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Risk factors and trends analysis of unwanted pregnancy in Indonesia

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ABSTRACT

Unwanted pregnancy has serious and adverse health, social, and economic impacts, as well as the risk of maternal and child mortality. In Indonesia, unwanted pregnancy is one of the most troubling public health problems and a major reproductive health problem. The sample consisted of 2002 (12,612), 2007 (14,471), 2012 (14,212), and 2017 (8,838), so the total sample was 50,233 couples of childbearing age by random sample method. This study was analyzed using logistic regression analysis. Unintended pregnancies were associated with maternal age, age at first marriage, number of children, maternal education, contraceptive use, contraceptive failure, residence, and the interval between pregnancies. Unwanted pregnancies at the mother's vulnerable age have increased over the past 10 years and decreased after entering the last 5 years, tend to be stable and constant at the age of first marriage. About one and a half women in Indonesia encounter unwanted pregnancies. Unwanted pregnancies fluctuate over 20 years. Women, especially the most vulnerable should be empowered to avoid unwanted pregnancies for their awareness and independence. Programs to expand access and quality of information and counseling centers, access and quality of women's health services, and specific reproductive health services as needed.

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1. INTRODUCTION

Indonesia's population growth rate reached 1.22% in 2020. That is higher than the previous decade's growth rate of 1.45 percent. Referring to the growth above, it is estimated that there are 4-5 million babies born every year in Indonesia, or equivalent to the population of Singapore. In 2022, the population growth rate is targeted at 1.17% [1]. One factor contributing to the population surge is the number of unwanted pregnancies. An unwanted pregnancy is a pregnancy that is not timely, unplanned, or desired at conception [2].

In the world, 45% of pregnancies from 2008 to 2011 and 38% of births from 2017 to 2019 [3]. According to the conducted studies, 120 million women in developing countries have unwanted pregnancies because of not using family planning methods, this means that one out of five pregnancies is unwanted [4]. Unintended pregnancy predisposes women to several risk factors such as unsafe abortion, maternal death, malnutrition, mental illness, and vertical transmission of human immunodeficiency virus (HIV) to children [5]. There is a growing body of evidence regarding the adverse health, economic, societal, and developmental consequences of unintended pregnancies [6]. Unintended pregnancy was positively associated with a low level of education, poverty, multiparity, rural residence, extreme ages, being unmarried, lack of decision-making power, inaccessibility of health facilities, poor knowledge, and non-use of contraceptives, and reduced abortion and stress [7].

No study published in Indonesia has reported comprehensive data over 60 years. Therefore, there is a need to assess unintended pregnancy trends to inform health practitioners and policymakers about the possibility of developing policy interventions and improving national health strategies regarding unintended pregnancies. Therefore, this study describes and analyzes the pattern and trend of changes in unwanted pregnancy in Indonesia over the past 60 years.

2. METHOD

The Indonesian Demographic and Health Survey is a national survey of demography and health in Indonesia as a result of collaboration between the Central Bureau of Statistics Indonesia, the Indonesian Population and Family Information Network, and the Ministry of Health. The survey provides data on fertility, family planning, maternal and child health, maternal mortality, and attention to the problems of acquired immune and deficiency syndrome and sexually transmitted. The sample determination refers to data from the Indonesian demographic health survey in 2002, 2007, 2012, and 2017. The data has been weighed to produce more tangible data. The sample consisted of 2002 (12,612), 2007 (14,471), 2012 (14,212), and 2017 (8,838) so the total sample was 50,233 couples of childbearing age with the random sample method. Data analysis using logistic regression. Compare the odds ratio of each survey year to see patterns and trends of unwanted pregnancies.

3. RESULTS AND DISCUSSION

Participants ranged in age from 15 to 49 and had an average age of 30. Most mothers are over 20 years old with a high school education. The age of marriage of mothers is mostly over the age of 20 years and more than half of mothers use contraception. The decision or freedom in choosing health services is determined together with the couple. Most mothers have a marriage agreement that is decided together with the couple. From the husband factor, most husbands' education is high school education, and the majority have an occupation. Determine the number of children born to most mothers to determine the number of equal couples.

