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EDUCATION ROLE IN UNINTENDED PREGNANCY IN RURAL INDONESIA

教育在印度尼西亞農村意外懷孕中的作用

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Abstract

This study aimed to analyze the relationship between education level and unintended pregnancies in rural Indonesia. The study examined 19,241 women who had given birth in the last five years in rural Indonesia. Apart from unintended pregnancy as an outcome variable, the study analyzed the education level as an exposure variable. The study also employed eight control variables (age, marital status, employment, wealth, parity, and family planning on radio, TV, and in newspapers/magazines). The study employs binary logistic regression in the final stage. The results show that the average unintended pregnancy in rural Indonesia was 11.3%. No education was 0.542 times less likely than higher education to experience unintended pregnancies (95% CI 0.542-0.543). Primary education is 1.599 times more likely than higher education to experience an unintended pregnancy (95% CI 1.599-1.599). Secondary education was 1.624 times more likely than higher education to experience unintended pregnancies (95% CI 1.623-1.624). Apart from the education level, the eight control variables tested also showed a significant relationship. The eight variables were age group, marital status, employment status, wealth status, and parity; family planning on radio, TV, and in newspapers/magazines. The study concluded that education level related to unintended pregnancy in rural Indonesia. The novelty and scientific contribution of the study was the role of education level in unintended pregnancy in rural areas. Previous studies rarely disclose information about it.

Keywords: Unintended Pregnancy, Education Level, Family Planning, Maternal Health, Media Exposure

摘要 本研究旨在分析印度尼西亞農村地區教育水平與意外懷孕之間的關係。該研究調查了過去五年在印度尼西亞農村分娩的 19,241 名婦女。除了將意外懷孕作為結果變量外，該研究還分析了教育水平作為暴露變量。該研究還使用了八個控制變量（年齡、婚姻狀況、就業、財富、生育率以及廣播、電視和報紙/雜誌上的計劃生育）。該研究在最後階段採用二元邏輯回歸。結果顯示，印度尼西亞農村地區的平均意外懷孕率為 11.3%。沒有受過教育的人意外懷孕的可能性比受過高等教育的人低 0.542 倍 (95% CI 0.542-0.543)。小學教育發生意外懷孕的可能性是高等教育的 1.599 倍 (95% CI 1.599-1.599)。中等教育發生意外懷孕的可能性是高等教育的 1.624 倍 (95% CI 1.623-1.624)。除了教育水平，測試的八個控制變量也顯示出顯著的關係。這八個變量是年齡組、婚姻狀況、就業狀況、財富狀況和均等；廣播、電視和報紙/雜誌上的計劃生育。該研究得出結論，教育水平與印度尼西亞農村地區的意外懷孕有關。該研究的新穎性和科學貢獻在於教育水平在農村地區意外懷孕中的作用。以前的研究很少披露有關它的信息。

关键词: 意外懷孕、教育水平、計劃生育、孕產婦健康、媒體曝光

I. INTRODUCTION

Discussing sexual behavior is taboo in Indonesia. The lack of communication related to sexual behavior has implications for the poor understanding of public health, especially sexual behavior. This situation correlates with unsafe sexual behavior, increasing adolescents' risk of risky pregnancy [1]. Adolescence is a critical phase in the human life cycle, where several transitions in health, social development, and physical and biological changes occur. The number of adolescents in Indonesia is estimated to be around 46 million in 2016, representing approximately 18% of Indonesia's total population. The changes in the transitional phase make adolescents closely related to seeking identity and attention from others, leading to risky sexual behavior, including sexual behavior before marriage [2]. Data from WHO in 2017 show that 21 million young girls aged 15-19 experienced pregnancies in developing countries in 2016. The data include 43% in Asia, 45% in Africa, and 74% in Latin American countries [3]. [4] showed that around 7% of pregnancies occur in women aged 15-19, 5% of whom have given birth, while the other 2% are first pregnancies.

A woman who has an unintended pregnancy does not want to be pregnant or have any children. A woman who has a mistimed pregnancy does not wish to be pregnant at this time but wants the pregnancy later [5]. The impact of unintended pregnancy on adolescents includes unsafe abortion, bleeding, and the risk of giving birth to a baby with a low birth weight. Unintended pregnancy is a highly complex situation. The situation is due to several factors, including a person's perception of pregnancy, attitudes toward pregnancy, intention to engage in premarital sex, subjective norms, education, and health systems in a country [3], [6], [7].

