

Global trends and future directions of anxiety in adolescent pregnancy: a bibliometric analysis

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Abstract. Adolescent pregnancy is a global problem today. This problem is higher in developing countries. This causes anxiety in 16%-44% of pregnant adolescents. Although not many lead to suicide, the anxiety of pregnant women can lead to poor pregnancy outcomes. This study aims to analyze mental health in adolescent pregnancy. This study used the PRISMA method to search for appropriate keywords in SCOPUS and then conducted a bibliometric analysis to examine the information in scientific publications and literature. The results of this study obtained information that the risk of anxiety disorders increases in teenage pregnant women due to hormonal imbalances in adolescents, unpreparedness in facing pregnancy, and premarital sexual behavior. To prevent anxiety in teenage pregnancy, it is necessary to conduct integrated antenatal care, including mental health screening. Efforts to improve the health of pregnant adolescent mothers can be made by identifying the adaptation process of adolescents regarding changes in roles and responsibilities, increasing the availability of youth-friendly services integrated antenatal care and primary health services, overcoming economic challenges, strengthening the social system of adolescents to undergo pregnancy and parenting.

1 Introduction

Teenage pregnancy is a severe public health problem. Every year in developing countries, an estimated 21 million adolescent girls aged 15-19 years become pregnant, and 12 million of them give birth [1] Although globally, the number of teenage pregnancies is declining, it is still necessary to be aware of the decline in the age of teenage pregnancy.

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Teenage pregnancy can be caused by low socioeconomic status [2], knowledge [3], peer influence, and family disharmony[4], [5] The possible impacts of teenage pregnancy are physical and mental health problems [6], low education of women [7], and lack of support from family and community.

The maternal mortality rate for pregnant and childbirth women aged 10-19 years is two to five times higher than the maternal mortality rate for pregnant and childbirth women aged 21-29 years. Anxiety disorders affect 10% of pregnant women in developed countries and 25% of pregnant women in developing countries. Anxiety during pregnancy affects 28.7% to 33.3% of pregnant women in Indonesia.

According to research, adolescence is the peak period for anxiety disorders. Out of 40 teenage pregnancies studied, all pregnant women experienced anxiety. As many as 27.5% experienced high anxiety, 45% experienced moderate anxiety, and 32.5% experienced mild anxiety [8].

Various studies have shown that teenage mothers experience much higher levels of depression, both before and after giving birth, compared to adult mothers and their non-pregnant peers. Among teenage mothers, the estimated depression rates range from 16% to 44%. However, there are no reports of pregnant teenagers committing suicide. Almost 19% of all teenagers aged 15 to 19 are reported to have suicidal thoughts, and 9% have attempted suicide [9].

Research shows a correlation between the level of anxiety in pregnant adolescents in developing countries with gestational age, physical activity, sleep patterns, and active smoking. Some measures that can be taken to prevent sadness during teenage pregnancies include coordinating antenatal care, mental education, and guaranteed services for the newborn, as well as regular home visits by healthcare professionals [9].

Pregnancy anxiety in adolescents is usually caused by sudden lifestyle changes, unsatisfactory home life, financial problems, and low social support for pregnant adolescents [10]. Adolescent pregnancy anxiety can last throughout the pregnancy. Starting from the beginning of pregnancy, adolescents underestimate their pregnancy for fear of being ostracized by people around them and feel obligated to their pregnancy. In the second trimester, adolescents will feel modern tasks, the need for health and funds and loneliness can increase anxiety in adolescents. In the final trimester, adolescents will feel anxious about childbirth and anxiety about their future [11].

Anxiety in teenage pregnancy is a problem that must be faced together because if it is not overcome, it will give birth to labor results that are not as desired [12]. This study aims to analyze the frequency of anxiety in teenage pregnancy through a bibliometric search of the relationship and then investigate the tendency of anxiety in teenage pregnancy.

