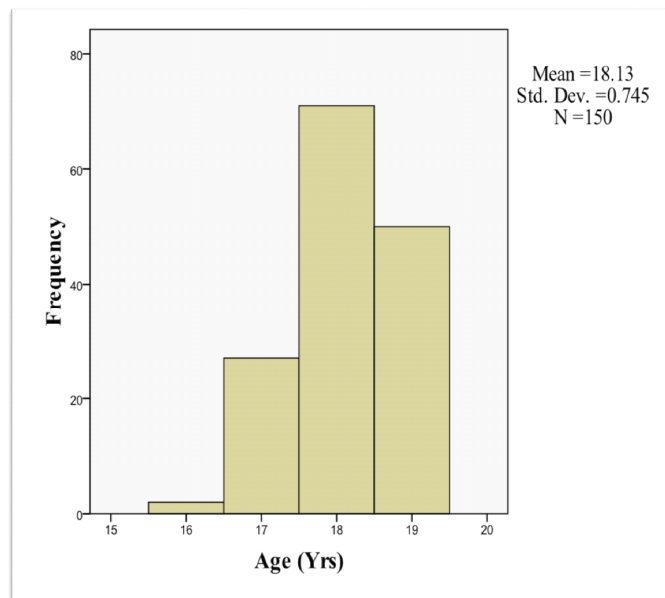


Figure 1. Distribution of teenage pregnancies according to age in years

Table 2. Descriptive Statistics of the teenage girls according to gestational age

| Parameters | Minimum | Maximum | Mean | Mode | Median | Std. Deviation | Total |
|-------------------------|---------|---------|-------|------|--------|----------------|-------|
| Gestational age (Weeks) | 20weeks | 42weeks | 36.75 | 38 | 38.00 | 4.206 | 150 |

Table 3. Teenage pregnancies deliveries

| Delivery or abortion | No. | % |
|---|-----|------|
| Pre term | | |
| Delivery at < 36 weeks gestation | 21 | 14 |
| Term | | |
| *Delivery at 36-40 weeks | 113 | 75.3 |
| Post term | | |
| Delivery more than 40 weeks classified placenta | 13 | 8.6 |
| Abortion < 28 weeks | 3 | 2 |

*The vast majority of teenage girls deliveries at 36-40 weeks as shown t in the previous table 3

Table 4. Distribution of teenage girls according parity

| Parity | No. | % |
|-------------|-----|------|
| Nulliparous | 137 | 91.3 |
| 1 | 9 | 6 |
| 2 – 3 | 4 | 2.6 |
| Total | 150 | 100 |

Table 5. Distribution of teenage pregnancies according to level of education

| Level of education | No. | % |
|--|-----|------|
| Primary school | 88 | 58.6 |
| Intermediate school | 33 | 22 |
| Still students in high school or college | 29 | 19.3 |
| Total | 150 | 100 |

All teenage mothers not employed.

Table 6. Details of clinical characteristics, of study population

| Characteristics/Parameters | Details | Number No. | Percentage % |
|----------------------------|--|------------|--------------|
| Past obstetric history | Uterine scar in previous pregnancy (Caesarean Section S/C) | 5 | 3.3 |
| | History of neonatal death | 1 | 0.6 |
| * Past medical history | Yes | 3 | 2 |
| ***Past surgical history | Yes | 0 | 0 |

***Past surgical history we exclude the cesarean section S/C.

The table 6 reveals that the most prevalent maternal morbidities. One case had epilepsy and one case had bronchial asthma and one case had hepatitis C virus (HCV +ve) with equal proportions. 0.6 % of cases had previous history of neonatal death.

Table 7. Distribution of co-morbidities of teenage girls during this pregnancy

| Co-morbidities | Pregnant teenage girls | |
|-------------------------------------|------------------------|-----|
| | No. | % |
| Anemia | 10 | 6.6 |
| Gestational diabetes mellitus (GDM) | 4 | 2.6 |
| Urinary tract infections (UTI) | 4 | 2.6 |
| Cholecystitis | 1 | 0.6 |

Table 8. Distribution of cases according to history of blood transfusion

| History of blood transfusion | No. | % |
|------------------------------|-----|-----|
| * Yes | 3 | 2 |
| No | 147 | 98 |
| Total | 150 | 100 |

*Only 2 % had history of observed blood loss.