[8] showed that internal and external factors influence unwanted pregnancy. The inner aspect is knowledge and education, whereas the external factor is the influence of media and peers. Moreover, this situation has the most decisive impact on the incidence of unwanted pregnancy in Indonesia. Education correlates with increasing personal knowledge of a subject, including experience related to reproductive health and sexual behavior. Discussing reproductive health is still taboo in Indonesian society, making it awkward to communicate sexuality among adolescents [2]. Unfortunately, everyone in Indonesia has not felt equal access to education in rural areas. A sociocultural pattern still prioritizes men's education, making women a vulnerable group [7], [9]. Besides, young women who experience unintended pregnancies will be deprived of their right to education, and the condition impacts improving the quality of life for young women [10]. The lack of access to information on reproductive health is also an obstacle to increasing adolescent knowledge regarding sexual behavior [11]. Several studies have explained that the lack of reproductive health education has led to misconceptions about preventing unintended adolescent pregnancies [12], [13]. Scientific research also shows that fulfilling women's access to education is a practical step toward avoiding unintended pregnancies. Schools provide access to higher education and become a place to develop youth imagination and creativity in preparing for marriage and life skill education [14–16].

Indonesia has a majority Muslim population, making early marriage an effort to prevent *zina*, a sexual act between unmarried couples. Based on these religious teachings, the program to postpone marriage's age poses a risk of premarital sex, especially for young women [5],

[17]. In the Indonesian context, society still upholds a patriarchal culture that places men as the dominant subject, especially in rural areas [18], [19]. This patriarchal value correlates with various stigmas of discrimination among Indonesian women [20], [21]. Based on this background, what is the role of education level on unintended pregnancy in rural Indonesia? This study aimed to analyze the relationship between education level and unintended pregnancies in rural Indonesia.

II. Materials and Methods

A. Data Source

The cross-sectional study extracted secondary data from 2017 Indonesian Demographic and Health Survey (IDHS) as analysis materials. This study's analysis unit is women of childbearing age (15-49 years old) who had given birth in rural Indonesia in the last five years (2012-2017). The sampling procedure used stratification and multi-stage random sampling. Furthermore, the method yielded a weighted sample size of 19,241 women to represent nationally.

B. Variables

The outcome variable in this study was an unintended pregnancy. Unintended pregnancy is defined and calculated as a pregnancy that is either unintended or mistimed. A woman who has an unintended pregnancy does not want to be pregnant or have any children. A woman who has a mistimed pregnancy does not wish to be pregnant at this time but wants the pregnancy later [5]. The study employed education level as an exposure variable: the respondents' acknowledgment of the latest education level. Education consists of four levels: no education, primary, secondary, and higher education. The research used eight other variables as control variables. The variables were age group, marital status, employment status, wealth status, and parity. In addition, media exposure includes family planning (FP) information on radio, FP on television, and FP in newspapers/magazines in the past few months.

The age group comprises 5-year intervals, namely 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, and 45-49. Marital status consists of two types: Single and married/living with a partner; single is when women are never in a union, divorced, or widowed. Wealth status was the respondents' acknowledgment of the wealth quintile in a household. Meanwhile, the study assessed household wealth based on furniture types and prices. It counts a television, a bicycle, or a car, and household goods, such as drinking water sources, bathroom amenities, and primary building materials for flooring; in assessing this variable, the study calculated with the principal component analysis. National wealth quintiles were arranged based on household scores and then divided into five categories, contributing 20% of the population based on the distribution [22], [23]. Wealth comprises five classes, the poorest, poorer, middle, richer, and richest. Parity is the frequency of women giving birth to live babies. The parity consists of two categories: primiparous (<2) and multiparous (≥2). In the variable "Have you heard about FP on radio, TV, and read about FP in newspapers/magazines in the last few months?" the answers were "No" and "Yes."

C. Data Analysis

At the initial stage, the study conducted a bivariate analysis using chi-square to determine differences in education levels in this study's other variables. The author then assessed each variable to ensure no signs of collinearity between the independent variables. Because of the dependent variable's nature, this study uses binary logistic regression for multivariate analysis. The entire statistical analysis process uses the IBM Statistic SPSS 26 software.