2 Methods

The PRISMA method - Preferred Reporting Items for Systematic Reviews and Meta-Analyses - was used in this study [13] Journals using Scopus, the keywords used were "adolescents, pregnancy, and anxiety." The results included 2877 journals. Then, to filter the journal publication year from 2018 to 2023, 1075 journals were obtained, of which 596 were accessible and 591 were relevant. The 591 journals were downloaded in RIS (Research Information System) format. After being entered into the Mendeley Reference Manager Application, the RIS format of each journal was converted or exported into the RIS format of the entire journal. Furthermore, the complete RIS of the journal was entered

into VOS Viewer 1.6.18. We obtained network visualization, density visualization, and overlay visualization analysis. Citation analysis refers to the recapitulation of journals cited by authors or researchers when they compile scientific papers [14] We then performed bibliometric analysis using. We then discussed the results.

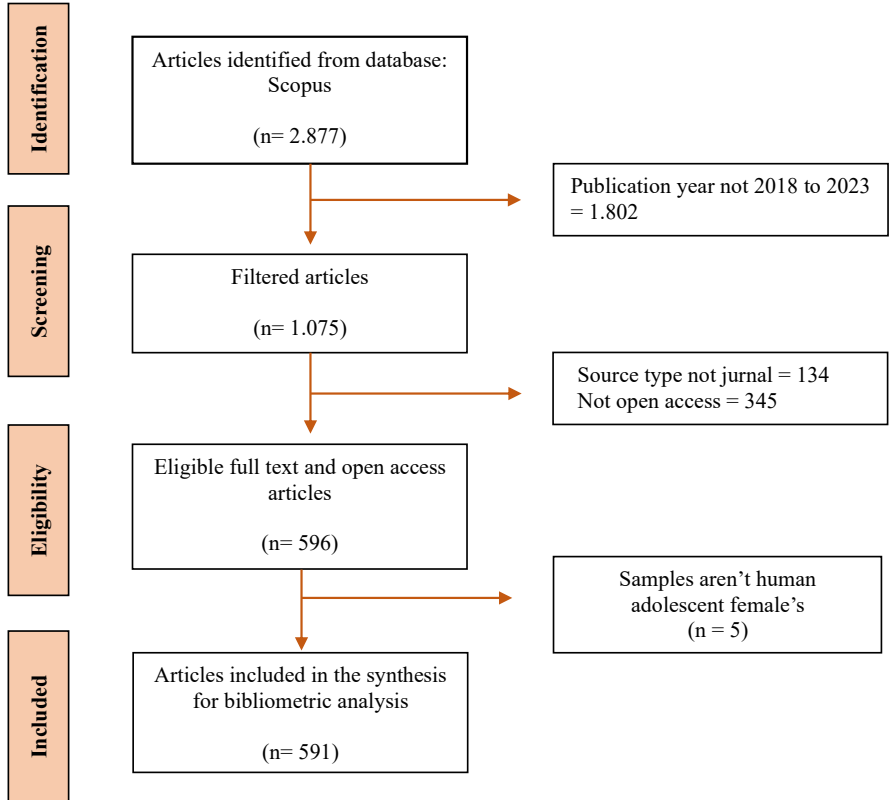


Fig. 1. PRISMA Flowcart

3 Result and Discussion

Figure 2. Development of Scientific Publications on Anxiety in Pregnant Adolescents from Database Scopus (2018 to 2023) has experienced developments that tend to increase. We can see from Figure 1 that in 2018, there were 157 titles of scientific publications that discussed anxiety in pregnant adolescents and experienced a significant increase until 2022 in the form of 200 titles of scientific publications. However, in 2023, there was a decrease of 186 titles.

One of the 2018 scientific publications discussed the anxieties of pregnant Kenyan adolescents. The results showed that pregnant adolescents face several problems. These include depression, anxiety, and stress related to pregnancy; rejection of pregnancy; lack of availability of care and basic needs; and lack of opportunities to develop themselves financially or educationally after pregnancy. In Kenya, adolescent girls face many issues.

These include structural problems in services such as prenatal care, mental health, newborn, and parenting support, as well as existing values and norms about gender and traditional family structures. More importantly, facing these difficulties has led to negative mental health consequences in pregnant adolescent girls, including feeling insecure about the future, feeling very defeated and sad about being pregnant, and feeling unsupported and powerless to look after their babies [15].