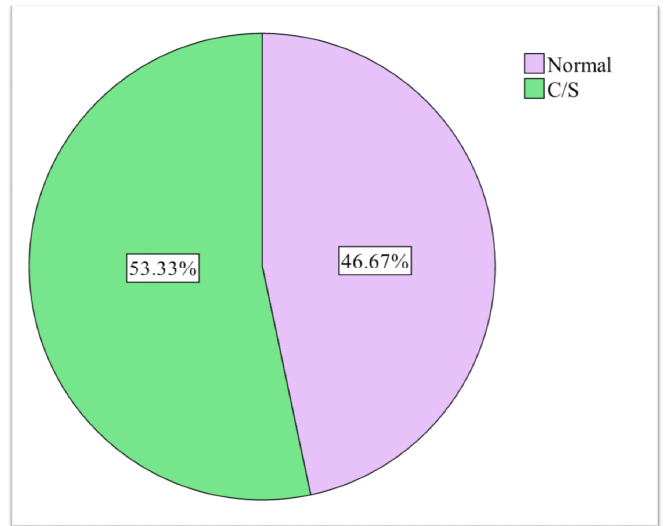


Figure 2. Mode of delivery of teenage mothers (normal vaginal delivery or Caesarean Section (S/C))

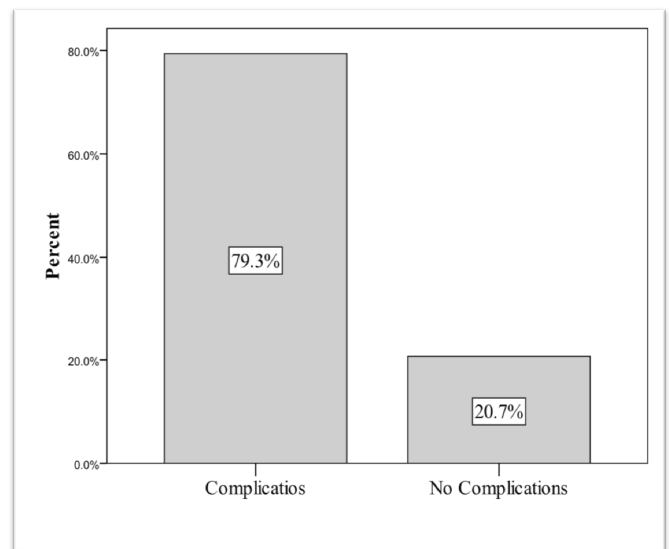


Figure 3. Characteristics of study population according to both maternal and newborn complications

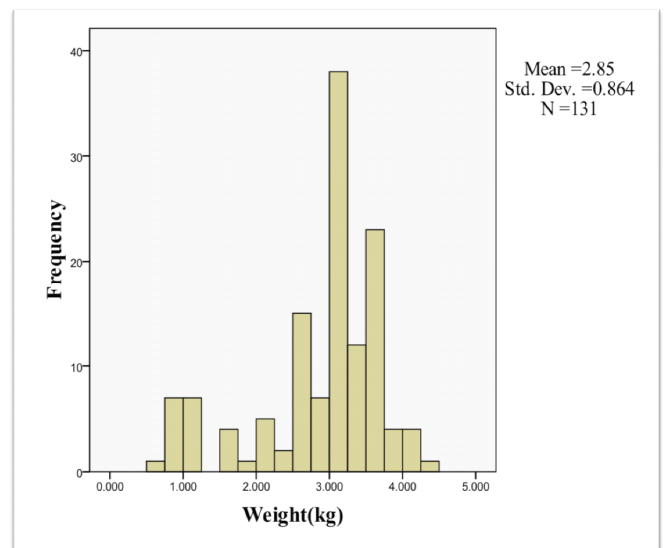


Figure 4. Distribution of newborn babies according to weight

The mode of delivery as normal vaginal delivery in 70 (46.6%) and cesarean section C/S in 80 girls (53.4) all these shown the figure 2.

