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Dear Riyanti,

ACCEPTANCE OF ARTICLE FOR PUBLICATION IN ANNNALS OF TROPICAL MEDICINE & PUBLIC HEALTH

I am happy to inform you that your article titled: **"Husband'sAssistance on the Perinatal Outcomes of Adolescent Pregnancy in Gunung Mas District, Indonesia "** has been accepted for publication in Annals of Tropical Medicine and Public Health. Provisionally, it is scheduled to be published in the forthcoming January 2021 Special Issue.

Accept my congratulation for this. I look forward to receiving more articles from you.

Best regards,

Assistant Professor Abubakar Yaro PhD
Editor In Chief
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Husband's Assistance on the Perinatal Outcomes of Adolescent Pregnancy in Gunung Mas District, Indonesia

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ABSTRACT

Background: Teenage pregnancy requires the assistance and support of a husband or other family members. Partner's support is also important in relation to pregnancy outcome, where a lack of support from a partner will cause pregnant women to have a negative attitude regarding the health of their pregnancy,which in turnwill have an adverse impact on pregnancy outcomes. **Aim:** This study aims to determine the effect of a husband's assistance on perinatal outcomes. **Setting and design:** This research is an analytical study that was conducted in 2 stages,cross-sectional study design and a quasi experimental design.**Methodsand material** : Analytic research with quasi-experimental design of nonequivalent pretest-posttest design.The samples of this study were 30 pairs of teenage pregnant women and their husbands who were selected usingsimple random sampling.**Statistical analysis used:** Data analysis were univariable, bivariable, and multivariable analyzes.**Results**: This study explains that the factors that influenced pregnancy outcomes were husband's assistance (p value 0.001 and OR = 16.7), pregnancy complications (p value 0.038 and OR = 3.8) and delivery complications (p value 0.000 and OR = 3.538).The other factors that had no influence wereparity (p value 0.796 and OR = 1.36), ANC frequency (p value 0.884 and OR = 1.14), family structure (p value 0.546 and OR =0.58) and delivery methods (p value 0.243 and OR = 0.78).**Conclusion.** There is an effect of husband's assistance on perinatal outcomes,pregnancy complications and childbirth complications. Husband's assistance will have a positive effect on perinatal outcomes.

Keywords: Husband's assistance, perinatal outcomes and adolescent pregnancy

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Introduction

Child marriage and child(adolescence) pregnancy are two things that are related. Habit and prevalence factors are influenced by local norms in certain areas. Child marriage leads to early pregnancy and childbirth, which is associated with high mortality and abnormalities for both mother and baby (UNICEF, 2013). Teenage pregnancy is one of the most important problems in the 21st century. There are more than 16 million children worldwide born to mothers aged 15-19 years. The highest rate for teenage pregnancies is in Africa, where Mozambique has one of the highest rates of child marriage at an early age (15 years) compared to other sub-Saharan areas (1,2). Some of othercountries with the highest child marriage rate include India, Bangladesh, Latin America, and the Caribbean.

The average birth rate per 1000 people between the ages of 15-19 is 115 in Africa, 75 in Latin America and the Caribbean, and 39 in Asia. The World Health Organization describes the adverse effects of teenage pregnancy on the health of mothers and their babies. Although childbirth occurs in all social groups, 12.8 million occur in developing countries. In Indonesia, 36.7% of women aged 15-19 years have given birth and 13.1%are pregnant with their first child.The average age of mothers who get pregnant for the first time is 18 years old, and 46%of women in Indonesia are pregnant at theage ofbelow 20 years. According to data from the World Fertility Police, 2012, Indonesia was one of the regions with the highest percentage of early marriage in the world with a ranking of 37 and it became the second-highest in ASEAN (3–5). Teenage pregnancies also have a negative impact on the health of adolescents and their babies, as well as social and economic impacts. Girls who experience teenage pregnancies are at risk of preterm delivery, LBW, and labor bleeding.In addition, teenage pregnancy is also associated with unwanted pregnancy and unsafe abortion. Babies born to mothers who are teenagers have a higher risk of experiencing premature labor, LBW, IUGR, and fetal distress, as well as simultaneouslabor(6,7).

Some other complications in infants that are often found are high cases of asphyxia, jaundice, hypothermia, tetanus neonatorum, infection/sepsis, birth trauma, LBW, respiratory syndrome, and congenital abnormalities. One study also explains that younger and older adolescents are more prone to experience vaginal delivery, maternal anemia, and premature labor of less than 37 weeks of pregnancy. Teens are less likely to have a cesarean delivery. Failure to progress or CPD occurs less frequently in older adolescents. Adolescents who go into labor spontaneously have a shorter second period. There are increased health risks in adolescent pregnancy for mothers and the babies who willbe born(8–10).

