

A Systematic Review of Risk Factors, Obstetric and Perinatal Outcomes in Teenage Pregnancy: Evidence Base for Policy Recommendations

*Mamta Trichal**

Abstract

It is commonly accepted that teen pregnancies raise the risk of both mental and physical health problems, although, worldwide, research amply supports the impact of adolescent pregnancies on the expansion of human capital. The association implies that, in the long-run, a teenage mother's prospects will be harmed, expanding the gender gap. The purpose of this study was to identify the risk factors of adolescent pregnancy, the health issues that they and their unborn babies must deal with, and to ascertain—through a systematic review—what additional developmental needs are brought on by early pregnancy. Nine (9) studies were chosen to research the primary risk factors of teen pregnancy, while ten (10) articles evaluated the negative effects of early pregnancy. A total of 19 articles, published in reliable journals between 2009 and 2021, were chosen for the study. Reviews, meta-analyses, and case studies were not chosen: only original works from reputable journals was considered. The most common causes of teenage pregnancy were found to be the lack of formal education, ignorance of how contraception should be handled, ignorance of sex and pregnancy risks, and early marriage. The analysis revealed that neonatal disorders such as eclampsia, severe anaemia, haemorrhage, and premature birth are more common among adolescent mothers. The results show that neonates and adolescent mothers both have negative impacts from early pregnancies. The study emphasizes the importance of sex education and campaigns to promote the use of contraception. Also, proper physical care and psychosocial support through health care agencies should be promoted.

Keywords: *pregnancy, risks, sex education, and teen pregnancy*

Introduction

The risk of mental and physical health problems during adolescent pregnancy is high, especially in females under the age of 15, as it is obvious that the body and mind of teenage girls are not yet ready to give birth and care for a child. As a result, teenage girls face various negative health outcomes in early pregnancy. Despite a global drop of 11.6% in teenage-specific fertility rate in the previous 20 years, there is still a wider variance in rates around the globe. In underdeveloped nations, about 12m of the estimated 20m girls between the ages of 15 and 19 who get pregnant each year, give birth. A study involving a total of 52 cases from 24 African nations discovered that currently 18.8% of adolescent girls become

* Department of Sociology - University of Dar es Salaam: mamta_trichal@yahoo.com

pregnant in Africa. Statistics shows that the East African sub-region has a greater prevalence of 21.5%. The Democratic People's Republic of China, on the other hand, has rates that range from 0.3% to 0.6%; while the proportion of women aged 15–19 who have begun having children ranges from 3%–23% in Addis Ababa; and overall fertility varies from 1.8%–7.2% (2016, Health Survey of Ethiopia).

According to a research from the Guttmacher Institute in New York, 10m unplanned babies are born to young girls between the ages of 15–19 in developing countries each year. The rise in unsafe abortions by adolescent girls between the ages of 15–19 each year also contributes to maternal mortality, as well as long-term health issues. Teenage mothers (10–19) are more likely than women (20–24) to experience eclampsia, peripheral endometritis, and systemic infections; and their offspring are also at risk for a number of health issues (WHO, 2016). Adolescent pregnancy has become a significant public health issue, particularly in Sub-Saharan Africa, where over 10% of girls become mothers by the time they are 16 years old. Therefore, the region is also well recognized for having a high prevalence of maternal and infant illnesses and mortality. Considering such high prevalence of teen pregnancy, this study focused on analysing the risk factors and the physical and mental complications teenage mothers have to face as outcomes of early pregnancies. The sub-sections that follow consider the elements that contribute to teen pregnancy, challenges that teen mothers have to grapple with, and the possible effects of teen pregnancy on health.

Elements Contributing to Teen Pregnancy

In developing countries, adolescence pregnancies account for around 90% of births to females between the ages 15–19. Poverty, illiteracy and drop-out from school are some of the factors that contribute to early pregnancy. Due to the poor socioeconomic level, which also contributes to the lack of family togetherness, some families also frequently experience abuse (Gwido & Fakedu, 2016). Due to poverty in these households, early pregnancies are common, which make matters worse for the less fortunate. Women have resorted to early sexual debuts and marriages as a coping mechanism to address economic difficulties (Chirwa et al., 2019; Chikalipo et al., 2018). When a teen girl becomes pregnant while enrolled in school, there are a number of repercussions that she must endure, including dropping out of school (Sobngwi et al., 2022). This restricts a teen's options of going to college. Early marriages originate from societal and financial restrictions placed on families and individual girls, and they are a significant factor in school desertion and the lack of formal education, which indirectly goads early childbearing.

Challenges and Barriers Facing Teen Mothers

Young mothers and teens who become pregnant face several difficulties. On the one hand, they have a responsibility to the unborn or inborn child; and on the other, they have a responsibility to prepare for a shift in society's attitudes.

Adolescent students who get pregnant are not allowed to attend school in many nations; and according to research, expecting students and new mothers are being discouraged from attending class (Odhiambo & Martinez, 2018). Peer pressure, poverty and early pregnancies are only a few of the complex interactions of factors that lead to school dropouts. Being financially independent is another challenge young girls face because there are very few employment opportunities accessible to them, hence making those from low-income homes more vulnerable. There have also been accounts of forced marriages brought on by an unplanned pregnancies (Azevedo & Samapio, 2003). Additionally, teen mothers have to face societal negative reactions such as discrimination, hostility or violence from spouses, parents and peers (Atuyamb et al., 2005; Griffin, 2015).

Health Effects of Adolescent Pregnancies

Teenage pregnancy is an international concern. The health of the babies and the health of the adolescent mothers could be at risk. When discussing the harmful consequences of early pregnancy on health for girls between the ages of 15 and 19, complications during pregnancy and delivery are the main causes of deaths. Maternal morbidity or long-term health problems are frequently the result of abortions at this age (Moraes et al., 2018; Neals et al., 2012). Teen mothers (ages 10 to 19) have higher rates of eclampsia, anaemia, systemic infections, and puerperal endometritis than mothers in their twenties and thirties (WHO, 2018). Besides the physical problems, teen mothers have greater negative psychological effects, helplessness, melancholy, loneliness in society, problems with hunger and sleep, feelings of guilt or worthlessness, and suicidal thoughts (Davies & Dunlop, 2014). Teenage mothers who become pregnant suffer from the lack of family support and inadequate prenatal care as a result of social prejudice; consequently, they must deal with a number of mental health issues (Pinho et al., 2017; Chikalipo et al., 2018).

Children born to adolescent girls are at risk of low birth weight, neonatal mortality, cognitive stimulation, behavioural issues, and systemic infections (Neal et al., 2012; Yussif et al., 2017; Ganchimeg et al., 2014; Taylor et al., 2015). It is also evident that one of the most common causes of severe impairments such as cerebral palsy, mental retardation, and other severe restrictions, is low birth weight. Numerous studies have also suggested that low birth weight can have some deleterious effect on cognitive and motor development (Jama & archives journals, 2006). It is clear from studies examining the impairment rates in preterm children that 23% of infants born between 22 and 25 weeks, or infants who were delivered prematurely, grow up with a neurological or developmental defect of some kind. Furthermore, they are more likely to acquire SIDS, the primary cause of new-born deaths in the first months or the first few years of life (Maheshwari et al., 2022; Liu et al., 2016).

Although studies on the prevalence and contributing factors of adolescent pregnancy have been undertaken, there is little information on the challenges and health issues related to adolescent pregnancies as a whole. The results of this study could therefore inform the development of policies, programmes, and interventions; to lessen the negative effects of early pregnancy.