Table 9. Obstetric outcomes in the study population

| Maternal complications | No. | Percentage % |
|--|-----|--------------|
| Abruption placenta | 6 | 4 |
| Hypertensive pregnancy disorders | 13 | 8.6 |
| * Obstructed or prolonged labor | 8 | 5.3 |
| (premature rupture of membrane) Drained liquor | 26 | 17.3 |
| **Abortion | 3 | 2 |
| Hyperemesis gravidarum | 2 | 1.3 |
| Placenta previa | 1 | 0.6 |
| Polyhydraminous | 1 | 0.6 |
| Hystertomy | 1 | 0.6 |
| *** Cervical & Perinatal tear | 1 | 0.6 |
| ****Retained placenta | 1 | 0.6 |

Note:

* The causes of obstructed labour were due to non-engaged head or cephalopelvic disproportion or due to malpresentation / lie.

** Abortion in three case 26weeks and two cases 24 weeks.

*** The patient had cervical & perinatal tear were transferred to Operation theatre (OT).

****Retained placenta one case transferred to Operation theatre.

Table 10. Descriptive Statistics of newborn babies according to birth weight

| Parameters | Minimum | Maximum | Mean | Mode | Median | Std. Deviation | Total | Missing value |
|------------|----------|---------|-------|-------|--------|----------------|-------|---------------|
| Weight(kg) | 0.700 mg | 4300 kg | 2.852 | 3.200 | 3.100 | 0.864 | 131 | 19 |

Prematurity (Birth weight > = 2.4 Kg) low birth weight.

Table 11. Perinatal outcomes and characteristics of neonates of teenage pregnancies

| Outcomes | Study population | |
|--|------------------|-----|
| | No. | % |
| Fetal distress | | |
| Uncreative Cardiotocography (CTG) | | |
| or fetal distress by signs muconium grade II or III or reduced fetal heart | 13 | 8.6 |
| Prematurity | 21 | 14 |
| Birth asphyxia | 6 | 6 |
| * Multiple congenital anomaly | 4 | 2.6 |
| Still birth | 4 | 2.6 |
| ** Birth injury | 4 | 2.6 |
| Neonatal hypoglycemia | 2 | 1.3 |
| Intra uterine growth retardation (IUGR) | 2 | 1.3 |
| Early neonatal death < 48 hours | 13 | 9.3 |
| Fetal distress | | |
| Uncreative Cardiotocography (CTG) | | |
| or fetal distress by signs muconium grade II or III or reduced fetal heart | 13 | 8.6 |
| Prematurity | 21 | 14 |
| Birth asphyxia | 6 | 6 |
| * Multiple congenital anomaly | 4 | 2.6 |
| Still birth | 4 | 2.6 |
| ** Birth injury | 4 | 2.6 |
| Neonatal hypoglycemia | 2 | 1.3 |
| Intra uterine growth retardation (IUGR) | 2 | 1.3 |
| Early neonatal death < 48 hours | 13 | 9.3 |

Note: * One baby had congenital heart disease, two babies had congenital anomalies in the liver.

** Dislocation shoulder recorded in 2 newborns.

Firstly, the results of maternal indications for cesarean section

The most prevalent indication was presence of drained liquor. Drained liquor as an indication for cesarean section represented (17.3 %) of cases. Previous CS scar. Cesarean section is a commonly applied surgical procedure among females during their reproductive period (3.3 %) of cases had history of previous scars. Cases with history of hypertensive pregnancy disorder (pre- eclamptic toxemia) represents approximately (9 %), Abruption placenta in (4%) of all cases, obstructed labour in (5.3%) of cases. Equal proportion of cases (0.6 %) had history of previous hysterotomy, placenta previa, polyhydraminous, hepatitis C virus positive had indications for C/S.