Maternal predisposing factors indicate that education, contraceptive use, self-freedom, similarity of intentions, and number of children influence unwanted pregnancies. The proportion of education mothers get the desired pregnancy tends to be the same. Mothers who use contraception are more likely to have a desired pregnancy. The mother's self-freedom will have a greater risk than if it is decided together with the couple. Most mothers and couples have the same intention in planning the number of children. Mothers who have two children are 4.7 times more likely to give birth than unwanted mothers. Access to the information obtained by most mothers is easy. Mothers who had easy access to information had a 1.6 times greater risk of developing a desired pregnancy than those with difficulty getting information. The activation factor in the form of access to information has a significant effect, mothers who easily access information have a 1.6 times greater risk of getting the desired pregnancy compared to mothers with unwanted pregnancies.

3.1. Characteristics of respondents

Table 1 shows that over ten years age of mothers in the vulnerable category has increased by 3.4%. The marriage age of <20 years old mothers decreased by 2.7%. Cash income increased by 57%. The number of children they have has decreased. Mothers who have two children tend to decrease by 13%, in contrast to mothers who have children >4 children, with an increase of 17%. The education of mothers who are out of school and only passed their elementary school decreased by 7% and 20%, while for secondary and higher education it increased by 20% and 6%, respectively. Working mothers increased by 11%. Mothers who used contraception increased by 4.1%. Contraceptive failure tends to increase by 1.5%. The age of the mother by composition tends to increase at the age of 19 years by 0.7%.

3.2. Unwanted pregnancy factors

Table 2 shows that statistical results from the four Demographic and Health Survey (DHS) data showed that there was a change in the OR of 4 variables over fifteen years, including maternal age, age at first marriage, contraceptive use, and contraceptive failure. There is an influence between maternal age and unwanted pregnancy in couples of childbearing ages in Indonesia ($p<0.005$). Unwanted pregnancies at a vulnerable age have increased over the past ten years and decreased after entering the last five years. There was an influence between the age of first marriage and unwanted pregnancy ($p<0.005$). Unwanted pregnancies at the age of first marriage tend to be stable and constant. There was an effect between contraceptive use and unwanted pregnancy ($p<0.005$). Unwanted pregnancies in women who use contraception tend to fluctuate (up and down). There is an influence between contraceptive failure and unwanted pregnancy ($p<0.005$). Unwanted pregnancies in contraceptive failure tend to increase.