Materials and Methods

The study used a systematic evaluation of relevant literature and adhered to the guidelines recommended by the Cochrane Collaboration (Clarke, 2004). There were 19 studies included in the analysis, all of which were published between 2009 and 2021. Out of the 19 studies, 9 were selected to find out the associated factors and barriers; while 10 focused on the negative effects of early pregnancy. Only original works from reliable journals were taken into account; and following the Cochrane process, the studies were initially categorized according to the different groups of design and outcomes.

The main objective of the study was to analyse the risk factors of teen pregnancy, and find out the different obstacles and difficulties, as well as the health-related problems, associated with such pregnancies. Literature search was conducted across significant databases: Embrace Pub Med (which contains Medline), Sociological Abstracts (SocAbs), Education Resources Information Centre (ERTC), Electronic Bibliographic Index (EBI) and Abstracts of Applied Social Sciences (ASSIA). Data was collected from January to June, 2022.

Criteria for Inclusion and Exclusion

Original articles published between 2009 and 2021, and which were completely free to access online in English, were chosen for the study. The research comprised cross-sectional descriptive studies, cohort studies, clinical trials, observational analytical studies, and randomized case control studies. The studies were identified and divided into groups based on the various designs and results. Theoretical articles, investigation with ambiguous descriptions, annual statistics reports, reviews of meta-analyses, case reports, and dissertations were not included in the study. The quality of the methodological systematic review was independently assessed to guarantee the objectivity of the study's design and report.

Descriptors from the Pub Medicine/Medline databases medical topic headings (MeSH), such as *pregnancy complications* and *pregnancy in teenagers*, were utilized to locate the articles. To learn more about the implications of early pregnancy, the researcher consulted 2,206 sources; and to study the risk factors, the researcher read 3,226 papers in addition to using the titles and abstracts to conduct an online search. Finally, only 19 papers fulfilled the criteria for inclusion, and they were all counted in the study as shown in Table 1. Figures, charts, and tables were used to synthesize, arrange and analyse the data.

Results and Discussion

The universe of the study consisted of 5,432 studies. Reading the titles and abstracts resulted in the disqualification of 5,375 studies. As a result, 19 of the 57 articles that were fully read and met the criteria for inclusion were picked (see Table 1).

Table 1: Inclusion of Studies for further Discussion

Early and Teen Pregnancy: Problems, Causes, and Contributing Factors		Adverse Effects of Adolescent Pregnancy	
<i>Searched articles</i>			
3,226		2,206	
<i>Reading titles and abstracts</i>			
Excluded	Included	Excluded	Included
3192	34	2183	23
<i>View full text</i>			
Excluded	Included	Excluded	Included
25	9	13	10

The nations of origin, publication year, methodology, aim, and a description of each study’s conclusions are shown in Tables 2 and 3. Only a few cohort studies were retrospective, prospective, or population-based; and most of the 19 selected researches were cross-sectional. Most of the studies were predominantly conducted in African and Asian countries between 2015 and 2021. Table 2 presents the risk factors/challenges, study area and the various methods utilized for the purpose of the studies on teen pregnancy, for further discussion.

Table 2: Studies on the Risk Factors/Challenges of Teenage Pregnancy

Reference	Year / Location	Method	Aim of Study
1. Ngum, C.W. et al. 44	Australia, 2015	Qualitative	Explore the causes and experiences of teenage mothers
2. Mezmur, H., et al. 38	Ethiopia, 2021	Cross-sectional	Study the associated factors of teenage pregnancy in Eastern Ethiopia
3. Anna, A., & Asif. et al. 5	Pakistan , 2021	Cross-sectional	Study the causes of teen pregnancy and its prevalence
4. Islam, M. M. et al. 30	Bangladesh, 2017	Cross-sectional	Examine the trends and determinants of adolescent motherhood in Bangladesh
5. Dieudonne Uwizeye & Ruben, 65	Rwanda, 2020	Mixed method	Analyse the association between household characteristics and teen pregnancy in Rwanda
6. Machunu, G. et al. 41	South Africa, 2012	Cross-sectional	Assess the prevalence of teen pregnancy and associated factors in the South African context

7. Beyene, A. et al. 8	Northwest Ethiopia, 2015	Quantitative cross-sectional study	Investigate the magnitude and factors associated with teen pregnancy
8. Rutaremwa, G. 54	Uganda, 2013	Mixed method	Examine factors associated with teen pregnancy and fertility in Uganda
9. Sebananwa, A. & Etienne, S.S. 59	2021	Qualitative	Study the root causes of early pregnant teenagers

Source: Authors creativity

Leading Risk Factors of Teen Pregnancy

A descriptive study conducted in Uganda to determine the association of socioeconomic factors with adolescent pregnancy and fertility revealed that over 80% of married female adolescents in Uganda were either currently pregnant or had given birth to a child, compared to 77% of those who had not yet been married. The percentage of females who were either pregnant or who had given birth was highest among the poorest (30.4%); and among these, 17.3% were living with their partners. The findings of this study show that adolescents in the richest quintile had the least odds of being pregnant, compared to those in the poorest quintile. These regional differences could be a result of the differences in the norms and behaviours, as well as varying socio-ecological factors related to pregnancy and childbearing in different regions of Uganda. Early marriage was found to be the leading factor of teen pregnancy (Rutaremwa et al., 2013).

Another study focused on the lived experiences of African-Australian young refugees (Ngum et al., 2015), highlighting the challenges of early pregnancy. The study revealed that motherhood brings increased responsibilities, social recognition and a sense of purpose for young mothers. Despite the positive aspects of motherhood, participants faced challenges that affected their lives. The challenges included coping with increased responsibilities following the birth of a baby, while at the same time managing the demands of schooling, work and caring for a baby in unhygienic settlements. The study found out that young mothers were thought to be undesirable role-models for other teenagers, and that they reflected poorly on the neighbourhood and their families. This perspective was supported by the obvious lack of assistance that these women received from their communities.

According to the results of a descriptive study carried out to assess the risk factors of teen pregnancy in Rwanda (Dieudonne & Ruben, 2020), among other things, parents' carefree attitude, peer pressure, and the environment: all contributed to the propensity of the girl child to become pregnant in a young age. The information shows that male-headed families reported almost a twofold instances of adolescent pregnancy (64%), compared to households led by women (almost 36%). The data also demonstrated variations in teenage fertility rates according to the educational qualifications of the household head. The rate of

teenage pregnancy was highest among parents with elementary school education or less (85%), and it decreased as the parents' education level rose (13% and nearly 2% with parents with secondary and higher education levels, respectively). Because their parents treated them poorly, both during and after giving birth, the effects of an early pregnancy were also similar to those of prior pregnancies. Also, the study found that teen girls engage in unsafe sex due to their low level of awareness of how their bodies in general, and their genital organs in particular, work. Other factors contributing to teen pregnancy were unfavourable environments of families and parental attitudes. However, there was no statistically significant connection between wealth index and teen pregnancy.

According to data from a research done in South Africa (Mchunu et al., 2012), 19.2% of female adolescents were reported having an adolescent pregnancy, while 5.8% of male adolescents were reported having impregnated a girl while they were adolescents (12–19 years). Adolescent pregnancy was linked to being employed or unemployed, having a more open-minded attitude toward sexuality, and using contraception methods or condoms. A total of 19% of the teenagers the study opined that they had become pregnant for the first time because they did not realize the risks involved, and felt pressured to establish their womanhood or maturity. The majority of the respondents (74.1%) admitted that their pregnancies had been unplanned; and this was due to little awareness of the risks involved when engaging in unprotected sex.