D. Ethics Approval

As a material analysis, the study employed secondary data from the 2017 IDHS. The survey removed all respondents' identities from the IDHS dataset. Respondents signed written consent forms to participate in this study, and children's parents or guardians were approved (less than 16 years). For this study, the author got permission to use data from the website https://dhsprogram.com. The 2017 IDHS uses the Standard DHS survey technique, initially reviewed and approved by the ORC Macro Institutional Review Board (IRB) in 2002 as part of the Demographic and Health Surveys (DHS) Program (DHS-7) authorized by ICF International's Institutional Review Board. DHS surveys that satisfy the requirements are branded as DHS-7 program approved and provide the required paperwork. ICF International's IRB meets the US Department of Health and Human Services "Protection of Human Subjects" requirements (45 CFR 46).

III. Results

The results show that the average unintended pregnancy in rural Indonesia was 11.3%. Table 1 shows the statistical description of unintended

pregnancy and respondent characteristics in rural Indonesia that women with primary education have the highest proportion of unintended pregnancies based on education level. Women aged 45-49 have the highest proportion of unintended pregnancies in rural Indonesia.

Regarding marital status, married women have an unintended pregnancy proportion higher than single women. Employed women have a slightly higher proportion of unintended pregnancies than unemployed women. The richest have the highest proportion of unintended pregnancies in rural Indonesia. Multiparous women have more unintended pregnancies than primiparous women.

Table 1 shows that women who heard about FP on the radio and TV have a higher proportion of unintended pregnancies than those who did not. Women who read about FP in a newspaper/magazine have a lower ratio of unintended pregnancy than those who did not. A collinearity test was the next step. According to the test results, there was no collinearity between the independent variables. The variance inflation factor (VIF) value for all independent variables is less than 10.00, while the tolerance value for all variables is more than 0.10. The evaluation's findings showed that the regression model's multicollinearity was absent.

Table 2 shows the binary logistic regression of unintended pregnancy in rural Indonesia. Based on the education level, no-education women have 0.542 times less likely to have an unintended pregnancy than higher-education women (AOR 0.542; 95% CI 0.542-0.543). Women with primary education are 1.599 times more likely than higher education women to experience unintended pregnancy (AOR 1.599; 95% 1.599-1.599). Meanwhile, women with secondary education were 1.624 times more likely than higher education women to experience unintended pregnancy (AOR 1.624; 95% CI 1.623-1.624). This analysis indicates that education level is an unintended pregnancy incidence determinant in rural Indonesia.

Table 1.
Statistic description of unintended pregnancy and respondent characteristics in a rural area, Indonesia, 2017 (n = 19,241)

Variables	Unintended pregnancy		p-value
	No (n = 17,277)	Yes (n = 1,964)	
Education level			< 0.001
• No education	94.4%	5.6%	
• Primary	87.6%	12.4%	
• Secondary	89.6%	10.4%	
• Higher	93.2%	6.8%	
Age group			< 0.001
• 15-19	93.9%	6.1%	
• 20-24	97.6%	2.4%	
• 25-29	96.7%	3.3%	
• 30-34	93.4%	6.6%	
• 35-39	86.6%	13.4%	
• 40-44	73.0%	27.0%	
• 45-49	59.8%	40.2%	
Marital status			< 0.001
• Single	92.0%	8.0%	
• Married/have a partner	88.6%	11.4%	
Employment status			< 0.001
• Unemployed	89.0%	11.0%	
• Employed	88.3%	11.7%	
Wealth status			< 0.001
• Poorest	89.0%	11.0%	
• Poorer	88.4%	11.6%	
• Middle	89.4%	10.6%	
• Richer	89.3%	10.7%	
• Richest	85.4%	14.6%	
Parity			<0.001
• Primiparous	99.3%	0.7%	
• Multiparous	86.9%	13.1%	
She heard about FP on radio			< 0.001
• No	89.0%	11.0%	
• Yes	85.4%	14.6%	
She heard about FP on television			< 0.001
• No	89.3%	10.7%	

Variables	Unintended pregnancy		p-value
	No (n = 17,277)	Yes (n = 1,964)	
• Yes	88.1%	11.9%	
She read about FP in the newspaper/magazine			< 0.001
• No	88.5%	11.5%	
• Yes	91.1%	8.9%	