Table 1. Intrapersonal risk factors for unwanted pregnancy in Indonesia

Variable			DHS 2002 n (%)	DHS 2007 n (%)	DHS 2012 n (%)	DHS 2017 n (%)
Intrapersonal factors	Mother's age	Ideal (20-35 years)	9,866 (78.2)	11,267 (77.0)	10,626 (74.8)	5,459 (61.8)
		Vulnerable (<20 & >35)	2,745 (21.8)	3,358 (23.0)	3,586 (25.2)	3,379 (38.2)
	First age of marriage	<20 years	7,307 (57.9)	7,493 (51.2)	7,786 (54.8)	7,707 (12.8)
		≥20 years	5,305 (42.1)	7,132 (48.8)	6,426 (45.2)	1,131 (87.2)
	Type of income	Unpaid	9,283 (73.6)	2,593 (33.8)	1,894 (13.3)	1,246 (14.1)
		Money	2,901 (23.0)	4,448 (58.0)	12,076 (85.0)	7,338 (83.0)
		Money and Goods	223 (1.8)	403 (5.3)	158 (1.1)	207 (2.3)
		Thing	205 (1.6)	226 (2.9)	84(0.6)	47 (0.5)
	Number of children	1	4,233 (33.6)	4,553 (31.1)	4,591 (32.3)	635 (7.2)
		2	3,657 (29.0)	4,165 (28.5)	2,309 (16.2)	2,150 (24.3)
		3	2,187 (17.0)	2,635 (18.0)	1,966 (13.8)	3,105 (35.1)
		≥4	2,535 (20.1)	3,272 (22.4)	5,346 (27.6)	1,803 (20.4)
	Mother's education	Not school	577 (4.6)	585 (4.0)	178 (1.3)	145 (1.6)
		Elementary school	6,113 (48.5)	5,328 (36.4)	4,548 (32.0)	2,964 (33.5)
		Junior high school	5,135 (40.7)	7,506 (51.3)	7,773 (54.7)	4,612 (52.2)
		Higher education	787 (6.2)	1,205 (8.2)	1,712 (12.0)	1,117 (12.6)
	Mother's job	Already	5,334 (42.3)	8,046 (53.8)	7,545 (53.1)	4,997 (56.5)
		Do not	7,278 (57.7)	7,198 (47.2)	6,667 (46.9)	3,841 (43.5)
	Use of contraception	Already	8,800 (69.8)	9,365 (64.0)	10,576 (74.4)	5,913 (66.9)
		Do not	3,812 (30.2)	5,260 (36.0)	3,636 (25.6)	2,924 (33.1)
	Contraceptive failure	Succeed	12,170 (96.5)	13,896 (95.0)	1,3651 (96.1)	2,924 (33.1)
		Fail	442 (3.5)	729 (5.0)	560 (3.9)	5,913 (66.9)
Community factors	Where to stay	Urban	5,644 (44.8)	5,920 (40.5)	6,770 (47.6)	4,282 (48.4)
		Rural	6,968 (55.2)	8,706 (59.5)	7,442 (52.4)	4,556 (51.6)
	Access information	Difficult	1,028 (8.2)	699 (4.8)	535 (3.8)	73 (0.8)
		Easy	11,583 (91.8)	13,926 (95.2)	13,677 (96.2)	8,765 (99.2)
Behavioral factors	First age of sex	Never	13 (0.1)	209 (1.4)	15 (0.1)	2 (0)
		<20 years	1,977 (15.7)	2,665 (18.2)	1,342 (9.4)	1,073 (12.1)
		20-49 years	1,462 (11.6)	2,858 (19.5)	1,916 (13.5)	1,173 (13.3)
		When married/living together	9,160 (72.6)	8,893 (60.8)	10,940 (77.0)	6,590 (74.6)
	Pregnancy distance	1	12,063 (95.7)	13,773 (94.2)	8,675 (61.0)	2,785 (31.5)
		2	35 (0.3)	92 (0.6)	836 (5.9)	3105 (35.1)
		3	83 (0.7)	121 (0.8)	1050 (7.4)	1,803 (20.4)
		4	430 (3.4)	639 (4.4)	3,652 (25.7)	1,145 (13.0)
	Unsafe sex behavior	Safe	11,264 (89.3)	12,365 (95.4)	13,749 (96.7)	7,775 (88.0)
		Unsafe	1,348 (10.7)	2,260 (3.6)	463 (3.3)	1,063 (12.0)
	Unwanted pregnancy	Pregnancy is desirable	10,487 (83.2)	11,509 (79.8)	12,045 (84.8)	7,402 (83.8)
		Unwanted pregnancy	2,125 (16.8)	3,057 (20.2)	2,167 (15.2)	1,435 (16.2)
		Unplanned	1,186 (9.4)	2,030 (12.3)	1,006 (7.1)	
		Not wanted anymore	939 (7.4)	1086 (7.9)	1,161 (8.1)	