It is rare for husbands to be involved and assist in pregnancy services (in the prenatal period), especially in certain areas in the province of Central Kalimantan, where the burden of antenatal care becomes the full responsibility of pregnant women, due topatriarchal culture which dictates the

differences between men's and women's roles.Reproductive tasks become the domain of women's empowerment and their husbands will act as leaders (the backbone of the family to earn a living). With a phenomenon like this, it is necessary to develop a model of assistanceby a husband or partner and see to what extent this development affects the quality of perinatal outcomes(11).

The husband assistance model that will be developed includes active assistance during pregnancy. The model of health prevention (Public Health Model) from Caplan (2001) described in Neeraja (2009) can be the basis for improving pregnancy outcomes. In this case, we need to integrate the concepts of health promotion and health care. Public health model is applied as prevention of perinatal complications;asthe strength of this model is the involvement of the husband. However,this theory has yet to look at prevention programs in the family by looking at the strengths and potentials of the family, including family culture. The fact is that family culture can play a role in strengthening the function of the husband/family partner to maintain the health of family members, namely pregnant women and their perinatal health.

Subject and method

This research was an analytical study that was conducted in 2 stages,namelythe first stage which useda cross-sectional study design (cross-sectional research approach) to design a development model according to the need assessment by pregnant women in accordance with the characteristics and place and research respondents and stages. The second stage was an analytical study with a quasi-experimental design ofa non-equivalent pretest-posttest design with a control group of the intervention of husband's assistance toward adolescent pregnant women.

The research was conducted in Gunung Mas Regency. It was conducted from April to September 2019. This study used minimum sample size as stated by Roscoe in Sugiono (2014), who suggested that the minimum sample size for a research is 30 people(12).The method of determining the sample from the population above was by employing simple random sampling. The data was collected using a questionnaire that had been compiled and tested for validity and reliability. Data analysis was performed using computerized assistance including univariable, bivariable, and multivariable analyzes.

Result

The research results can be described in the analysis below:

Based on the results of the bivariate analysis, the factors which affected perinatal outcome were husband's assistance (p-value 0.001 and OR = 16.7), pregnancy complications (p-value 0.038 and OR = 3.8), and delivery complications (p-value 0.000 and OR = 3.538). Assistance provided by the husband increased the positive perinatal outcome by 16.7 times compared to pregnant women who were not accompaniedby their husbands. Pregnancy complications had an impact on perinatal outcome, based on the results of the analysis namely OR = 3.8, which meant that complications

during pregnancy would increase the incidence of negative outcomes by 3.8 times compared to pregnant women who did not experience any complications. Labor complications also had an effect on perinatal outcome with an OR = 23.00 which meant that mothers who had labor complications would have an effect on perinatal outcome 23 times compared to pregnant women who did not experience labor complications. Other factors that hadno affect were parity, ANC frequency, family structure, and method of delivery.

Tabel 1. Description of the characteristics of the respondents

Variable	Frequency	%
PerinatalOutcome		
▪ Positive	48	80
▪ Negative	12	20
Husband's Asssistance		
▪ Yes	30	50
▪ No	30	50
Parity		
▪ Primipara	56	93.3
▪ Multipara	4	6.7
ANC Frequency		
▪ < 4 times	30	50.0
▪ ≥ 4 times	30	50.0
Pregnancy Complications		
▪ Yes	30	50.0
▪ No	30	50.0
Family Structure		
▪ Nuclearfamily	7	11.7
▪ ExtendedFamily	53	88.3
Job Status		
▪ Employed	29	48.3
▪ Unemployed	31	51.7
Mother's Education		
▪ Low level	48	80.0
▪ Middle level	12	20.0
Family income		
▪ <Regencyminimum wage	43	71.7
▪ ≥Regencyminimum wage	17	28.3
Delivery Methods		
▪ Normal delivery	55	91.7
▪ Assisted delivery	5	8.3
Delivery complications		
▪ Yes	8	13.3
▪ No	52	86.7