Similarly, a study conducted in Pakistan to assess the prevalence and predictors of teen pregnancy (Anna et al., 2021) revealed that teenage pregnancy rates were higher among those whose partners were not working, or who were unskilled; compared with those working as professionals. More than half belonged to either the poorest or the poorer wealth quantiles (54%). The study also established an association between educational and employment status of females with early pregnancies. It was learnt that more than two-thirds of the women were not educated (71%), or employed (79%). On the other hand, teenage girls who had higher education, and who remained in school longer, generally had lower rates of early pregnancy.

A community-based cross-sectional study of 2,258 female teenagers (Mezmur et al., 2021) overwhelmingly reported that 90.3% of teenagers did not communicate with their parents regarding reproductive health (RH) issues: only 17.2% knew the fertile period in the menstrual cycle, and only 193 (8.6%) knew when emergency contraceptives should be taken. The mean age at marriage among married teenagers was 15.7 (± 1.2); and about 542 (24%) received sexual education at school. Around one-third of the respondents reported to have elder sisters who had a history of teenage pregnancy. According to the National Survey of Teenage Pregnancy, the prevalence of teenage pregnancy among teenagers was 7.05 times higher among teens who were between 16 and 17 than those who were between 13 and 14. The ratio was 9.85 times higher for teenagers with no formal

education, compared to those who had formal education. Unawareness about the risk of pregnancy was also found to be the most important reason of early pregnancy. A similar study of risk factors shows that teenage girls who had no education were found to have 2.76 times higher odds of adolescent motherhood than their counterparts who had secondary education (Islam et al., 2017). Lower spousal age gap and higher education were also associated with lower likelihood of teen motherhood. Young girls belonging to poorer wealth quintiles were found to be 71.2% more likely to experience adolescent motherhood, compared to their counterparts in the richest wealth quintile.

A study of Northwest Ethiopia (Beyene et al., 2015) showed that women living in rural areas were four times more likely to have teenage pregnancies compared to those living in urban areas. Women whose age at first marriage was below 18 years, and those who had not used contraception prior to their first pregnancy, were twice as likely to be pregnant.

Data from a descriptive study shows that male-headed households reported nearly a double of teenage pregnancy cases (64%), compared to female-headed households (36%). A study by Sebananwa and Etienne (2021) in Rwanda found the age of the household head a significant determinant of the occurrence of teenage pregnancy. Teen girls living in households headed by individuals aged 30 to 44 were more than 90% less likely to get pregnant, compared to those living in households with individuals aged less than 30 years. The study also shows a significant reduction of teenage pregnancies as the size of a household increases. Medium-size households were more than 60% (OR: 0.38, with 95% CI 0.27, 0.55) less likely to have a pregnant teenage girl, compared to small households of less than 5 members. Financial, social and educational empowerment of parents, and harmonious household contexts, also contributed to lessening the cases of teenage pregnancies. The study suggests that strategies for reducing teen pregnancies should focus on a range of household-level contexts (ibid.).

Table 3: Distribution of Adolescents as per their Socio-demographic Characteristics

Studies <i>Reference</i>	Marital Status		Wealth Status			Education	Domicile		
	<i>Married</i>	<i>Single</i>	<i>Poor</i>	<i>M</i>	<i>Rich</i>	<i>Up to prim. /no educ.</i>	<i>Sec and above</i>	<i>Urban</i>	<i>Rural</i>
1. Ngum, C.W. et al.	—	—	—	—	—	—	—	—	—
2. Mezmur, H. et al.	32%	7.6%	0.8%	19.2%	40%	100%	0%	—	—
3. Anna, A., & Asif et al.	—	—	3.8%	20.4%	25%	85%	15%	0.5%	39.5%
4. Islam, M. M. et al.	—	—	38.6%	22%	38.8%	36.4%	60.6%	9.8%	30.2%
5. Dieudonne Uwizeye & Ruben B.	1.6%	9.4%	2.3%	18.9%	38%	5.1%	15%	0.6%	79.3%
6. Machunu, G. et al.	—	—	Low poverty			9.7%	61.6%	0.4%	39.5%
7. Beyene, A. et al.	6.9%	4%	7.4%	82%	1.1%	2.3%	37.7%	3.5%	6.5%
8. Rutaremwa, G.	1.7%	28.7%	63.6%	25.2%	36%	7.3%	34.1%	22%	86%
9. Sebananwa, A., & Etienne, S. S.	—	—	>80%	15%	5%	90%	10%	>10%	<90%

Source: Authors own

Table 3 shows the demographic characteristics of the studied sample. It was found that the majority of the respondents were married, belonged to the poor wealth quintile, were less educated, and resided in rural areas.

Negative Outcomes of Teen Pregnancy on Mother and New-born

A prospective, population-based multi-country research study by Althabe et al. (2015) of all pregnant women in defined geographic areas across 7 sites in six low-middle income countries (Kenya, Zambia, India, Pakistan, Guatemala and Argentina) revealed that pregnancy among adolescents is not associated with worse maternal outcomes, but is associated with worse perinatal outcomes, particularly in younger adolescents. A total of 269,273 women were enrolled between January 2010 and December 2013. Out of these, 11.9% of pregnancies (32,097/269,273) involved teenagers between 15–19, while 0.14% (370/269,273) involved girls under the age of 15. Adolescent pregnancies under 15 years were only noted in Sub-Saharan Africa and Latin America. Pregnancies among adolescents between 15 and 19 years ranged from 2% in Pakistan to 26% in Argentina. It was found that adolescents did not exhibit a higher risk of negative maternal outcomes compared to adults. Preterm birth and low birth weight (LBW) risks were considerably higher among early and older adolescents, with the largest risks found in the group of individuals under the age of 15. In Sub-Saharan Africa and Latin America, neonatal and perinatal mortality followed a similar trend, with the largest risk occurring in early adolescence even if the differences in this age range were not statistically significant. However, in South Asia, adolescents aged between 15–19 did not face higher chances of neonatal and perinatal deaths than adults.

Table 4: Studies on the Health Consequences Mother and Child

Ref.	Country/Year	Method	Aim
1 Ganchimeg, T. et al. 24	Japan, 2014	Facility based cross-sectional study and multi-level logistic regression models were used	Assess the likelihood of unfavourable pregnancy outcomes among young people in 29 different countries
2 Gurung, R. et al. 23	Nepal, 2020	Observational cross-sectional study	Evaluate the prevalence, risk factors, and health of pregnant women and new-borns
3 Shah, N. et al. 60	Pakistan, 2011	Prospective case control study	Compare the obstetric outcome of teenage pregnancy with that of non-teenage pregnancy
4 Ayele, M. A. et al. 7	Ethiopia, 2020	Retrospective cohort study design	Evaluate TP and its harmful prenatal and obstetric outcomes at the Lemlem Karl hospital in Ethiopia