Other indications for cesarean section were which recorded postdate in (8.6%) of cases and malpresentation (breech delivery) prevalent in five females which represent (3.3%) of the studied population, and multiple pregnancy in (0.6%) of the studied population. 1.3 % of cases had a history of intrauterine fetal death as an indication of cesarean section. All cases had neither history of maternal sepsis, nor death.

Secondly, the results of fetal indications of cesarean section. These indications were; Prematurity (14%) in the studied population, nearly (9 %) of cases their indications of cesarean section was distress by Cardio tomography (CTG) or fetal distress by signs. Concerning neonates of the studied cases, there was history of birth asphyxia in 6 %. Only 1.3 % of neonates had hypoglycemia. 2.6 % of cases their indications of cesarean section was anomaly of their babies.

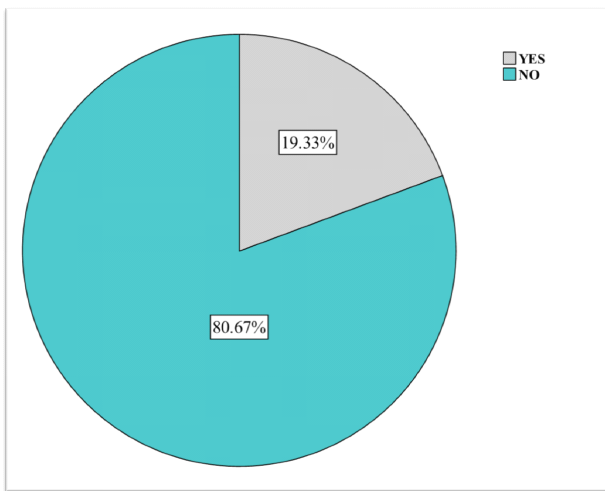


Figure 5. Distribution of newborn babies if handed immediately to their mothers.

Figure 6 shows alive babies were 124 (nearly 83%) and dead babies were 26 (17.3%).

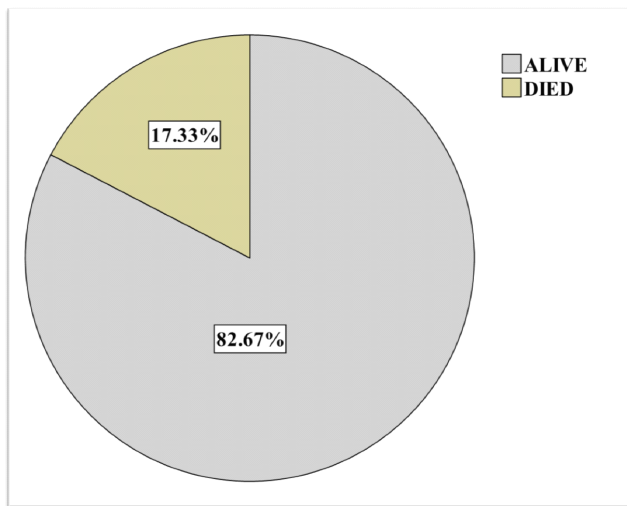


Figure 6. Distribution of newborn babies according of alive or died

Table 12. Duration of neonatal hospital admission to neonatal intensive care unit (NICU).

| Neonatal hospital admission NICU | Newborns | |
|----------------------------------|----------|------|
| | No. | % |
| 1-2 days | 131 | 87.3 |
| 3- 7 days | 14 | 9.3 |
| More than one week | 5 | 3.3 |

Table 13. The relationship between mode of delivery of teenage mothers, and outcomes of newborn babies

| Mode of delivery | Outcomes of babies | | Total | P value |
|-------------------------|--------------------|-------------|-------|---------|
| | Discharge | Died | | |
| Normal vaginal delivery | 70 (56.4 %) | 0 (0.0%) | 70 | 0.000* |
| C/S | 54 (43.5 %) | 26 (100.0%) | 80 | |
| Total | 124 (82.6%) | 26 (100.0%) | 150 | |

*Chi square test 27.52, p value 0.000 (highly significant).