Table 2. Correlation of intrapersonal factors with unwanted pregnancy

Intrapersonal factors	Unwanted pregnancy							
	DHS 2002		DHS 2007		DHS 2012		DHS 2017	
	n (%)	p-value OR(CI95%)	n (%)	p-value OR(CI95%)	n (%)	p-value OR(CI95%)	n (%)	p-value OR(CI95%)
Mother's age								
Ideal (20-35 years)	799 (29.1)	0.001	2,172 (19.3)	0.0001	1,197 (11.3)	0.0001	892 (19.4)	0.001
Vulnerable (<20 & >35)	1,326 (13.4)	0.38 (0.34-0.42)	944 (28.1)	1.64 (1.49-1.79)	970 (27.0)	2.9 (2.66-3.12)	543 (12.8)	1.63 (1.45-1.83)
First age of marriage								
≥20 years	1,357 (18.6)	0.0001	1,525 (20.4)	0.004	1,144 (17.8)	0.0001	1,243 (16.1)	0.0001
<20 years	767 (14.5)	0.74 (0.67-0.82)	1,591 (22.3)	1.12 (1.04-1.22)	1024 (13.2)	0.7 (0.64-0.77)	192 (17.0)	0.7 (0.54-0.79)
Type of income								
Unpaid	1,506 (16.2)	0.016	465 (22.3)	0.577	263 (13.9)	0.044	214 (17.2)	0.94
Money	531 (18.3)		871 (22.2)		875 (16.2)		1,177 (16.0)	
Money and goods	46 (20.6)		98 (25.3)		22 (13.9)		41 (19.9)	
Thing	40 (19.6)		26 (22.2)		15 (18.1)		3 (6.4)	
Number of children								
1	185 (4.4)	0.0001	352 (7.7)	0.0001	186 (3.5)	0.0001	84 (13.2)	0.0001
2	501 (13.7)		844 (20.3)		604 (13.2)		294 (13.7)	
3	469 (21.4)		718 (27.2)		620 (26.9)		468 (15.1)	
4+	969 (38.2)		1,201 (36.7)		757 (38.5)		347 (19.2)	
Mother's education								
Drop out	137 (23.8)	0.0001	203 (34.7)	0.0001	28 (15.7)	0.0001	26 (15.7)	0.0001
Elementary school	1,100 (18.0)		1,131 (21.2)		785 (17.3)		457 (16.5)	
Intermediate	765 (14.9)		1,554 (20.7)		1,137 (14.6)		758 (16.2)	
Higher education	123 (15.6)		227 (18.8)		217 (12.7)		194 (17.8)	
Mother's work								
No working	1,217 (16.7)	0.692	1,695 (20.0)	0.0001	991 (14.9)	0.240	591 (15.4)	0.063
Work	907 (17.0)	1.0 (0.93-1.12)	1,396 (22.8)	1.2 (1.09-1.28)	1,176 (15.6)	1.1 (0.96-1.16)	843 (16.9)	1.15 (0.99-1.25)
Use of contraception								
Do not	211 (13.6)	0.0001	2,053 (21.9)	0.016	477 (13.1)	0.0001	524 (17.9)	0.003
Already	1,914 (17.3)	1.3 (1.14-1.56)	1,063 (20.2)	0.9 (0.83-0.98)	1,690 (16.0)	1.3 (1.13-1.40)	911 (15.4)	0.8 (0.74-0.94)
Contraceptive failure								
Do not	2,057 (16.9)	0.0001	3,014 (21.7)	0.0001	2,125 (15.6)	0.0001	524 (17.9)	0.003

Already	68 (31.9)	0.6 (0.55-0.74)	102 (14.0)	0.6 (0.47-0.73)	42 (7.5)	0.4 (0.32-0.60)	911 (15.4)	0.8 (0.74-0.94)

Table 2 shows that the fourth statistical result of DHS data shows that there has been a change in variable AOR over fifteen years, namely residence. There is an influence between residence and unwanted pregnancy among couples of childbearing ages in Indonesia ($p<0.005$). Unwanted pregnancy in the mother's dwelling tends to be stable and constant.

3.3. Trends and risk factors

3.3.1. Trend of unwanted pregnancy

Figure 1 shows the incidence of unwanted pregnancies tends to stabilize around 15-20% within 20 years. It can be seen in the picture that there is a fluctuating pattern of unwanted pregnancies that occurs for 20 years. Unwanted pregnancies increased significantly in 2007 but declined after entering the last ten years.

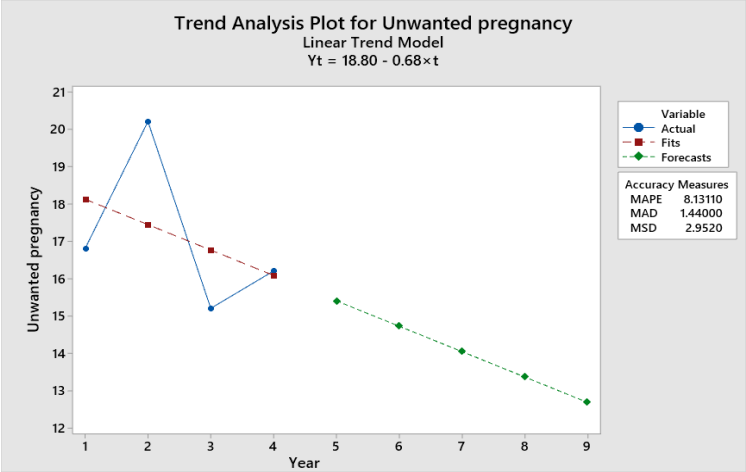

Figure 1. Trends in factors that influence unwanted pregnancies

3.3.2. Trend and risk factors of unwanted pregnancy

Risk factors and trends, it is explained using the logistic regression test shown in Figure 2, namely that 5 factors simultaneously influence the four survey periods, namely: Figures 2 (a) place of residence, (b) mother's age, (c) age at first marriage, (d) Use of contraceptives, (e) Contraceptive failure. Mother age is the most dominant factor, increasing over fifteen years, and declining in 2017.