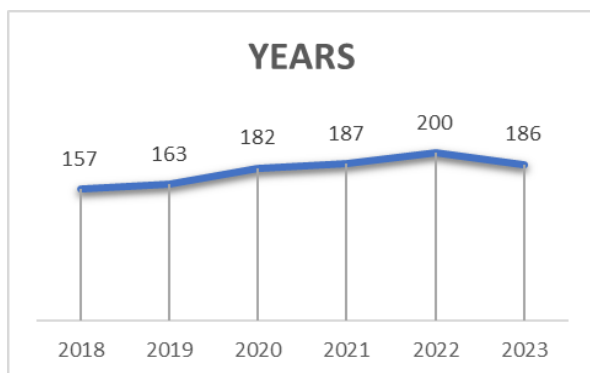


Fig. 2. Development of Scientific Publications on Anxiety in Pregnant Adolescents from Database Scopus (2018 to 2023)

In 2022, one of the articles in a scientific publication discussed teenage and young adult pregnancy in Nigeria. When they experience pregnancy, the feeling is one of fear, shame, anxiety and depression. Most of the pregnancies resulted in live babies, while some had stillbirths or abortions performed. After pregnancy, some participants managed to complete their education. Lack of sexual and reproductive health education and parental communication are major risk factors for teenage pregnancy. Adolescents in this study did not receive adequate education on sexual and reproductive health that could help them make decisions and take action regarding their sexual and reproductive health [16].

One of the scientific publication articles in 2023 discusses the differences in delivery outcomes of teenage, older, and normal-age pregnancies. The rate of non-continuation during pregnancy is highest in teenage pregnancies. The cause of fetal distress in adolescent pregnancy is one of the indications for cesarean section. In labor outcomes, the adolescent pregnancy group was found to have the highest first-minute newborn APGAR score and higher rates of preterm birth and SGA (Small for Gestational Age) [17].

Among the contributing factors to teenage pregnancy is that the majority of parents are not aware enough of health issues that they do not discuss with their children about sexual and reproductive health. But there are also research results that state that at a younger age, teenagers have a better fertility plan compared to newly married adults [18], [19]. Adolescent pregnancies often experience problems such as low self-esteem, guilt, loneliness, self-harm, depression, and suicide. Anxiety symptoms and somatic diseases (such as heart problems) may appear, especially for pregnancies exposed to sexual coercion during marriage. Adolescents who experience domestic violence have a higher risk of pregnancy. It is critical to conduct a thorough analysis of partner violence involving perpetrators and victimization during pregnancy. Clinical and community

prevention efforts should target pregnant adolescents and their partners to reduce vulnerability and negative impacts. Anxiety and depression in adolescent pregnant women may also increase morbidity [20-25] .

Some ways to address psychological health issues in adolescent pregnancy are as follows: (1) Support from parents, especially mothers of pregnant adolescents[26]; (2) Psychosocial support-based psychoeducation program reduces anxiety and depression and increases the level of social support perceived by pregnant adolescents[27]; (3) The socio-cultural context of low/middle-income countries to support the development of pregnancy-related anxiety (PRA) prevention strategies[28]; (4) Client-centered counseling (both the adolescent herself and with her partner) that is non-judgmental, caring, and confidential can reduce pregnant adolescents' anxiety and concerns[29-31]; (5) Improved coping strategies and support during pregnancy and postpartum[32]; (6) Interventions that enhance social networks to address abuse and the provision of adequate mental health care can minimize adverse impacts and improve the mental health of pregnant adolescents and children [33], [34].

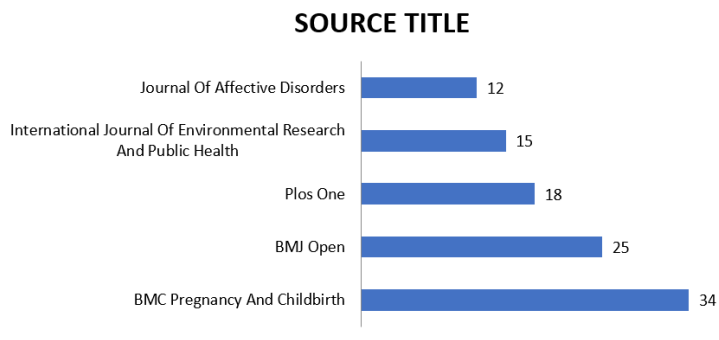


Fig. 3. Distribution of Authors and Journal Articles on Anxiety in Adolescent Pregnancy by Source Title

Figure 3. shows that five relevant publications ranked first out of the total publications, namely 34 articles from BMC Pregnancy and Childbirth Journal, 25 articles from BMJ Open, 18 articles from Plos One, 15 articles from International Journal of Environmental Research And Public Health, and 12 articles from Journal Of Affective Disorders. These five journals each published important publications analyzing anxiety in teenage pregnancy.