5	Mukhopadhyay, P. et al. 40	India, 2010	Cross-sectional observational study	Compare TP perinatal outcomes with several sociodemographic traits in Eastern India
6	Althebe, F. et al. 1	2015	Cross cultural population-based observational study	Investigate the negative maternal and perinatal effects of teenage pregnancy
7	Yussif, A. S. et al. 72	Ghana, 2017	Cross-sectional study	Investigate the long-term impact of teenage pregnancy on following pregnancies, births, and the socioeconomic condition of the women
8	Moraes, A. N. et al. 39	Zambia, 2018	Cross-sectional study	Look into perinatal and obstetric outcomes in teenage pregnancy in comparison to mothers who are between 20 and 24 years old
9	Flaming, N. et al. 22	Ontario, 2013	Retrospective population-based cohort study	Describe the relationship between adolescent pregnancy and particular harmful maternal obstetrical and neonatal outcomes, as well as maternal health behaviours
10	Ngowa, J. et al. 47	Younde, Cameroon, 2015	Retrospective cohort study	Ascertain in Cameroon the obstetric and perineal outcomes of neoplastic adolescent pregnancies

Source: Authors creativity

A prospective case-control research (Shah et al., 2011) was carried out at three tertiary care institutions in Sindh, Pakistan, to compare the obstetric outcome of teenage pregnancies with that of non-teenage pregnancies. In comparison to non-teenage mothers, teenage mothers were more likely to experience severe anaemia (8% versus 4.3%; $p = 0.03$), chorioamnionitis (2.8% vs 0.8%, $p = 0.01$); and their infants were more likely to experience post-maturity (4.6% vs. 1.8%, $p = 0.02$) and meconium aspiration syndrome (6.5% vs. 2.4%, $p = 0.01$). In contrast, kids had a lower likelihood of being overweight than adults. Instrumental births occurred more frequently among teens (7.1% vs. 2.2%, $p = 0.01$) than in non-teenagers. Preterm birth, low birth weight, respiratory distress syndrome, and perinatal and foetal deaths were almost of the same risks in both groups.

Another study that was conducted in 29 countries (Ganchimeg et al., 2014) to investigate the risk of adverse pregnancy outcomes among adolescents demonstrated the unfavourable pregnancy outcomes in participants. While caesarean section rates were greater among younger adolescent mothers (<15 years) than among adult mothers (27.9% versus 23.5%, respectively), pre-

eclampsia, eclampsia, puerperal endometritis, and systemic infections were significantly higher among adolescents than adult women. All adolescent mothers had a non-significantly greater rate of SMO cases per 1000 deliveries than did adult mothers. To compare the obstetric outcome of teenage pregnancies with that of non-teenage pregnancies, a substantial rise in the prevalence of preterm birth and serious new-born conditions were noted with decreasing maternal age, compared with adult mothers aged between 20–24 years.

A study conducted in Ethiopia by Ayele et al. (2020) established that, compared to older mothers, young mothers had significantly lower obstetric and neonatal outcomes. Unfavourable obstetric and perinatal outcomes in teen pregnancy were significantly associated with caesarean delivery (AOR: 0.57; 95% CI, 0.36–0.90), episiotomy (AOR: 2.01; 95% CI, 1.25–3.39), low birth weight (AOR: 2.22; 95% CI, 1.13–4.36), and early delivery (AOR: 2.87). (1.49–5.52). The study findings show that 17.5% of teenagers and 6.8% of adults had babies that were underweight at delivery. Thirty-five (11.3%) of all the young mothers had pregnancy-induced hypertension; while just thirteen (4.2%) of the older women showed the symptoms of hypertension disorder.

In a tertiary-care hospital in Eastern India, a cross-sectional observational study was conducted (Mukhopadhyay et al., 2010) to assess the various socio-demographic traits and perinatal outcomes of teenage and adult primigravida women. The study subjects consisted of 350 sample cases and comparison groups. Data was gathered utilizing a pretested and predesigned programme during the interviews and observations. The findings showed that preterm birth rates were greater among teenage women (27.7% vs. 13.1%); and low birth weight rates were higher among the same group (38.9% vs. 30.4%). Teenage deliveries had a much higher stillbirth rate (5.1% vs 0.9%). When compared to the adult primigravida women, adolescent mothers experienced more negative perinatal consequences, such as preterm births, stillbirths, neonatal deaths, and low birthweight babies. The study findings show that 17.5% of teenagers and 6.8% of adults had babies that were underweight at delivery. Thirty-five (11.3%) of all the young mothers had pregnancy-induced hypertension, compared with just thirteen (4.2%) of the older women. A total of 40 (12.9%) adolescent women delivered their babies via caesarean section, as opposed to 58 (18%) of adult mothers. Unfavourable obstetric and perinatal outcomes in teen pregnancy were significantly associated with a caesarean delivery (AOR: 0.57; 95% CI, 0.36–0.90), an episiotomy (AOR: 2.01; 95% CI, 1.25–3.39), low birth weight (AOR: 2.22; 95% CI, 1.13–4.36), and early delivery (AOR: 2.87).

This study comprised 551,079 records of singleton births; 23,992 (4.35%) of which came from teenage pregnancies. Adolescents were in the quintiles with the lowest levels of education and family income; and they used drugs and smoked more frequently than adult women. Although adolescents had a

significantly higher risk of preterm premature rupture of membranes, they had a significantly lower risk of gestational hypertension, gestational diabetes, placental abruption, and placenta previa (RR 1.16). Adolescents had a considerably greater percentage of spontaneous vaginal births (aRR 1.76), significantly lower rates of epidural analgesia usage (aRR 0.93), caesarean section use (aRR 0.57), and significantly higher rates of emergency CS (aRR 0.76). (aRR 1.31). Adolescent mothers were substantially more likely to give birth to neonates who were very preterm (aRR = 1.08), and had to be admitted to the NICU (aRR 1.16). In terms of rates of small gestational age babies, low birth weight babies, preterm births, and foetal deaths, there was no discernible differences. The prevalence of breastfeeding, first trimester prenatal visits, and prenatal class attendance among adolescents were all significantly lower (Fleming et al., 2013).

An observational study of 12 hospitals in Nepal for a period of 12 months assessed the maternal and neonatal health consequences among adolescent mothers. In this study, it was found that it is more likely that adolescents would have a baby that is underweight for gestational age, a preterm birth, and a lengthy labour. The chance of having a baby with a significant abnormality was similarly higher in adolescent mothers than in adult women. Compared to adult mothers, adolescent mothers had the risk of significant malformation that was more than twice as high (aOR-2.66, 95% CI 1.12-6.33, p-0.027) (Gurung et al., 2020).

In another study conducted in the districts of Luapula, the obstetric and perinatal outcomes in teenagers were compared to mothers who were between 20-24 years old, and gave birth at particular health facilities. The risks of eclampsia, anaemia, haemorrhage, cephalopelvic disproportion, protracted labour, and caesarean delivery were considerably high among mothers under the age of 20. Maternal age and unfavourable obstetric and perinatal outcomes were found to be associated; however, this link was reduced after potential confounders were taken into account. Low birth weight, preterm delivery, low Apgar score, and neonatal death were risks that were elevated in children born to mothers under the age of 20. The risk of suffocation, however, seemed to increase with age (Moraes et al., 2018).

A study involving 400 women to assess the long-term impacts of subsequent pregnancies and deliveries, as well as on the socioeconomic position of the women in one community of Northern Ghana, revealed that younger women (19 years old at the time of their first pregnancy) had an 80% higher risk of having their first and subsequent babies delivered via caesarean delivery than older women (<19 years). Additionally, younger mothers had a 30% increased risk of losing their child within the first six weeks of birth; and a 45% increased risk of stillbirths. The socioeconomic status of the two age groups was the same (Yussif et al., 2017).

