

RISK OF ASTHMA DUE TO THE EXISTENCE OF PSYCHOLOGICAL DISORDERS DURING PREGNANCY AND RISK OF ASTHMA IN CHILDREN

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REVIEW

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ABSTRACT

Background: Asthma during pregnancy is a trigger factor for complications in pregnancy. Asthma is a chronic disease of the respiratory tract which can cause complications including the risk of asthma in the offspring, abortion, fetal death, and hypoxia. Psychological factors are often found to be the cause of asthma in pregnancy, such as stress which continues with anxiety and depression. In addition, asthma during the prenatal period is also associated with asthma in later babies.

Objective: To understand of risk of asthma during pregnancy and their children after birth.

Methods: This article will discuss a literature review by searching for journal articles on electronic media using the referencing period between January 2000 and January 2021.

Results: Psychological disorders such as stress and anxiety are psychiatric conditions that are felt to be unpleasant and are associated with the causative factors for the onset of asthma or asthma recurrence and the management of asthma itself. The psychological disorder, either in the form of stress or anxiety, hurts the health condition of the mother during her pregnancy. The stress experienced by the mother during pregnancy also hurts her child in the future. This has pathophysiology, namely due to the continued secretion of cortisol as a result of axial activation in the hypothalamus and hypophysis glands which will eventually lead to T Helper 2 (Th2) cells in the fetus of birth.

Conclusion: There is a correlation between the risk of asthma during pregnancy to their children after birth.

Keywords: psychological disorders, stress, depression, pregnancy, asthma.

Article History:

Received: April 06, 2021

Accepted: May 06, 2021

Published: September 30, 2022

Cite this as: Pratiwi, N.A.J.. Risk of asthma due to the existence of psychological disorders during pregnancy and risk of asthma in children. *Journal of Psychiatry Psychology and Behavioral Research*; 2022.3:2. p30-32.

INTRODUCTION

Pregnancy is the moment most anticipated by every couple. This will bring happiness and often lead to psychological problems for mothers such as stress, depression, and anxiety. When pregnant, mothers tend to feel higher psychological disorders. As a result of several causes, including worry about the safety of the baby, disease, fear of childbirth, poor marriage relationships so on. Asthma is a disease that often appears in pregnancy. It is not quite clear what causes asthma in pregnancy but it can be due to genetics, certain diseases, the result of a mother experiencing depression, or other psychological disorders.¹ There is research that states that anxiety occurs at the gestational age of the mother between 18 and 31 weeks. An individual can be considered with respiratory asthma if diagnosed at the age of 7.5 years and for 12 months undergoing medical treatment.^{2,3} Asthma is also associated with a deviated immune system or hypersensitivity

reactions that occur in the human respiratory tract. And asthma is strongly associated with human psychological problems.⁴

Some of the risks of this psychological disorder can increase during pregnancy and the puerperium. The worldwide incidence rate of postpartum depression is estimated at 6.5% -12.9%. Research conducted in Australia states that the rate of depression for pregnant women is 6.2%, and depression postpartum is 3.3%. In several studies, it was described that poor psychological distress during pregnancy had a negative long-term correlation to infant development, and rates of maternal depression were associated with the incidence of diarrhea and decreased growth rate. Recent research has found that depression experienced by mothers during the first 6 to 7 years of a child's life is associated with an increased incidence of asthma during childhood. Poor mental health can be associated with risk factors for asthma events, hence the importance of clinical management to understand the nature

and rates of psychopathological events that occur during pregnancy and postpartum. There is a finding that lack of motivation, feeling less enthusiastic, and impaired cognitive function that leads to depressive symptoms will lead to an even worse incidence of asthma.⁵ This is by several theories that have stated if there is a relationship that pregnant women with anxiety and depression will tend to have uncontrolled asthma/recurrence of asthma.⁶

METHOD

This article discusses psychological disorders such as stress and anxiety that occur in pregnant women that will lead to asthma and recurrence of asthma as well as the risk of asthma in their babies and children in the future based on a literature review which searching by journal articles on electronic media using the referencing period between January 2000 until January 2021.

RESULT AND DISCUSS

Psychological Disorder

The definition of psychological disorder is a disorder of several psychiatric conditions characterized by significant disturbances in the individual, disturbances in emotional regulation, and behaviors that describe dysfunction of psychiatric and biological conditions. Psychological disorders are usually associated with sadness and/or disabilities in social activities, work, friendship, and other important activities.³

Asthma in Pregnancy

Asthma is a chronic disease in the respiratory system that will cause difficulty breathing, discomfort, and wheezing. Asthma can increase the risk of premature birth and LBW. There is research that states that congenital abnormalities occur in children resulting from being born to a mother who suffers from asthma during her pregnancy. But this study still needs to be further proven.⁷ The existence of respiratory problems during pregnancy such as asthma, asthma severity, asthma before conception, and during early pregnancy is a clinical journey of predisposing asthma itself. Mothers with mild asthma tend not to need hospital care, only regular scheduled visits, and administration of steroid therapy when compared to patients with severe and moderate asthma.⁸

The occurrence of asthma is caused by hormonal changes during pregnancy. The presence of the hormones progesterone and estrogen will cause bronchodilation in β -adrenergic. Histamine levels in plasma will decrease during pregnancy due to increased levels of histamine. In addition, the increase in prostaglandins E₂, I₂, and atrial natriuretic factor 1 will increase bronchodilation and bronchial stabilization. An increase in emotional stress can also affect the frequency of asthma. Which increases the level of the hormone progesterone will cause hyperventilation or increased complaints of tightness in sufferers. Pregnant women also often feel anxious about their condition and worry about the effects of the drugs they are taking, so it is not uncommon for them to deliberately stop their asthma medication. With the above factors, the incidence of asthma can be predicted to get worse or not.⁸