Adolescent girls in the United States have become one of the most critical issues [35]. The number of adolescent pregnancy cases is increasing in other developed and developing countries, not only in the United States. Among the risk factors that can cause anxiety in adolescent pregnancy are authoritarian rules, lack of support and affection from the family, and unilaterally set limits by parents [36]. Nicotine exposure in adolescent relationships [37], intimate partner violence in pregnant adolescents, especially in poor urban areas [21] and stress experienced during the transition to motherhood in adolescence [38]. In other developed countries, there are also many studies on the socioeconomic functions and tangled threads of teenage pregnancy [39].

Although the issue of teenage pregnancy is a global health problem, some authors from developed and developing countries were so prolific during the study period that they published around five hundred papers; however, some countries had only one paper.

Since teenage pregnancy carries higher medical and psychosocial risks, leading to problems in public health, justice, and education, every country must conduct research. The World Health Organization (WHO) states that every year, 21 million girls aged 15 to 19 in developing regions become pregnant with childbirth, about 12 million of whom give birth. In addition, about 2.5 million girls under the age of 16 give birth [40].

In the beginning, adolescent pregnancy would lead to early teenage marriage in areas that still use religious norms and customs, but now it has become commonplace in society. Young women who marry underage (less than 20 years old) may experience mental health disorders. An article published by BMJ Open states that there is a significant correlation between the mental health of early-married adolescent girls and partner violence, such as depression, anxiety, and stress [41]. Poor pregnancy mental health and well-being can impact women, children and families in the long term [42].

Pregnant adolescent girls and girls living in extended families experiencing food insecurity share problems and different ways of adapting, according to one BMC Women's Health article. However, these risk factors are already present in pregnant adolescent girls because they are not physically and mentally ready to become pregnant (teenage pregnancy) and because their problems are considered undesirable or unacceptable by society [43].

Adolescent behaviors and various health problems often have similar risk factors and protective factors. Health services should move beyond these issues to improve adolescent health services, including preventing teenage pregnancy, HIV prevention, treatment and care, and HPV vaccination. Health services must move beyond this issue to meet adolescents' multiple health needs and development [40].

Vos viewer analysis shows the relationship between one term and another. Vos viewer displays bibliometric mapping in three different visualizations, including network visualization (Figure 4), overlay visualization (Figure 5), and density visualization (Figure 6) with keywords labeled as colored circles. The circle size is positively correlated with the occurrence of keywords in the title and abstract. The more often the keywords appear, the larger the letters and circles in bibliometric.

The following are the results of network visualization using the keyword anxiety that occurs in adolescent pregnancy.

heightened if the pregnant mother is an adolescent as the peak of anxiety occurs during the transitional stage of adolescence. Pregnant adolescents are a high-risk group for mental disorders. Adolescents need care, support and non-judgmental interactions. This is related to the negative stigma in society regarding premarital sexual behavior [30].

ANC service functions as promotive, preventive, curative, and rehabilitative, with a focus on promotive efforts to improve the quality of public health. Pregnant women and adolescents are the main targets of health education. The unpreparedness of teenage pregnant women to accept their pregnancy hurts the health of the mother and the unborn child. For mothers, pregnancy becomes a burden as the gestational age increases. Thus, mental health screening of pregnant women should be done from the beginning of pregnancy to determine whether pregnant women need intensive assistance and treatment [44]. Global mental health challenges are often rooted in economic conditions, sexual violence, and trauma. In 2020-2023, cases of mental disorders will increase, which will be exacerbated by the COVID-19 pandemic [45].

Research on anxiety-related teenage pregnancy shows that some teenage mothers reject their babies. Family reactions to the pregnancy varied, ranging from anger and disappointment to silence, but some forgave. The change in role as a mother causes psychological problems experienced by teenage mothers, including guilt, anxiety, and even suicidal thoughts. Teenage pregnancy also adversely affects the economic stability of the family, with teenagers in danger of dropping out of school and constrained from pursuing formal education. In addition, teenagers have to accept negative stigma from society [46]. Therefore, adolescents must have the knowledge and skills to make the right decisions about their lives, especially reproductive health [47].