Our findings show that unwanted pregnancies experienced by couples of childbearing ages in Indonesia are around 15-20% over 20 years. This is lower than unwanted pregnancies in Ethiopia [8]. A high level of education is one of the most common reasons for unwanted pregnancies in Indonesia. The results of the analysis showed that most mothers with secondary education and the risk of getting unwanted pregnancies tended to be similar. This is in line with women's education regarding unwanted pregnancies [9]. Women who have secondary education are more likely to be at risk of unwanted pregnancy, compared to women who do not attend school [10]. Women who have higher education are at risk for untimely or unwanted pregnancies [7]. Women who are more educated are more likely to be honest in reporting their recent pregnancy as untimely [10]

While the mother's marriageable age is older than 20 years, the mother's age is not related to the desired incidence of pregnancy. The results differed in that younger women were more likely to report untimely pregnancies and these findings were in line with previous research findings [9], [11], [12]. This can be explained by the argument that for young women, the purpose of sexual intercourse may be other than childbirth, and pregnancy may represent an undesirable consequence of sexual intercourse [13], [14]. Younger mothers are a risk factor for unwanted pregnancies. Unwanted pregnancies are usually observed in socially disadvantaged women [15], [16].

The majority of mothers use contraception, and women who use contraception and those who do not use contraception have the same risk. The influence of knowledge about contraception plays an important role in the use of contraception, and it is one of the important factors associated with unwanted pregnancy [13]. There is an inverse relationship between contraceptive use and unwanted pregnancy [17], [18]. However, there is a positive association between contraceptive use and unwanted pregnancy [17], [19], [20].