Table 2.
Results of binary logistic regression of unintended pregnancy in rural Indonesia, 2017 (n = 19,241)

Predictors	Unintended Pregnancy			
	p-value	AOR	95% CI	
			Lower bound	Upper bound
Education level: No education	< 0.001	0.542	0.542	0.543
Education level: Primary	< 0.001	1.599	1.599	1.599
Education level: Secondary	< 0.001	1.624	1.623	1.624
Education level: Higher	-	-	-	-
Age group: 15-19	-	-	-	-
Age group: 20-24	< 0.001	0.137	0.137	0.137
Age group: 25-29	< 0.001	0.100	0.100	0.100
Age group: 30-34	< 0.001	0.170	0.170	0.170
Age group: 35-39	< 0.001	0.363	0.363	0.364
Age group: 40-44	< 0.001	0.906	0.906	0.907
Age group: 45-49	< 0.001	1.716	1.715	1.717
Marital: Single	-	-	-	-
Marital: Married/Living with a partner	< 0.001	1.429	1.428	1.430
Employment status: Unemployed	-	-	-	-
Employment status: Employed	< 0.001	0.869	0.869	0.869
Wealth status: Poorest	-	-	-	-
Wealth status: Poorer	< 0.001	1.083	1.082	1.083
Wealth status: Middle	< 0.001	0.985	0.985	0.985
Wealth status: Richer	< 0.001	0.998	0.998	0.998
Wealth status: Richest	< 0.001	1.475	1.475	1.475
Parity: Primiparous	-	-	-	-
Parity: Multiparous	< 0.001	13.494	13.487	13.501
Heard FP on the radio: No (ref.)	-	-	-	-
Heard FP on the radio: Yes	< 0.001	1.491	1.490	1.491
Heard FP on Television: No	-	-	-	-
Heard FP on Television: Yes	< 0.001	1.371	1.370	1.371
Heard FP in newspaper/magazine: No	-	-	-	-
Heard FP in newspaper/magazine: Yes	< 0.001	0.693	0.693	0.693

Apart from the education level, the eight independent variables tested also showed significant results. The eight variables are age group, marital status, employment status, wealth status, parity, FP on the radio, FP on TV, and FP in newspapers/magazines.

According to the age group, all age groups are less likely than the 15-19 age group to experience unintended pregnancy in rural Indonesia. Except for the 45-49 age group, which has 1.716 times the likelihood of experiencing unintended pregnancy in rural Indonesia compared with the 15-19 age group (AOR 1.716; 95% CI 1.715-1.717).

Table 2 shows that married women or women living with partners are 1.429 times more likely than single women to experience unintended pregnancy (AOR 1.429; 95% CI 1.428-1.430). This information indicates that married or living with partners are more likely to experience unintended pregnancy in rural Indonesia.

Based on employment status, employed women are 0.869 times less likely than unemployed women to experience unintended pregnancy (AOR 0.869; 95% CI 0.869-0.869). This analysis shows that unemployment is a risk factor for women in rural Indonesia to experience unintended pregnancies.

Based on wealth status, women with more inferior and prosperous wealth status have a higher probability of experiencing unintended pregnancy in rural Indonesia than the most impoverished women. On the other hand, women in the middle and more affluent wealth status were less likely to experience unintended pregnancy than the most deficient women in rural Indonesia. According to parity, women with many children were 13.494 times more likely than primiparous women to experience unintended pregnancies (AOR 13.494; 95% CI 13.487-13.501).

Based on the reception of FP information in

the media, women that heard FP on the radio and TV have a higher probability than women that heard FP on the radio and TV of experiencing unintended pregnancy in rural Indonesia. Otherwise, women who read FP in newspapers/magazines are less likely than women that heard FP in newspapers/magazines to experience unintended pregnancy in rural Indonesia.

IV. DISCUSSION

The analysis found that women in rural areas had a much higher chance of unintended pregnancy. Previous studies revealed that unintended pregnancy among women teenagers (15-19 years old) was urban. These women who experience unintended pregnancies do not have the proper education and come from family breakdowns caused by their parents' divorce [24], [25].