Table 13 reveals that a higher proportion of neonates (56.4 %) had normal vaginal delivery and discharge from the hospital compared to neonates (43.5%) delivered with cession sections C/S. This difference was statistically highly significant, P= 0.000.

DISCUSSION

One hundred and fifty teen age pregnancies from Benghazi medical center were studied. The minimum age in this study was 16 years, the maximum age was 19 years and the mean age was 18.13 with SD 0.745. The vast majority of the cases 75.3% delivered full term 36-40 weeks and the preterm deliveries were only in 14%. Most of teenage girls were nulliparous 91.3%. As the legal age for marriage in Libya is 18 years although, many girls marry before 18 years. Same findings for age of marriage in most South Asian countries is 18 years, however many girls marry before the age. The risk factors identified for teenage pregnancy in South Asian countries like Bangladesh, India and Nepal include low socio- economic background, low educational attainment, disrupted family structure and poor sexual health practices. (3) In our study most of the girls had low level of education only primary school although some of the teenage girls are still continue their study in the high school or college. The mothers are low level of education from Benghazi city not from rural areas and may be living in low or middle socioeconomic status. All the teenage pregnancies are not employed this is may reflect the income of their husband were acceptable as Libya one of the middle income countries and the vast majority of Libyan men prefer their wives not working when they get married young girls . A similar finding in Wiler *et al*, study 2016 were the teenage mothers are less likely to complete high school, are more likely to live in poverty, and have children who frequently experience health and developmental problems. Understanding the risk factors for teenage pregnancy is a prerequisite for reducing rates of teenage motherhood. (25) Same results in a previous study that recorded teenage pregnancy is highly associated with high rate of unemployment, school failure and drop-outs and limited future career opportunities. (1)

Furthermore, Goonewardene *et al*, study recorded that the teenage pregnancies, especially those below 17 years of age, are significantly associated with poverty, poor education. (6) Also Marco and Francesconi demonstrated that early motherhood is not just a symptom, but it may be a cause of socioeconomic disadvantages that are transmitted across generations. Reduction of early (and not just teen) childbearing will not eradicate child poverty, nor will it tackle the many powerful effects of growing up with poor parents. But it does represent a viable strategy for widening the life chances of already disadvantaged children. (18) When compared our results with Bangladesh study, the researchers' states that immaturity of birth canal causes prolonged or obstructed labour. A girl become parent before becoming an adult and both mother and fetus competes for nutrition. Usually growth restriction of fetus occur and cannot tolerate stress of labour results fetal distress and to manage this problem incidence of cesarean section/ instrumental delivery increased. Lack of awareness, illiteracy, low socioeconomic condition, delay in seeking ante and intra natal care are the factors adding risk to increased operative interference and perinatal complications in adolescents. (12) Regarding the mode of delivery in our study the majority of the teenage girls delivered by Caesarean section which represent 80 (53%) and normal vaginal delivery in 70 (nearly 47%) of the cases. In contrast to several studies found that teenage mothers had a lower incidence of caesarean section and delivery using instruments. (16) Our results regarding the maternal complications in teenage pregnancies were in particular included; Preterm deliveries in 14 % of teenage pregnancies, Preeclampsia 8.6%, anemia in 6.6% of

the study sample, obstructed or prolonged labor in 5.3% of cases, abruption placenta 4%. This results in consistent with a previous study found that the most maternal and child morbidity and mortality are related to hypertensive disorders of pregnancy, infections, low birth weight, and preterm delivery. (20) Goonewardene *et al*, study showed that the anaemia, pregnancy induced hypertension and preterm delivery. (6) Wheras, Sulaiman *et al*, study reported teenage pregnancy has been to be associated with an increased risk of pregnancy-induced hypertension, premature labour and anaemia. (15) From the studies regarding complications Pregnancy in teenagers are often complicated by hyperemesis gravidarum, miscarriage, anaemia, preeclampsia, eclampsia, and prematurity. Labour and delivery may also be complicated by obstructed labour due to fetopelvic disproportion, rupture uterus, stillbirth, obstetric fistulae, prolonged labour, instrumental delivery, caesarean section, A lower risk of gestational diabetes mellitus, and death. (10, 16) Another similar study revealed that the teenage births result in health consequences; children are more likely to be born pre-term, have lower birth weight, and higher neonatal mortality. (25) While mothers experience greater rates of post-partum depression and are less likely to initiate breastfeeding. (25) Our results regarding anemia were in only 6.6% when compared with Indian teenage pregnancies had malnourished, stunted, and half of them have anaemia. (7) Our results about perinatal complications included the following the fetal distress by signs or by unreactive CTG represent 6.8 % of cases and birth asphyxia in 6 % of cases while equal proportions of 2.6 % of still birth and congenital anomalies