Tabel 4.4. Bivariat Analysis ofPerinatalOutcome

Variable	Pregnancy Outcome		OR	95% CI		P value
	Positive	Negative				
Husband's Assistance ▪ Yes ▪ No	 29(96.7) 19(63.3)	 1 (3.3) 11(36.7)	16.7	2.001	14.08	0.001*
Parity ▪ Primipara ▪ Multipara	45 (80.4) 3 (75)	11 (19.6) 1 (25)	1.364	0.129	14.40	0.796
ANC Frequency ▪ <4 times ▪ ≥4 times	 13 (81.3) 35 (79.5)	 3 (18.7) 9 (20.5)	1.114	0.260	4.767	0.884
Pregnancy complications ▪ No ▪ Yes	 1 (33.3) 47 (82.5)	 2 (66.7) 10 (17.5)	3.800	1.429	10.107	0.038*
Family structure ▪ Nuclearfamily ▪ ExtendedFamily	 5 (71.4) 43 (81.1)	 2 (28.6) 10 (18.9)	0.581	0.098	3.442	0.546
Delivery methods ▪ Normal delivery ▪ Assisteddelivery	 43 (78.2) 5 (100)	 12 (21.8) 0 (0)	0.782	0.68	0.893	0.243
Delivery complications ▪ No ▪ Yes	 2 (25) 46 (88.5)	 6 (75) 6 (11.5)	23.00	1.061	11.798	0.000*

Tabel 3. Multivariate Analysis

Variable	B	SE	Wald	df	Sig	Exp(B	95%CI
Husband's Assistance	20.112	8340.086	0.000	1	0.998	54249	0.00-12.68
Parity	1.793	1.738	1.065	1	0.302	0.000	0.199- 5.67
ANC Frequency	-18.67	8340.086	0.000	1	0.998	1.993	0.000- 4.878
Pregnancy complications	-3.56	1.573	0.051	1	0.821	13180	0.032- 5.87
Family structure	18.697	8340.086	0.000	1	0.998	1.993	0.000-4.878
Delivery methods	-17.49	15766	0.000	1	0.999	0.701	0.000-532
Delivery complications	2.709	1.091	6.164	1	0.013*	15.016	1.769-7.87

Based on the results of the multivariate analysis, it was found that the complications of childbirth influenced perinatal outcome. The analysis produced p-value of 0.013 and OR = 15.016, which meant that pregnant women who experienced labor complications experienced15.016 times as manynegative perinatal outcomes compared to pregnant women who did not experience labor complications.

Discussion

Pregnant women who were accompaniedby their husbands had positive perinatal outcomes compared to pregnant women who did not receive any assistance. The pregnancy outcomes assessed in this study were perinatal conditions (prematurity, LBW, and other perinatal complications).Interventions byhusbands or partners can be developed in the form of collaborations that have been carried out by non-resident African-American fathers (13). Partner's support is an important and potential target in interventions to improve pregnancy outcomes(14,15).The partner or husband assistance system in Indonesia has been carried out through the alert husbandprogram which has been implemented in Indonesia since 2010, which is an important part of the movement for motherly care in utilizing health services during pregnancy, childbirth, and postpartum(16).

There is a significant relationship between the husband's involvement in the use of pregnancy and childbirth services.This statement means that pregnant women use pregnancy health services and delivery assistance by skilled birth attendants due to their husband's involvement and support from the family (17–19). Partner's support is also an important matterrelated to pregnancy outcomes, in the sense thata lack of support from a partner will cause pregnant women to have negative attitudes related to the health of their pregnancy which will haveadverse impact on pregnancy outcomes (20,21).Pregnant women who became therespondents in this study were in the age range of adolescents who had an average risk of 17.8 years and were under the age of 20 years. Different studies have found that girls who experience teenage pregnancies are at risk of preterm delivery, LBW, and labor bleeding. In addition, it is also associated with unwanted pregnancies and unsafe abortions (22). Adolescent pregnancy that occurred in Saudi Arabia was not associated with worsening pregnancy outcome. Teenage pregnancy will have an impact or influence on maternal outcomes, delivery outcomes, and neonatal outcomes. Therefore, an effort is needed to provide the best treatment for adolescent pregnancy including for maternal outcomes: anemia, gestational diabetes, placenta previa, infection, fever and hypertension; delivery methods: delivery method, postpartum hemorrhage, postpartum depression, breastfeeding initiation and outcomes; as well asneonatal outcomes: prematurity, low birth weight babies, respiratory depression syndrome, congenital disorders, and autism (23). Another study conducted by V Karata et al (2018) also found that the age factor of adolescent pregnant women would have an effect on perinatal outcome as evidenced by the increase in the incidence of prematurity, Apgar score value of less than 7 at 5 minutes, and babies who required longer treatment at the NICU(24).