A study in Bali-Indonesia shows that adolescents' knowledge and attitudes in urban areas are higher than in Suburban areas. The respondents' flow of information and activities influenced the phenomenon [26]. A previous study informed that single women in the 15-19 age group have the highest likelihood of unintended pregnancy. Facts in Indonesia, most women aged 15-19 are women who attend high school and are not allowed to get pregnant. These findings align with studies conducted in Ghana, which have revealed a higher prevalence of unintended pregnancies among women in the 15-19-year age group than women in all other age categories. The study categorized single women aged 15-19 as adolescents [27]. Unintended pregnancy among teenagers has significant health consequences for teenage mothers and babies [28].

Moreover, social effects for a woman experiencing an unintended pregnancy include stigma, rejection, or violence by partners, parents, and peers. Girls who become pregnant before 18 are more likely to experience marital or partner violence [29]. A single woman giving birth to a child will be worse off in many dimensions: school performance, social and emotional development, health, and success in work. Children are also at a greater risk of sexual abuse and cannot complete a college education [24], [30].

The study results found that education is a protective factor for women from unintended pregnancy. The higher a woman's education, the more she can understand the risks she must face in making decisions or actions. Previous studies have found a link between education and women's knowledge about pregnancy's risk factors and dangers. The higher the woman's education level, the better her understanding of pregnancy's danger signs is also informed [31]. Meanwhile, several other studies on reproductive health have found that women with low education are barriers to achieving better quality reproductive health [32]. Less-educated women do not want more children than highly-educated women. Education can raise awareness about unintended pregnancy consequences and possible contraceptive methods that educated women can use [27]. Better education is closely related to better health behavior output [33], [34].

The analysis showed that unemployed women have a lower chance of experiencing unintended pregnancies. Working women can change household decision-making dynamics regarding cooking food for the family, children's education, and family size [35]. A study in America states that economic conditions shape Americans' decisions about having children. Other studies suggest that factors that cause unintended pregnancies include stigma against pregnancy, culture, demands for women's time competition (work or school), and efforts to improve the family size. Other causes are disagreements between partners regarding family shape and size, lack of support from wrongdoing one partner, lack of access to FP services, and problems with contraception. On the other hand, mostly talking about methods and availability, many avoid contraception because of the stigma of having specific side effects, poor understanding of the risks of pregnancy, and unexpected circumstances such as illness, job loss, and divorce [15], [36], [37].

The study found poverty to be a risk factor for women to experience an unintended pregnancy. Pregnancy is a potential new economic burden for single women that women must face. In Indonesia, poverty relates to women accessing reproductive services, including contraception services. Poor women bear a higher share of unintended pregnancies. The poverty experienced by single women indicates their inability to buy modern contraceptives while at the same time not following or failing natural contraceptive methods [37], [38].

Multiparous single women have a much higher chance of experiencing an unintended pregnancy. This finding aligns with previous research that single women with three or more children experience an unintended pregnancy. A study in Ethiopia states that women who have given birth several times are satisfied with their number [39]. Multiparous single women

increasingly recognize the benefits of having a small family size. In Indonesia, some single women are working women; this may be because working women are very aware of pregnancy due to the demands of their work, possibly limited periods of maternity leave, and other disincentives [40].

This paper is novel because it seeks to contribute to the current debate in the literature on unintended pregnancy. The scientific novelty of the article also consists of a conducted large-scale study describing the author's theoretical and practical prerequisites in the reproductive health field.

V. Conclusion

The study analyzed the relationship between education level and unintended pregnancies in rural Indonesia. Based on the aim and results, the study concludes that education level relates to unintended pregnancy in rural Indonesia. Level of education is a determining factor in the prevalence of unintended pregnancy in rural Indonesia.

Besides education level, the study proves that eight control variables relate to unintended pregnancy in rural Indonesia: age group, marital status, employment status, wealth status, parity, FP on radio, FP on TV, and FP in newspapers/magazines.

A suggestion for practical use is that, according to this study's results, policymakers must make policies with specific targets to accelerate the decrease in unintended pregnancy in rural Indonesia.

VI. Strengths and Limitations of the Study

The study's strength is the analysis of big data represented nationally. Meanwhile, the study uses secondary data from the 2017 IDHS, and the information generated is more superficial. The studies cannot capture the reasons behind every phenomenon related to values and norms in Indonesia, as several previous studies [41–43] informed. Further studies are needed for this phenomenon in greater depth using a qualitative approach.

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