Table 5: Prevalence of Maternal Complications in Teen Pregnancies

Ref.	Anaemia	Haemorrhagic Syndrome	Chorioamnionitis	Hypertension Disorders	PPROM
1. Genchimeg, T. et al.	—	0.8%	0.6%	3.8%	—
2. Gurung, R. et al.	0.3%	2.0%	0.7%	1.0%	—
3. Shah, N. et al.	8%	0.6%	2.8%	10.2	1.1%
4. Ayele, M. A. et al.	—	—	—	11.3	7.4%
5. Mukhopadhyay, P. et al.	—	—	—	—	—
6. Althebe, F. et al.	—	1.4% South Asian 1.8% Sub-Saharan	0.6% SA 0.4% SS	2.7% SA 1.9% SS	—
7. Yussif, A. S. et al.	3.7%	1.3%	—	—	3.7%
8. Moraes, A. N. et al.	23.8%	6%	—	—	—
9. Flaming, N. et al.	2%	—	—	5%	1.2%
10. Ngowa, J. et al.	3.15%	0.35%	—	—	20.3%

Source: Created by author

The most often described maternal complications in the included studies were haemorrhagic syndrome, hypertension disorder, anaemia and PPRM (Table 5).

Table 6: Prevalence of Neonatal Complications in Teen Pregnancy

Studies	Preterm Delivery	LBW	Neonatal Death/Severe Condition	Perinatal Death	Still Birth
1. Genchimeg, T. et al.	11.2%	14.6%	3.6%	—	2.3%
2. Gurung, R. et al.	14.1%	16.4%	2%	—	10%
3. Shah, N. et al.	7.7%	20.5%	0.7%	—	6.5%
4. Ayele, M. A. et al.	—	—	—	—	—
5. Mukhopadhyay, P. et al.	27.7%	38.9%	5.1%	—	5.1%
6. Althebe, F. et al.	12% SA 11.5%SS	18.6%SA 8.7% SS	33.8% SA 19.2%SS	5.9% SA 32.2 SS	31.4%SA 19.2%SS
7. Yussif, A. S. et al.	—	6%	7%	—	8.9%
8. Moraes, A. N. et al.	5.4%	17.1%	7%	—	1.2%
9. Flaming, N. et al.	7.4%	6.3%	0.8%	—	—
10. Ngowa, J. et al.	17.8%	17.8%	0.70%	1.05%	—

Source: Created by author

Table 6 shows complications in newborn babies as an outcome of TP. The most often described complications were LBW, preterm delivery, still birth, neonatal death and neonatal severe conditions.

Figure 1 presents a summary of the risk factors and challenges of the health outcomes associated with teenage pregnancy following the analysis of related studies. The root cause of teenage pregnancy, according to studies on the prevalence and associated factors of early pregnancy, was the lack of knowledge or ignorance about safe sex. This is followed by other factors like culture, stigma,

misconceptions, curiosity, single parenting, unsupportive family environment, violence, and other unfavourable circumstances. Also, early marriage and the lack of formal education were two social and economic factors that contributed to early pregnancy. According to researches, the sole important aspect in a couple's marriage appears to be their age. Early marriage has a big impact on how many adolescent girls get pregnant; and low socioeconomic position and illiteracy are both contributory and precipitating variables.

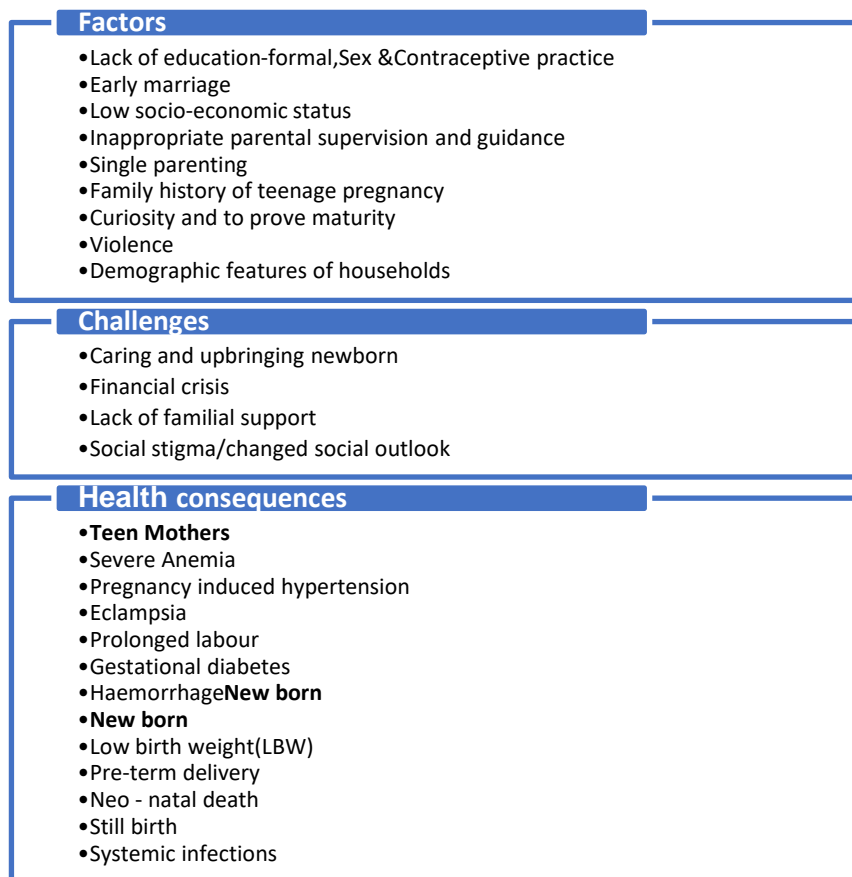


Figure 1: Factors, Challenges and Health Consequences Associated with Teenage Pregnancy

Source: Authors creativity

Discussion

The quality of life of both teenagers and their children are impacted by the repercussions of early motherhood. Teen mothers undoubtedly have terrible lives. They are more likely to stop going to school and develop a reliance on

money. They have fewer possibilities for employment because of their lack of education. They also face difficulties of carrying out one's obligations, getting less help, being a bad mother, changing society perceptions, and enduring economic crises. Also, teenage mothers worry that they will not be able to bear motherhood responsibilities. Hence, such multiple mental strains can have a detrimental effect on a mother's performance, her family's health, and the health of her unborn child (Yates, 2013; Mangeli et al., 2017). During the study, it was learnt that early marriage, illiteracy, poor housing, ignorance of pregnancy risks, and unfamiliarity with contraceptives were among the risk variables vastly reported. Public health policy and programme designers should take these risk factors into account as they have negative reproductive outcomes to young mothers. According to the studies, teen pregnancies were highly correlated with their household, family environment, parenting, and particularly their domicile.

It was also confirmed that the marital status of the head of a household was yet another crucial variable for teen pregnancy. When compared to homes headed by married couples, households headed by divorced or separated couples were found to have a 1.72 times higher risk of teen pregnancy (Uwizeye et al., 2020). It was also proved in the findings that low socioeconomic status was significantly associated with high rates of teenage pregnancies (Nyakubega, 2008; Kost et al., 2017; Ajala, 2014; Sebananwa & Etienne, 2021; Odimigwu & Mkwanzani, 2016). The majority of the research was done in Asian or Sub-Saharan African nations. An inadequate parental support and incapacity to meet the girls' financial demands were clearly visible characteristics of these households (Nwogwugwe, 2013; Mezmur, 2021). Due to this, teen girls indulged in inappropriate sexual encounters, and became pregnant quite early (Odimigwu & Mkwanzani, 2016). According to the study, young girls' sexual partners, who are typically older, dupe them with cash or other presents to the point where the girls engage in unprotected sex, eventually becoming pregnant (Nyakubega, 2018; Kost et al., 2017).

