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Determinants of Early Fertility in Indonesia: 2012 Data Analysis of Indonesian Demographic and Health Survey

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Abstract— **Background:** Maternal mortality rate was still high around 359 deaths per 100,000 live births in 2012 in Indonesia. The cause of death was associated with early fertility. **Aim**: This studyaimed to identify the determinants of early fertility in Indonesia. **Methods:** The data used was derived from the 2012 Indonesia Demographic and Health Survey (IDHS). The analysis of this study used bivariate analysis with Chi-square test and multivariate analysis with logistic regressions. **Results:** The study showed that 36.7% of respondents who lived in rural gave birth at less than 20 years of age compared to those who lived in urban (25%). About 47.7% women were no education and primary education. About 39.6% women with lower wealth index were more likely to be young mother. Logistic regression analysis found that the early fertility associated with residence (OR=0.81; 95% CI=0.74-0.88), secondary education (OR=0.04; 95% CI=0.03-0.06), higher education (OR=0.10; 95% CI=0.08-0.14), middle wealth index (OR=0.81; 95% CI=0.73-0.90), upper wealth index (OR=0.86; 95% CI=0.77-0.97), and contraceptive use (OR=1.21; 95% CI=1.11-1.33). **Recommendation:** The early fertility case could be reduced by providing family planning program in Indonesia. Married women need more information on risks of early childbirth and contraceptive methods. Increasing women's education was an important effort for a better life.

Key words: Fertility, Early, Adolescent, Indonesia, logistic regression

Introduction

The third objective of Sustainable Development Goal (SDG) was to guarantee the health and well-being of age levels populations through improvements in reproductive, maternal and child health. The SDG 3.1 target aims to reduce the maternal mortality ratio to less than 70 per 100.00 live births and the SDG target 3.2 ends deaths of newborn and under-five, which can be prevented by reducing the neonatal mortality rate by at least 12 per 1,000 live births and toddler mortality rate by 25 per 1,000 live births [1,2].

Maternal mortality rate was still high around 359 deaths per 100,000 live births in 2012 in Indonesia[3]. Neonatal Mortality was 15 deaths per 1,000 live births[4]. One of the causes of these high deaths was the age of mothers giving birth that too young (less than 20 years). Children born from mothers who were too young, that risk of death and illness related to childbirth compared to older women[3,4]. The condition and physical growth of the mothers were not yet mature and perfect cause complications during pregnancy, childbirth, and post-partum[5, 6, 7, 8, 9]. Children born to mothers under the age of 18 are twice as likely to die than those born to mothers who are not at high risk[3,4].

Several studies have found that giving birth at too young age depend on socio-demographic factors. In Ethiopia, women who live in urban areas and were highly educated tend to be lower experiencing the too-young fertility[10]. Age, desire for having more than two children, residence, knowledge of contraceptive methods, women's autonomy in decision making, and family influence are determinants of the early fertility in Bangladesh[11,12]. A study in Brazil explains that the early fertility was influenced by age, wealth quintile, education, occupational status, knowledge of fertility, ethnicity, age at first sexual intercourse, marital status, and contraceptive use[13]. The percentage of women who gave birth at too young age (less than 20 years) fell to 27% in 2012 from 39.5% in 2007[3,14]. Based on this, the studyaimed to identify the determinants of early fertility in Indonesia.

Methods

This study used data from the 2012 Indonesia Demographic and Health Survey. Samples were women 15 till 49 years old women of childbearing age who were married or had ever married or lived together for five years prior to the survey. The study limited births to first order to 12,572 births for the five years before the survey[3].

The dependent variable was the age of first birth from the statement of women who were sampled in the study. The size of the age at first birth was collected from the question "what age did the mother first give birth?" This was a dichotomous variable (less than 20 years = 1, above or equal to 20 years = 2).
The independent variables were residence grouped into two categories: (1) rural and (2) urban. The education level of the respondents was categorized into three: (1) no primary school (2) secondary school (3) higher. The welfare index variable was divided into three categories: (1) low (2) medium (3) high. The contraceptive use variable was grouped into two categories: (1) no use (2) use. The occupational status of the respondents was divided into two groups: (1) unemployed (2) employed. The latest marital status was categorized into two: (1) single (2) married / ever. The knowledge about family planning was divided into two categories: (1) not know (2) know.

SPSS version 21 was used to process data. Three stages of statistical analysis were applied in this study. First, Univariate analysis describe frequency and percentage of variables. In the second stage, we used bivariate analysis (cross tabulation and chi-square statistics) to test the significance of the relationship between the independent and dependent variables at the 95% significance level. The final stage was multivariate analysis with binary logistic regression due to the nature of the dependent variable dichotomy.

Results

The results of bivariate analysis showed that women who lived in rural area significantly gave birth at less than 20 years of age compared to those who lived in urban area (36.7% compared to 25%). Only 3.1% of highly educated women gave birth at less than 20 years of age and nearly half of those with no education and primary level of education had children at less than 20 years of age (47.7% were not educated – primary school; 26.1% were secondary school graduates). Childbirth at a young age tends to occur among those from lower socioeconomic status (39.6%) compared to the middle (32.3%) and the upper (22%). Women with no knowledge of family planning (52.8%) and did not use contraceptives tend to have children earlier (27.1). Around 32.3% of those unemployed (32.3%) were more exposed to having children faster than the employed women (29.4%).