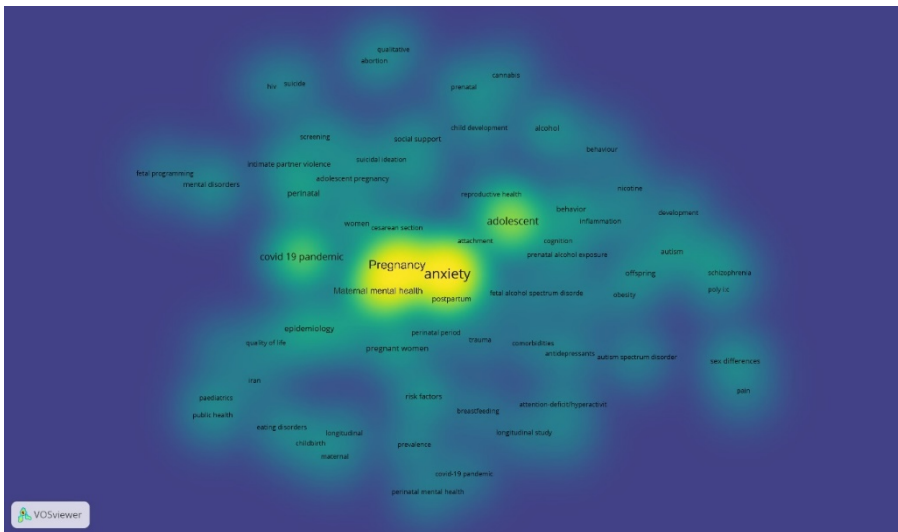


Fig. 6. Vos Viewer Density Visualization

The density visualization shown in Figure 6 shows that the terms anxiety, pregnancy, maternal mental health, and postpartum have the highest number of studies, so these terms appear close together, as well as the terms adolescents and the Covid-19 pandemic, which are also widely studied in research. The density visualization shown in Figure 6. explains that the yellow color that appears more clearly and the larger diameter of the circle

indicates the denser the keyword. Research with these keywords is increasingly frequent, with the number of studies increasing yearly. However, the number of studies with these keywords decreases when the yellow color fades and merges with the green background.[49] Several studies on teenage pregnancies aged 13-19 years show adverse effects on the physical and mental health of both mother and baby [49].

4 Conclusion

The health of pregnant women should be a public health priority. The health of pregnant women is related to the growth and development of the children born [50]. Pregnant women's health includes physical and mental health. Teenage pregnancy is prone to health problems due to poor social stability, low knowledge of health during pregnancy, and lack of utilization of reproductive health services [51].

The main risk factors for adolescent pregnancy are less sexual and reproductive health education and parental communication. Pregnancy causes feelings of fear, shame, and anxiety that impact the health of the baby who is born. The risk of premature birth, low birth weight, and even stillbirth will increase in adolescent pregnancy [16]. In addition to physical health impacts, pregnant mothers who experience stress are also at risk of causing children to experience mental disorders such as ADHD (Attention Deficit Hyperactivity Disorder)[52].

Efforts to improve the health of pregnant adolescent mothers can be made by identifying the adaptation process of adolescents regarding changes in roles and responsibilities, increasing the availability of youth-friendly services integrated into antenatal care and primary health services, overcoming economic challenges, strengthening the social system of adolescents to undergo pregnancy and parenting. This is done as an effort to achieve adolescent mental health [53].

Among the physical, mental and social health changes caused by teenage pregnancy include psychological conditions during pregnancy. Mental health consists of many types of disorders, which are commonly referred to as health conditions, anxiety disorders, stress, and depression. Teenage pregnancy causes many severe physical and psychological problems. Going into labor at an early age is physically very risky, increasing the risk of maternal and infant mortality.

Problems that can arise include adolescents who are not ready to become mothers, dropping out of school or work, and the birth of an illegitimate child. This may happen again and again. Sexual education for adolescents is needed so that children who do not receive sexual education from their parents can still get it from the school environment. In addition, it is hoped that teenagers will better understand the boundaries in their relationships to avoid negative influences from their surroundings.

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