Parental and marital status, single parenting, insufficient parental guidance and supervision, parents' low educational level, household demographics, and violence were among the leading risk variables that were found in the analysis (Beyene et al., 2015; Sebananwa et al., 2021; Mezmur, 2021). Generally, in the studies discussing the importance of household socioeconomic factors, it was noted that the financial/social and educational level of empowerment of parents, which set the boundaries for child discipline, contributed to reducing the cases of teen pregnancy. The findings strongly suggest the need of parenting educational programmes for better development of the youth and children.

It was also found that women who live in rural areas are more likely to become pregnant at a younger age than those who live in urban areas (Uwizeye & Ruben, 2020; Rutaremwa et al., 2013; Sebananwa, 2021). This may be proof that women in rural areas are cut off from information and the media, and may face greater family pressure to marry at a young age than urban ones.

Additionally, it was noted that women who were under 18 years old when they got married had a higher likelihood of becoming pregnant. This is likely because pregnancy rates are naturally higher when couples get married at a young age.

Research on African-Australian refugees (Ngum, et al., 2015) provide insight into the intersecting identities that influence teen pregnancies. Despite the difficulties of early parenting, the research showed that being a mother offered enjoyment to many young women, although new challenging roles overwhelmed them. Other studies have also shown how being a mother and an adolescent have opposing duties (Islam, 2017; Mchunu, 2012). However, the lack of community support for adolescent mothers can make motherhood very challenging. Additionally, the community begins to question the family of teen parents and other family members, which heightens feelings of shame and rejection. Hence, the research findings showed that social and family support are essential for teen mothers.

The consequences of early motherhood have an effect on both teenagers' quality of life and that of their offspring. As observed through the research, teen mothers lead horrible lives; they have a higher propensity to drop out of school and become financially dependent. Due to their lack of education, they have fewer options for employment. Economic crisis, prejudiced social opinion, being a lousy mother, having trouble fulfilling one's commitments, and getting less aid: all these are a few of the key challenges. Often, these teenagers are worried that they will not be able to handle the obligations of motherhood. The performance of a mother, the health of her family, and the health of her unborn child: all can be negatively impacted by several mental pressures (Yates, 2013; Mengeli et al., 2017). It is required that, to lessen the consequences, the home and school environments should be made safer enough to safeguard teens from exposure to harmful influences.

Studies of health outcomes of teenage motherhoods demonstrate various health consequences, predominantly higher in almost all adolescent pregnancies in lesser or greater proportion, including haemorrhagic syndrome, hypertension, anaemia, and PPROM. Systemic infections (Genchimeg et al., 2014; Yussif et al., 2017), perineal tear (Ayele, et al., 2020; Ngowa, et al., 2015), and obstructed labour (Genchimeg et al., 2014; Gurungs et al., 2020; Moraes et al., 2018), were also found to be significantly higher in teen pregnancies. Hypertensive disorders were again commonly observed in teenage mothers. This might be attributed to the fact that null parity and age of less than 18 years are the possible risk factors for the development of pregnancy-induced hypertension (Kawakita et al., 2016).

Premature mother's brace rupture has been documented in a small number of studies as a birth problem (Yussif et al., 2017; Ngowa et al., 2015). Surprisingly, in one study (Ngowa et al., 2015), teen pregnancy was considerably of a high proportion (20.3%). Abortion was not significantly associated with age; however, a small number of researches included records of abortion cases (Yussif et al.,

2017; Shah et al., 2011). One explanation for the higher-than-average frequency of teenage pregnancies (13%) that resulted in unsafe abortions is the fear of rejection by parents. A few studies observed that teenagers are more prone to have the symptoms of chorioamnionitis (Genchimeg et al., 2014; Gurungs, et.al.2020; Shah, 2015; Althabe et al., 2015). Apparently, very few studies mentioned urinary infections (Mukhopadhyay et al., 2020; Shah et al., 2011). Complications like congenital abnormalities, foetal distress, and low Apgar scores were also noted in a fair number of studies (Ayele et al., 2020; Ngowa et al., 2015).

The overall pattern of perinatal outcomes was more diverse. The bulk of the studies found that there were considerably greater risks of preterm births, LBWs, and stillbirths. New-borns by teenagers had a higher incidence of being low-birth-weight babies. Low birth weight is a major contributor to child mortality, and a major indicator of malnutrition (Kushwaha, et al., 1993). In most of the studies, it was also discovered that teens had a higher rate of low-birth-weight babies than adults. Teenage mothers are more likely to deliver premature babies, which increases the likelihood of LBWs (Genchimeg et al., 2014; Huang et al., 2014; Ngowa et al., 2015; Egbe et al., 2015). Some teenagers have pre-eclampsia as a result of LBW and preterm delivery; and both the mother and the infant can die as a result of this. Also, it can harm the kidneys and liver; and hence lead to LBW, stillbirths, preterm births, and inadequate growth that is deadly (Ozdemirci et al., 2016; Shah et al., 2011).

The primary health issues that continually show that neonates are not in excellent condition are low birth weight, preterm delivery, neonatal mortality, and systemic infections. Directly or indirectly, these issues have a negative long-term impact on a child's later life (Jean et al, 2015; Mukhopadhyay et al., 2020; Abebe et al., 2018; Genchimeg, 2014). Additionally, teen pregnancies have led to a higher percentage of stillbirths. According to a study by Yussif et al. (2017), teenage pregnancies have a risk of stillbirths that is more than 40% of the case of non-teenagers. Insufficient prenatal care is one of the several causes of stillbirths or child mortalities during delivery, and early-pregnant women are more likely to have no prenatal care (WHO, 2016).

While numerous researches also show greater rates of neonatal deaths (Althebe et al., 2015; Yussif, et al., 2017; Moraes, et al., 2018; Genchimeg, et al., 2014), a few studies that were highlighted also contained evidences of perinatal deaths (Althebe et al., 2015; Ngowa et al., 2015). Teenage mothers may not receive as much prenatal care, or have as much family support as other mature mothers do; and as a result, their children may more likely be born prematurely or with low birth weights (Rios et al., 2007). Preventive prenatal care interventions and counselling need to be covered more widely. As alluded to earlier, due to their physiological and psychological immaturity, together with the lack of sexual and reproductive understanding, adolescent women have a higher chance of becoming pregnant (Amjad et al., 2019).

Conclusion

This review identified a higher risk of unfavourable maternal and perinatal outcomes linked with teen pregnancies, and includes a thorough overview of these factors. It offers a succinct and insightful research base for childhood and youth development programmes; as well as effective prevention methods for unplanned teen pregnancies. The growth and development of the next generation may be seriously threatened by teen pregnancies. The results of the studies highlight the importance of improving education for young girls to promote their empowerment and reduce their susceptibility to early marriages. Promoting education at the rural community level is important. Adolescent girls and boys, as well as their parents, should be the focus of school and community initiatives. Additionally, greater effort should be made in creating plans to deal with gender inequality and poverty.