Table 1: Percentage Distribution of Early Fertility by background Characteristics, Indonesia Demographic and Health Survey, 2012

Characteristics	Number of births	Early Fertility (%)	
		<20	≥20
Place of residence (p=.000)			
Rural	6,386	36.7	63.3
Urban	6,365	25.0	75.0
Education level (p=.000)			
No education-primary	4,334	47.7	52.3
Secondary	6,992	26.1	73.9
Higher	1,427	3.1	96.9
Wealth index (p=.000)			
Lower	4,935	39.6	60.4
Middle	2,595	32.3	67.7
Upper	5,222	22.0	78.0

FP knowledge (p=.000)			
No	72	52.8	47.2
Yes	12,680	30.8	69.2
Contraceptive use (p=.000)			
No	3,238	27.1	72.9
Yes	9,514	32.2	67.8
Current marital status (p=.135)			
No	5	0	100
Yes	12,746	30.9	69.1
Current work (p=.000)			
No	6,610	32.3	67.7
Yes	6,142	29.4	70.6
Total	12.752	30.9	60.1

Note: Rows sum to 100%. P values are based on chi-squared test.

The results of multivariate analysis were presented in Table 2, showing that residence, education level, socioeconomic status, and contraceptive use were very significant variables affecting the behavior of giving birth at a very young age or less than 20 years. Among the independent variables, the contraceptive use variable was the most significantly influential to the age of first birth compared to other variables (OR = 1.21; 95% CI = 1.11-1.33).

Women from the upper welfare level (OR = 0.86; 95% CI = 0.73-0.97) and the middle (OR = 0.81; 95% CI = 0.73-0.90) tend not to experience the early fertility than women from the lower level. Women with higher education (OR = 0.10; 95% CI = 0.08-0.14) and secondary school (OR = 0.04; 95% CI = 0.03-0.06) had higher odds ratio than other categories. Women who lived in urban area were 0.8 times likely not to experience the early fertility.

Table 2. Logistic Regression Predicting Early Fertility in Indonesia, 2012

Variables	**OR**	**[95% CI]**
Place of residence (r: Rural)		
Urban	0.81***	[0.74- 0.88]
Education level (r: No education and primary)		
Secondary	0.04***	[0.03, 0.06]
Higher	0.10***	[0.08-0.14]
Wealth quintile index (r: Lower)		
Middle	0.81***	[0.73-0.90]
Higher	0.86***	[0.77-0.97]
Use of contraceptive (r: No)		
Yes	1.21***	[1.11- 1.33]

*p≤.10 **p≤.05 ***p≤.001
†OR = Odds Ratio.
††CI = Confidence Interval.
[1]*r* = Refers to reference category

Discussion

This study wanted to find out the patterns and determinants of early fertility among women in Indonesia. This was because those living in urban area are more exposed to information and knowledge about

reproductive health. Access to health care services was available and easy to obtain. The numbers of health facilities and qualified staff were also influential factors[15].

Education was the most influential factor to fertility. The higher education, the higher age of first birth[4]. Educated women were more open and they receive new information related to reproductive health. The higher education level, women tend to postpone the age of marriage, set birth spacing, limit the number of children, and use contraceptives[10, 11, 13,16, 17].

Knowledge and skills acquired through education can affect a person's cognitive functioning, make him/her easier to receive health education messages, or more enable them to communicate with and access appropriate health care services[18]. Those who gave birth at too young age tend to be less educated, had a lower social status, had a lower knowledge of reproductive health including contraception and lower reproductive decision-making ability[19].

Empirical studies explain that wealth quintile was related to the too-young age of childbirth. Women from lower socioeconomic status will have difficulty in accessing health care services in health facilities, lack of access to information and health care services. As a result, they are more exposed to childbirth at a young age[15,20]. Living in a poor family and environment does not provide many opportunities for women, so that they are exposed to having sexual intercourse early. Poverty also encourages adolescents to conduct sexual transactions as a way of survival[21].

Contraceptive use was the most important factor to reduce the percentage of childbirth at a young age. Contraceptive use can prevent pregnancy at a very young age or can set the birth spacing. The tendency to give birth at a too-young age increases the risk of maternal and child mortality[2, 3, 5]. The relationship between maternal age at birth and child mortality illustrates the U curve[3]. This is related to biological factors that cause complications during pregnancy and labor[3]. Contraception becomes a factor for preventing birth at too young age[2, 5].

Conclusion

Three out of ten women in Indonesia experience early fertility (less than 20 years). An important finding is that the use of contraceptive methods was significantly influential in reducing early fertility. Contraceptive use can delay pregnancy, and arrange subsequent births. Providing opportunities to get education and empowering women are expected to provide opportunities for women to develop better.

This study has a number of limitations. First, the use of Indonesia Demographic and Health Survey data which is cross-sectional data was not able to read the social phenomena in the society that underlie the occurrence of the too-young fertility. Second, the sample used for births that took place five years before the survey does not measure the overall birth due to the fear of bias from respondents' answers.

Policy makers should be able to widely provide access and information on reproductive health and family planning. Increased use of contraceptives among young women can reduce and prevent the early fertility in Indonesia.

Declarations

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Conflict of Interest: None declared.

Ethical Clearance: Ethical clearance was obtained from Faculty of Public Health University Indonesia and for the use of secondary data used (No.letter of ethical clearance: 674/UN2.F10/PPM.00.02/2018).

Author Contribution

All authors have contributed equally.

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