This is supported by researches done in other countries such as a study of Derme *et al*, that found a significantly higher risk of preterm labour and low birth weight. (16) Other important consequences of teenage pregnancy have been reported including post neonatal mortality, premature death of young mothers, unemployment and poverty. (16) Postnatal contraception should be encouraged to avoid further pregnancies leading to financial and emotional stability. Greater importance should be given to sex education and contraception to avoid unwanted teenage pregnancies. (16,28) Perinatal outcomes, such as low birth weight, preterm delivery, perinatal death, cephalo- pelvic disproportion and maternal death were recorded in Bahir study. (5) A same study showed that the teenage girls are physically and psychologically immature for reproduction. Therefore, several medical complications such as pre-term birth, low birth weight, small for gestational age (5)

Regarding the risk of abortions in our study only 2% of the study population while Adeyinka *et al* recorded where the teenage girl who is pregnant has 40% chance of carrying it to term and 42% chance of induced abortion. (17) There are high rates of spontaneous abortion, preterm delivery and low birth weight among adolescent girls as compared to older women aged 20- 29. (3) Our results no maternal mortality were recorded. Whereas, Mothers in this age group face a 20 to 200 per cent greater chance of dying in pregnancy than women aged 20 to 24. (13) Adolescents, pregnancy is associated with a higher risk of complications such as puerperal endometritis and systemic infections compared to women aged 20–24 years. These complications are a major cause of death among girls within this age group. (24) Our findings revealed that a higher proportion of neonates had normal vaginal delivery and discharge from the hospital compared to neonates delivered

with cession sections C/S . This difference was statistically highly significant, $P= 0.000$. All the died neonates were delivered by C/S. In this study missed information of antenatal care (ANC) or Booking status follow up if the teenage girls were unbooked or booked. The antenatal clinic is the only place where a young woman can obtain reproductive advice. A research in Kuala Lumpur, Malaysia, over the 3-year (2006 – 2008) indicates that pregnant adolescents are less likely to receive prenatal care than older women, often seeking it only in the third trimester. (15) Teenagers should also be counseled on the need for antenatal care and hospital confinement. Emergency obstetric care should be available and accessible for management of complications of teenage pregnancy. (10) Government should empower the citizenry and encourage the education of the girl child. (10) In our study we recorded the mean birth weight of babies were 2.8 Kg, it is acceptable as the reference definition of the low birth weight was less than 2.4 Kg. Despite of presence of low birth weight the minimum birth weight was 800 gm. A stronger likelihood of low birth – weight in the infants has been recorded among adolescent mothers than their counterparts and this has been mainly associated with poor maternal nutrition. (13) As to problems with the newborn, gestation during adolescence is associated with higher rates of low birth weight (LBW), preterm delivery, respiratory diseases, and birth trauma, besides a higher frequency of neonatal complications and infant mortality. (21) There is highly association between teenage women with abortions, infant mortality. (1)

Limitation of the study: Small sample sizes, non-random technique was used to representing the population also this study was retrospective not prospective study and no comparison of the pregnancy outcome between the younger and older teenagers. Furthermore, there was a lot of missed information regarding whether the teenage girls were booked or unbooked also no enough data about neonatal parameter such as Apgar score and other causes of neonatal mortality such as neonatal sepsis and neonatal jaundice or respiratory distress syndrome also weight of neonates were missed in some of teenage mothers.