Recommendations

In addition to being a health concern, teen pregnancy is more closely linked to child poverty. The broader context in which teenage mothers experience unintended pregnancies should also be taken into account by policy makers and service providers. The findings of this review support the following recommendations for teen pregnancy prevention:

- (a) To help prevent teen pregnancies, parent-adolescent relationship programmes must be organized with a focus on enhancing family communication about sexual issues and behaviours.
- (b) Education regarding sexual diversity must be covered in the school curriculum, which aspire to provide the pupils with the relevant knowledge, right attitude, and healthy sexual choices.
- (c) Adolescents need comprehensive sexual and reproductive health counselling, which requires counselling and rehabilitation services, to assist them deal with issues on sex, pregnancy, and contraception. Parents and guardians also require advice and information on similar issues.
- (d) Considering the opinions and experiences of pregnant teenagers, it is critical to provide antenatal care for all. This care of young women should be encouraged by health providers.
- (e) Education for girl children must be free or significantly discounted at the primary and secondary levels, especially in rural areas. The environments at homes and at schools should be sufficiently safe.
- (f) Political planners and decision-makers should create and implement laws and regulations banning marriage of females under the age of 18 years.

References

- Althabe, F., Moore, J. L. & Gibbons, L. (2015). Adverse maternal and perinatal outcomes in adolescent pregnancies: The global network's maternal new-born health registry study. *Reproductive Health*, 12. <https://doi.org/10.1186/1742-4755-12-S2-S8>.
- Adebayo, O. (2014). Factors associated with teenage pregnancy and fertility in Nigeria. *Journal of Economics and Sustainable Development*, 5(2). www.iiste.org ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online).
- Ajala, A. O. (2014). Factors associated with teenage pregnancy and fertility in Nigeria. *Journal of Economics and Sustainable Development*, 5(2).
- Amjad, S., MacDonald, I. & Chambers, T. (2019). Social determinants of health and adverse maternal and birth outcomes in adolescent pregnancies: A systematic review and meta-analysis. *Pediatrics Perinat Epidemiol*, 33(1): 88-99.
- Anna, A., Asif, K., Lavanya, L., Salima, M. & Zohra, S. L. (2021). *Prevalence and predictors of teenage pregnancy in Pakistan: A trend analysis from Pakistan Demographic and Health Survey datasets from 1990 to 2018*. *International Health*. <https://doi.org/10.1093/inthealth/ihab025>.
- Azevedo, D. V. & Sampaio, H. A. (2003). Fatores de risco associados à gestação na adolescência. *Femina*, 31(5): 457-64.
- Ayele, M. A., Girma, W. F., Jember, D. A., Reda, M. M., Engida, G. & Wake, G. E. (2020). Teenage pregnancy and its adverse obstetric and perinatal outcomes at Lemlem Karl Hospital, Tigray, Ethiopia, 2018. *BioMed Research International*. Article ID 3124847, <https://doi.org/10.1155/2020/3124847>.
- Beyene, A., Muhiye, A., Getachew, Y., Hiruye, A., Mariam, D. H....., Enquesselassie F. (2015). Assessment of the magnitude of teenage pregnancy and its associated factors among teenage females visiting Assosa General Hospital. *Ethiopia Medical Journal, July Supplement*, 2, 25-37. PMID: 26591280.
- Berenson, A. B., Wiemann, C. M. & McCombs, S. L. (1997). Adverse perinatal outcomes in young adolescents. *The Journal of Reproductive Medicine*, 42(9): 559-564.
- Black, R., Laxminarayan, R. & Temmerman, M. (2016). *Disease control priorities* (3rd ed.). World Bank Publications.
- Chikalipo, M. C., Nyondo, L., Ngalande, R. C., Muheriwa, S. R. & Kafulafula, U. K. (2018). Perceptions of pregnant adolescents on the antenatal care received at Ndirande Health Centre in Blantyre, Malawi. *Malawi Medical Journal* 25-30. [pmid:29868156](https://pubmed.ncbi.nlm.nih.gov/29868156/).
- Chirwa, G. C., Mazalale, J., Likupe, G., Nkhoma, D., Chiwaula, L. & Chintsanya, J. (2019). An evolution of socioeconomic related inequality in teenage pregnancy and childbearing in Malawi. *PLoS ONE* 14(11): e0225374. <https://doi.org/10.1371/journal.pone.0225374>.
- Davies, A. M. & Dunlop, W. (2016). Hypertension in pregnancy. In Barron, S. L. & Thomson, A. M. (Eds). *Obstetrical epidemiology* (pp. 184-6). London: Academic Press.

- Egbe, T. O., Omeichu, A., Halle-Ekane, G. E. & Tchente, C. N. (2015). Prevalence and outcome of teenage hospital births at the Buea health district. *Reproductive Health*, 12(1): 1-10.
- Fleming, N., Ng, N., Osborne, C., Biederman, S., Yasseen, A. S., White, R. & Walker, M. (2013). Adolescent pregnancy outcomes in the province of Ontario: A cohort study. *Journal of obstetrics and gynaecology Canada*, 35(3): 234-245. [https://doi.org/10.1016/S1701-2163\(15\)30995-6](https://doi.org/10.1016/S1701-2163(15)30995-6).
- Gurung, R., Målqvist, M. & Hong, Z. (2020). The burden of adolescent motherhood and health consequences in Nepal. *BMC Pregnancy Childbirth*, 20, 318. <https://doi.org/10.1186/s12884-020-03013-8>.
- Ganchimeg, T., Ota, E. & Morisaki, N. (2014). Pregnancy and childbirth outcomes among adolescent mothers: A World Health Organization multicountry study. *BJOG: An International Journal of Obstetrics & Gynaecology*, 121(1): 40-48.
- Gwido, V. & Fekadu, M. A. (2016). Factors contributing to, and effects of teenage pregnancy in Juba. *SSMJ*, 9(2).
- Huang, C., Lin, Y., Huang, Y. & Huang, K. (2014). Comparison of medical issues in antenatal and perinatal periods in early youth, adolescent, and young adult mothers in Taiwan: A 10-year nationwide study. *BMC Pregnancy Childbirth*, 14(1): 1-7.
- Islam, M. M., Islam, M. K., Hasan, M. S. & Hossain, M. B. (2017). Adolescent motherhood in Bangladesh: Trends and determinants. *PLoS ONE* 12(11): e0188294. <https://doi.org/10.1371/journal.pone.0188294>.
- Kawakita, T. K., Wilson, K. L., Grantz, H. J., Landy, C., Huang, & Gomez-lobo, V. (2016). Adverse maternal and neonatal outcomes in adolescent pregnancy. *Journal of Paediatric and Adolescent Gynaecology*, 29(2): 130-136.
- Kushwaha, K. P., Rai, A. K., Rathi, A. K., Singh, Y. D. & Sirohi, R. (1993). Pregnancies in adolescents: Foetal, neonatal and maternal outcome. *Indian Paediatric*, 30, 501-5.
- Kost, K., Maddow-Zimet, I. & Arpai, A. (2017). *Pregnancies, births, and abortions among adolescents and young women in the United States, 2013: National and state trends by age, race and ethnicity*. Guttmacher Institute.
- Liu, L., Oza, S., Hogan, D., Chu, Y., Perin, J., Zhu, J., Lawn, J. E. Black, R. E. (2016). Global, regional, and national causes of under-5 mortality in 2000-15: An updated systematic analysis with implications for the sustainable development goals. *Lancet* (London, England): 388(10063): 3027-3035. [https://doi.org/10.1016/S0140-6736\(16\)31593-8](https://doi.org/10.1016/S0140-6736(16)31593-8).
- Mangeli, M., Rayyani, M., Cheraghi, M. A. & Tirgari, B. (2017). Exploring the challenges of adolescent mothers from their life experiences in the transition to motherhood: A qualitative study. *Journal of Family & Reproductive Health*, 11(3): 165-173.
- Mezmur, H., Assefa, N. & Alemayehu, T. (2021). Teenage pregnancy and its associated factors in Eastern Ethiopia: A community-based study. *International Journal of Women's Health*, 13: 267-278. <https://doi.org/10.2147/IJWH.S287715>.