Antenatal care (ANC) is an important determinant to reduce maternal mortality and is one of the basic components that affect the health of mothers and their babies.It will also provide positive experiences for maintaining the health of women, children, and adolescents (25–27). The earlier the ANC is carried out, the morefavorable effects it will have on the mother and the fetus.Moreover, it will reduce the number of home births as well(28,29). Pregnancy care (ANC) is a preventive and curative service measure that is carried out during pregnancy. During pregnancy, health workers will carry out monitoring to assess unfavorable risk factors for the mother and fetus, and pregnancy services will

affect the coverage of deliveries by trained health personnel (30,31). Adequate and specific pregnancy services (ANC) are especially neededfor adolescence pregnant women,asthey are part of a specific population (32–34). Antenatal care is an important intervention to assess risk factors associated with pregnancy, counseling, and future management. Integrated ANC will affect the incidence of prematurity. Preterm labor can be prevented with continuous and accessible pregnancy care (35). A research conducted by Utami and Irwanti (2014) found that there was a significant relationship between ANC visits and the incidence of prematurity. According to Kajdy et al (2019), prenatal care can be conductedto detect the status of young babies during pregnancy in relation to perinatal outcomes and high mortality.Thus, this detection is required for all pregnancies, including for pregnant women who have low risk to make it easier to predict/detect potential perinataland neonatal complications(36).

A research with different results conducted by Legawati, et al. (2017) found that there was a significant relationship between parity and the incidence of prematurity.The more the number of children, the higher the incidence of prematurity(35).This study divided the family structure into 2 categories, namely the nuclear family (husband, family, and children) and extended family (husband, wife, children and other families) who live together with family greetings. Family structureindirectly influences the decision making in afamily. Pregnant women who live with their parents will be influenced by the mother/in-law when they make a decision. In adolescent pregnant women whoare a lot more dependent on the decision makingprocess conductedby other families, it is found that the condition related to the complications that they are experiencingis getting worse. The family structure factor plays a role in causing3 delays, especially the delay in decision making. For pregnant women who live in extended families, we canfind conditions such aspoor empowerment, inadequate socioeconomic and gender inequality as well as low family attention to pregnant women so that the chance of complications increases and will have a less favorable impact on the conditions of the pregnant women(37).

This study found a relation between complications experienced by mothers during pregnancy and an increased incidence of perinatal complications. Pregnancy complications will affect pregnancy outcomes in the form of unfavorable clinical symptoms such as gestational diabetes, placenta previa and premature rupture of membranes(38). According to Zanconato et al (2019), it was found that obstetric complications would affect perinatal conditions such as low birth weight, asphyxia, metabolic dysfunction, care in the intensive unit (NICU) and the incidence of stillbirth. A research byV Karata et al (2018) also found that adolescent pregnancy complications wouldincrease the likelihood of pregnancy complications such as gestational diabetes and pre-eclampsia, which wouldhave an adverse impact on perinatal outcomes (24,39).

A research by Claramonte et al (2019) stated that the method of delivery did not affect pregnancy outcomes. However, it can be an intermediate factor which can connect other factors that affect the method of delivery so that they will have an impact on pregnancy outcomes. Other factors include age, which causes an increase in risk factors for pregnancy which will lead to an increase in the choice of artificial/assisteddelivery methods, for example, Sectio cesarea andprolonged

obstruction of labor that requires action (vacuum/forceps).Such conditions will have an impact on the perinatal outcome (asphyxia, jaundice, etc.). Method of delivery influences pregnancy (perinatal) outcome in relation to the impact of assisted delivery. CS delivery will affect perinatal health in the form of increased incidence of neonatal asphyxia and longer treatment in the NICU(24,38,39).

Delivery complication can be a condition that is exacerbated by complications of pregnancy, thus affecting the perinatal outcome of delivery. Complications of pregnancy (anemia) will cause an increase in the incidence of prolonged labor, obstruction, hypotonic inertia, retention of the placenta, and uterine atony. This condition will also have a direct and indirect impact on perinatal conditions, such as an increase in the incidence of LBW, asphyxia, cyanosis, jaundice, hypoglycemia, and hypothermia,meaning that optimal perinatal care is needed (39). Labor complications are influenced by complications that occur in pregnancy, so it is likely that they have an impact on perinatal conditions. If pre-eclampsia occursduring pregnancy, it is likely that eclampsia will occurat the time of delivery, which will result in negative perinatal outcome (hypoxia, IUFD, stillbirth and other perinatal conditions) (24).

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