CONCLUSION

Our results seemed to confirm the outcomes of previous studies for teenage pregnant women, mainly regarding the increased risks of preterm deliveries, hypertensive pregnancy induced disorder, obstructed labor, abruption placenta and the higher incidence of C/S delivery. Furthermore, the risk factors including poor education of mothers unemployment, anemia and infections. In general, the teenage pregnancy resulted in a number of negative maternal and neonatal consequences due to the incomplete development of genital tract and the musculoskeletal system of pregnant adolescents predispose them to worse overall obstetrical outcomes. The positive indicator of this study no maternal mortality were recorded.

Recommendations

- Appropriate and adequate counselling on different antenatal services and ensure that the minimum number of regular antenatal visits is made, because the antenatal care provides an opportunity for pregnancy complications to be diagnosed early and appropriate intervention instituted. So, improving compliance with prenatal care could

significantly reduce the frequency of adverse fetal outcomes in adolescent populations.

- Improve the reproductive outcome but also decrease the incidence of teenage pregnancy by increasing public awareness, ensuring female education and enforcing marriage law. Countries should be work to preventing adolescent pregnancy through school and community – based family life education via education of family about complications of teenage pregnancy and their impact on mother child and society, and encourage of females to complete high school. Therefore, managers and planners should develop and implement appropriate strategies to reduce this problem.
- Future studies using larger sample sizes and from other parts of the country should be conducted and involving the field of teen age pregnancy and better to use simple random technique is suitable as sample size for representing the population. So, the need for a prospective study of the obstetric performance of teenage mothers in community and possible comparison of the pregnancy outcome between the younger and older teenagers. Moreover, future large-scale studies which can clearly elucidate the association of adolescent pregnancy with neonatal ICU admission and Apgar score level of newborn babies is recommended.
- Encourage junior doctors to complete the medical records.
- Teenage pregnancy needs to be tackled as a priority to ease the burden of socioeconomic and health problem.