- Moraes, A. N., Likwa, R. N. & Nzala, S. H. (2018). A retrospective analysis of adverse obstetric and perinatal outcomes in adolescent pregnancy: The case of Luapula Province, Zambia. *Maternal health, neonatal and perinatal* 4. <https://doi.org/10.1186/s40748-018-0088-y>.
- Mukhopadhyay, P., Chaudhuri, R. N. & Paul, B. (2010). Hospital-based perinatal outcomes and complications in teenage pregnancy in India. *Journal of Health, Population, and Nutrition*, 28(5): 494–500. <https://doi.org/10.3329/jhpn.v28i5.6158>.
- Mchunu, G., Peltzer, K., Tutshana, B. & Seutlwadi, L. (2012). Adolescent pregnancy and associated factors in South African youth. *African Health Sciences*, 12(4): 426–434. <https://doi.org/10.4314/ahs.v12i4.5>.
- Maheshwari, M. V., Khalid, N. & Patel, P. D. (2022). Maternal and neonatal outcomes of adolescent pregnancy: A narrative review. *Cureus* 14(6): e25921. doi:10.7759/cureus.25921.
- Ngum, Chi, Watts, M. C., Liamputtong, P. & Mcmichael, C. (2015). Early motherhood: A qualitative study exploring the experiences of African Australian teenage mothers in greater Melbourne, Australia. *BMC Public Health*, 15, 873. <https://doi.org/10.1186/s12889-015-2215-2>.
- Neal, S., Matthews, Z. & Frost, M. (2012). Childbearing in adolescents aged 12–15 years in low resource countries: A neglected issue. *Acta Obstetric Gynaecology*, 1114–18. Every Woman Every Child. <https://doi.org/10.1111/j.1600-0412.2012.01467.x>.
- Ngowa, J., Kasia, J., Pisoh, W., Ngassam, A. & Noa, C. (2015) Obstetrical and perinatal outcomes of adolescent pregnancies in Cameroon: A retrospective cohort study at the Yaoundé General Hospital. *Open Journal of Obstetrics and Gynaecology*, 5, 88–93. doi: 10.4236/ojog.2015.52012.
- Kaphagawani, N. C. & Kalipeni, E. (2017). Sociocultural factors contributing to teenage pregnancy in Zomba District, Malawi. *Global Public Health*, 12(6): 694–710. <https://doi.org/10.1080/17441692.2016.1229354>.
- Nyakubega, P. (2008). Factors associated with adolescent pregnancies among secondary school students. A study from Tanga-Tanzania. *Off. Publ. Tanzania Med. Stud. Assoc*, 5, 31–33.
- Pinho-Pompeu, M., Surita, F. G., Pastore, D. A., Paulino, D. S. M., Pinto, E. & Silva, J. L. (2017). Anaemia in pregnant adolescents: Impact of treatment on perinatal outcomes. *Matern Fetal Neonatal Med*, 30(10): 1158–1162. doi: 10.1080/14767058.2016.1205032. Epub 2016 Jul 17. PMID: 27354114.
- Ozdemirci, S., T., Kasapoglu, D. A., Cirik, N., Yerebasmaz, F., Kayikcioglu, & Salgur, F. (2016). Is late adolescence a real risk factor for an adverse outcome of pregnancy? *The Journal of Maternal-Foetal & Neonatal Medicine*, 29(20): 3391–3394.
- Odimegwu, C. & Mkwanzani, S. (2016). Factors associated with teenage pregnancy in Sub-Sahara. *African Journal of Reproductive Health (Special edition)*: 20(3) 107.
- Odhiambo, A. & Martiniez (2018). Leave no girl behind in Africa: Discrimination in education against pregnant girls and adolescent mothers. *Human Rights Watch*.

- Rutaremwya, G. (2013). Factors associated with adolescent pregnancy and fertility in Uganda: Analysis of the 2011 demographic and health survey data. *Social Sciences*, 2(1): 7-13. doi:10.11648/j.ss.20130201.12.
- Rios, K. S. A., Williams, L. C. A. & Aiello, A. L. R. (2007). Gravidez na adolescência e impactos no desenvolvimento infantil. *Adolesc Saude*, 4 6-11.
- Sobngwi-Tambekou, J. L., Tsague-Agnoux, M. & Fezeu, L. K. (2022). Teenage childbearing and school dropout in a sample of 18,791 single mothers in Cameroon. *Reprod Health*, 19, 10. <https://doi.org/10.1186/s12978-021-01323-4>.
- Silva, A., Caroline, A., Andrade, S., ... Patrícia, G. (2013). Fatores de risco que contribuem para a ocorrência da gravidez na adolescência: revisão integrativa da literatura. *Revista Cuidarte*, 4(1): 531-539. Retrieved October 26, 2021, from http://www.scielo.org/co/scielo.php?script=sci_arttext&pid=S2216-09732013000100014&lng=en&tlng=.
- Sebaganwa, A. & Etienne S. S. (2021). Causes of early motherhood, consequences and prevention strategies: The case of early pregnant teenagers. *Rwanda Journal of Social Sciences, Humanities and Business*. ISSN 2708-759X (Print); ISSN 2708-7603 (Online). DOI: <https://dx.doi.org/10.4313/rjsshb.v2i1.7>.
- Shah, N., Rohra, D. K. & Shuja, S. (2011). Comparison of obstetric outcome among teenage and non-teenage mothers from three tertiary care hospitals of Sindh, Pakistan. *Journal of the Pakistan Medical Association*, 61(10): 963-967.
- Sharma, A. K., Verma, K., Khatri, S., Kannan, A. T. (2001). Pregnancy in adolescents: Study of risks and outcome in Eastern Nepal. *Indian Pediatr*, 38, 1405-9.
- Taylor, S., Williams, B., Magnus, D., Goenka, A. & Modi, N. (2015). From MDG to SDG: Good news for global child health? *The Lancet*, 386, 1213-4.
- UNFPA (2015). *Girlhood, not motherhood: Preventing adolescent pregnancy*. New York: UNFPA.
- Uwizeye, D., Muhayiteto, R., Kantarama, E., Wiehler, S. & Murangwa, Y. (2020). *Prevalence of teenage pregnancy and the associated contextual correlates in Rwanda*.
- Walker, J. (2012). Early marriage in Africa-trends, harmful effects and interventions. *African Journal of Reproductive Health*, 16(2): 231-240.
- WHO (2016). *Global health estimates 2015: Deaths by cause, age, sex, by country and by region, 2000-2015*. Geneva: WHO.
- World Health Organization (2016). *Adolescent world pregnancy*. <http://www.who.int/mediacentre/factsheets/fs364/en>. Accessed 01 January 2017.
- Yussif, A. S., Lasse, A. & Ganyaglo, G. Y. (2017). The long-term effects of adolescent pregnancies in a community in Northern Ghana on subsequent pregnancies and births of the young mothers. *Reprod Health*, 14, 178. <https://doi.org/10.1186/s12978-017-0443-x>.
- Yates, P. M. (2013). Treatment of sexual offenders: Research, best practices, and emerging models. *International Journal of Behavioural Consultation and Therapy*, 8(3-4): 89-95. <https://doi.org/10.1037/h0100989>.