Psychological Disorders During Pregnancy

During pregnancy, many women complain of experiencing a state of emotional instability. About 70% of women report that

they experience changes in sleep patterns, loss of appetite, frequent fatigue, and fatigue. The incidence of depression occurred by 13.6% at 32 weeks 'gestation and 17% at 35 - 36 weeks gestation. More women experience depression at between 18 and 32 weeks of gestation, and peak in the 1st and 3rd trimesters.⁹

Pregnant women often experience anxiety problems, such as obsessive-compulsive disorders, panic, and eating disorders. Factors that cause depression during pregnancy are a history of previous depression, a history of postpartum depression, depression caused by family or marriage, lack of social support, or a spouse or family who does not want her pregnancy. Depression during pregnancy if not treated will hurt the mother, loss of adherence to antenatal care including malnutrition, women tend to consume illegal drugs and or drugs, consumption of alcohol, and thoughts of suicide that will endanger themselves and the fetus and will result in the emergence of postpartum depression. Of these several factors, none other than will cause psychological problems in the fetus it is carrying. Stress during pregnancy and other psychological disorders is strongly associated with the risk of asthma or wheezing in children in the future, and severe stress levels will exacerbate the risk of developing asthma.¹⁰

With the intervention in pregnant women, it is hoped that pregnant women with depression will receive intensive care. Like psychotherapy, education, and support for pregnant women by health workers, pharmacological therapy is also used as an alternative in providing therapy.⁹

Psychological Disorders During Pregnancy and the Risk of Asthma from Woman

Asthma is a chronic inflammatory disorder of the respiratory tract, caused by exposure to allergies such as too hot weather, smoke, dust, feathers, pollen, psychological disorders, and usually due to genetics. According to Hostiadi, 2015 asthma is caused due to trigger factors such as allergens, stress, work environment, weather changes, and respiratory infections. The existence of stress and emotional disturbances will trigger asthma in individuals and will worsen asthma attacks that have been around for a long time.¹ Anxiety is a natural thing experienced by every individual, which can be overcome immediately so that humans can adjust themselves better. However, if this is not given the proper care it will have a negative impact. When individuals experience stress, anxiety symptoms will appear so that the histamine will come out and cause narrowing of the airways, this narrowing is characterized by shortness of breath and pain in the throat, which triggers asthma. The psychological role associated with increasing the severity of asthma and the existence of routine screening for psychological disorders is used to provide management and control of asthma.^{11,12}

Psychological Disorders During Pregnancy and the Risk of Asthma in Children

From the research conducted by Chiu et al, it was found that the prenatal and postnatal experiences of pregnant women with stress or psychological disorders were associated with the risk of asthma or wheezing in their children in the future. In essence, stress and depression lead to asthma in babies. Wright et al. Showed that the disturbance of the hormone cortisol in pregnant women and obese women affects the incidence of wheezing in children. This is reinforced by research from Guxens et al, that mothers with psychological disorders during pregnancy will cause wheezing in their children at the age of 1 to 4 years. If pregnant women experience psychological disorders such as stress ext, it will

increase the level of immunoglobulin E (IgE) in the umbilical cord blood. Stress in the mother will result in changes in the balance of fetal cytokines which in turn will increase the immune response to T helper 2 (Th2) cells which cause allergic reactions, namely the character of asthma itself. Interleukin 6 (IL-6) which is associated with preterm events can increase the response of Th2 cells by stimulating the production of interleukin 4 (IL-4) and IL-3. If this is not given good management, there will be changes in the production of glucocorticoids and cytokines that cause premature births, changes in the infant's immune system, and disruption in the development of lung function so that the risk of developing asthma occurs. Stress during 3rd trimester of pregnancy is associated with an increase in the gene coding for the glucocorticoid NR3C11 and an increased response to cortisol in infants aged 3 months. fetuses who experience exposure from maternal blood circulation to increased levels of glucocorticoid hormones, namely endogenous or exogenous hormones, can cause permanent changes in the hypothalamus axis of the adrenal pituitary in the fetus and neonates.¹⁰

Animal and human studies have found that the occurrence of stress in pregnant women can affect the immune system and mechanism function in the fetus which will lead to the mechanism of the occurrence of

asthma. The increase in the hormone cortisol when the mother experiences stress it is associated with the respiratory system in the child. In addition, there are changes in the mother's immune system, namely T Helper 2 (Th2) and T helper 17 (Th17) cells. In addition to the above factors, it is also found that the microbiome factor influences the risk of asthma in children. Psychological disorders, namely stress associated with the microbiome of pregnant women. Where the bacterial community in the intestines and vagina of the mother will change due to the stress that the mother experiences so it is related to asthma that occurs in the fetus she is carrying. The stress experienced by pregnant women will interfere with the placental regulation of cortisol exposure in the fetus. For example, mothers with moderate to severe depression can downregulate the placenta with the gene encoding 11B hydroxysteroid type II which will increase exposure to cortisol in the fetus.¹⁰ There is a change in the profile of blood cytokines in the umbilical cord, namely in the interleukin group: IL-12, IL-1 β , IL-4, IL-5, IL6, IL-8, and TNF- α in children who are exposed to stress during the mother's pregnancy.⁵ If children born to mothers who had previous asthma will be more at risk of developing asthma in their future lives. This is due to heredity.^{12,13}

CONCLUSION

There is a correlation between the risk of asthma during pregnancy to their children after birth.

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