REFERENCES

1. Tuyiragize R, Nzabona A, Asiimwe JB, Kakuba C, Mushomi J. Predisposing factors of teenage pregnancy in the Uganda Lake Victoria Island and Mountain districts. 2018;1–12.
2. Kassa GM, Arowojolu AO, Odukogbe AA, Yalew AW. Adverse neonatal outcomes of adolescent pregnancy in Northwest Ethiopia. 2019;1–20.
3. Shirin.pdf [Internet]. Chattagram Maa-O-Shishu Hospital Medical College Journal; 2016. Available from: www.banglajol.info/index.php/CMOSHMCJ
4. Kasso T. Teenage Pregnancy: Prevalence, Pattern and Predisposing Factors in a Tertiary Teenage Pregnancy : Prevalence , Pattern and Predisposing Factors in a Tertiary Hospital , Southern Nigeria. *Asian J Med Heal.*, 2020; 17:1–5.
5. Priyanka Bharti. Bharti. *Int J Heal Clin Res.*, 2020; 214–7.
6. Goonewardene IMR, Waduge RPKD. Adverse effects of teenage pregnancy. *Ceylon Med J.* 2005; 116–20.
7. Mukhopadhyay P, R.N. Chaudhuri and BP. Mukhopadhyay. *J Heal Popul NUTR.*, 2010 ;(5):494–500.
8. Ochen AM, Chi PC, Lawoko S. Predictors of teenage pregnancy among girls aged 13 – 19 years in Uganda: a community based case-control study. *BMC Pregnancy Childbirth.* 2019; 19(211):1–14.
9. Adolescent pregnancy fact sheet [Internet]. Geneva 27, Switzerland; 2014. Available from: www.who.int/reproductivehealth
10. Iklaki CU, Inaku JU, Ekabua JE, Ekanem EI, Udo AE. Perinatal Outcome in Unbooked Teenage Pregnancies in the University of Perinatal Outcome in Unbooked Teenage Pregnancies in the University of Calabar Teaching Hospital, Calabar , Nigeria. *ISRN Obstet Gynecol.* 2012;5.
11. Basiam Husien Bahir NAAM. Bahir. *World J Pharm Res.* 2017; 6(7):197– 208.
12. Kamrun Nessa, Mossammat Zebunnesa, Nahla Bari ABS. Study of Some Sociodemographic Factors in Teenage Pregnancy. *Chattagram Maa-O-Shishu Hosp Med Coll J.* 2014; 13(3):21–5.
13. Ibrahim Isa Ayuba OG. Ayuba.pdf. *Ethiop J Heal Sci.*, 2012; 22(1):45–50.
14. Adolescent pregnancy Evidence brief [Internet]. 2019. Available from: www.who.int/reproductivehealth
15. Sulaiman S, Othman S, Razali N, Hassan J. Obstetric and perinatal outcome in teenage pregnancies. *S Afr J Obstet Gynaecol* [Internet]. 2013;17(3):77–80. Available from: <https://www.researchgate.net/publication/279220543> Obstetric
16. Derme M, Leoncini E, Vetrano G, Aleandri V. Obstetric and perinatal outcomes of teenage pregnant women: a retrospective study. *Epidemiol Biostat Public Heal* [Internet]. 2013;10(4). Available from: <https://www.researchgate.net/publication/270646976>
17. Adeyinka DA, Oladimeji O, Falope O. Outcome of adolescent pregnancies in southwestern Nigeria: A casecontrol study Outcome of adolescent pregnancies in southwestern Nigeria: a case – control study. *J Matern Neonatal Med.*, 2010; 1–5.
18. Francesconi M. Adult Outcomes for Children of Teenage Mothers [Internet]. Bonn; 2007. Available from: <http://hdl.handle.net/10419/34623>
19. Kheir A, Ali R. neonatal outcome of teenage pregnancy as compared to adult pregnancy in a tertiary maternity hospital in sudan (september neonatal outcome of teenage pregnancy as compared to adult pregnancy in a tertiary maternity hospital in sudan (September 2016 TO. *J Basic Appl Res Int.*, 2017;22(4):164–9.
20. Kassa GM, Arowojolu AO, Odukogbe AA, Yalew AW. Prevalence and determinants of adolescent pregnancy in Africa: a systematic review and Meta-analysis. *Reprod Health.* 2018; 15(195):1–18.
21. Azevedo WF De, Diniz MB, Evangelista CB. Complications in adolescent pregnancy: systematic review of the literature. *Einstein.* 2014; 1–9.
22. Florence A. Undiyaundeye AAA and TM. The effect of teenage pregnancy on the girl-child in nigerian the effect of teenage pregnancy on the girl-child in. *Int J Multidiscip Thought.* 2015; 5(4):283–9.
23. Agnieszka Bałanda-Bałdyga , Anna Bogusława Pilewska-Kozak , Celina Łepecka-Klusek GS and BD. Bałdyga. *Int J Environ Res Public Health* [Internet].2020;17(1411):2–10. Available from: www.mdpi.com/journal/ijerph
24. Nkhoma DE, Lin C, Katengeza HL, Soko CJ, Estinfort W, Wang Y, et al. Girls 'Empowerment and Adolescent Pregnancy : A Systematic Review. *Int J Environ Res Public Health.* 2020; 17(1664):2–14.
25. Wall-wieler E, Roos LL, Nickel NC. Teenage pregnancy: the impact of maternal adolescent childbearing and older sister's teenage pregnancy on a younger sister. *BMC Pregnancy Childbirth* [Internet]. 2016; 16(120):1–12. Available from: <http://dx.doi.org/10.1186/s12884-016-0911-2>
26. Harris KR, Ahlers-schmidt CR, Weeks KL. Young Mothers Lack Plans to Receive Preventive Health Care. *J Prim Care Community Health.* 2014; 5(2):144–7.
27. Maria Navarro Paniagua, Walker I. The Impact of Teenage Motherhood on the The Impact of Teenage Motherhood on the Education and Fertility of their Children: Evidence for Europe Maria Navarro Paniagua. 2012 ;(6995).
28. Sheet F. Maternal age at delivery and trends in young teenage mothers. 2015; 4(11):2–5.