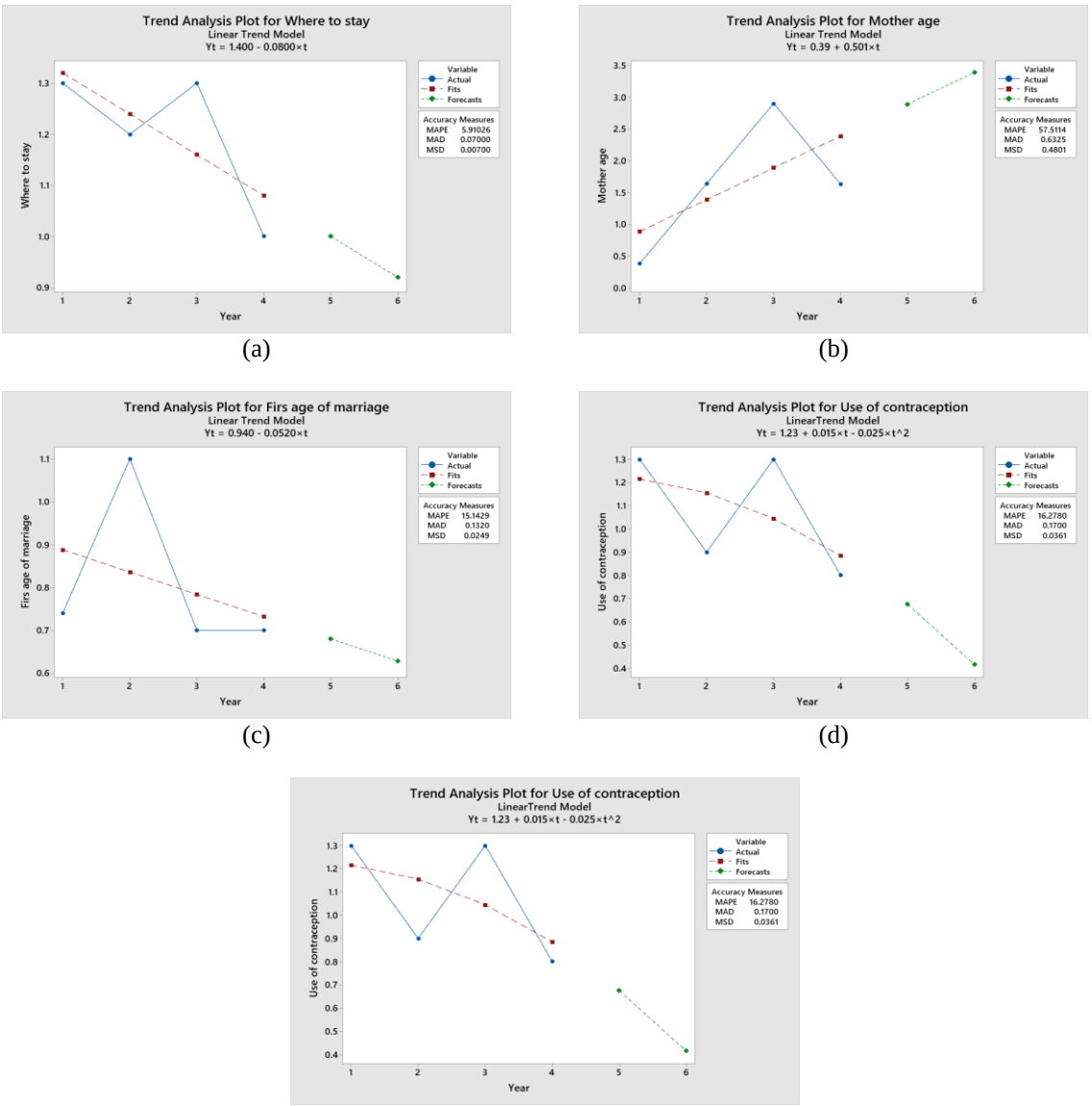

Figure 2. Trends and patterns of unwanted pregnancy, (a) where to stay, (b) mother's age, (c) first age of marriage, (d) use of contraception, (e) contraception failure

The decision or freedom in choosing health services is determined together with the couple. Most mothers have freedom of consent in marriages that are decided together with the spouse. Because female autonomy is associated with unwanted pregnancy. Women who have low decision-making are at risk of unwanted pregnancies [21], [22]. Women with autonomy tend to discuss contraceptive methods with their partners and are more likely to use modern family planning services or intend to do so in the future thereby reducing unwanted pregnancies, women's autonomy being a significant predictor of unwanted pregnancies [22], [23].

More women have the same intention in the number of children. Most mothers and couples have the same intention in planning the number of children. The intention to implement family planning among contraceptive users currently reflects indicators of women's awareness of unwanted pregnancies and readiness to avoid them [21], [22]. Non-contraceptive methods are 100% effective. It is estimated that 8-30 million pregnancies each year have resulted from contraceptive failure that is inconsistent or incorrect in the use of the contraceptive method or simply due to the failure of the contraceptive method itself. Those who are motivated not to have more children and have used contraception but still failed will usually find a way out by abortion [24].

The husband's education is mostly high school education and education is considered one of the determining factors of unwanted pregnancy. There is a positive correlation between the education of the unwanted spouse/husband and the desired pregnancy [11]. The majority of husbands are employed and this being of low economic status, social and education spouses/husbands may be at risk of low fertility control resulting in unwanted pregnancies [25]. Access to the information obtained by most mothers is easy. Mothers who have easy access to information have a 1.6 times greater risk of developing a desired pregnancy than those with difficult information. Access to information has a significant effect, women who have easy access to information have a 1.6 times greater risk of developing a desired pregnancy compared to women with unwanted pregnancies [26].

The number of children is the most dominant factor influencing unwanted pregnancies, as the incidence of unwanted pregnancies would indicate a high risk in women who have given birth three or more times [27]. Similar results were obtained from previous studies in the United States. After giving birth to desired children, women who want to limit their fertility and pregnancy tend to consider unwanted pregnancies rather than improper pregnancies. In addition, birth increases the chances of unwanted pregnancy and increases the chances of untimely pregnancy [6], [15]. Women who do not have children before the first pregnancy will tend to have a risk of unwanted pregnancy, compared to women who want to have more children before pregnancy [15]. An increase in the number of living children is positively associated with unwanted pregnancies [28].

3.3.3. Risk of unwanted pregnancy

Possible consequences of an unwanted pregnancy include: i) An unwanted pregnancy can lead to the birth of an unwanted child. The future of this unwanted child often does not get proper love and nurturing from her parents so her growth can be disrupted; ii) The occurrence of an unwanted pregnancy can lead to abortion because most women having unwanted pregnancies make decisions or ways to get out of the (unwanted pregnancies), let alone unsafe abortions [15]. Unwanted pregnancy will also increase the risk of complications and death in pregnant women, in addition to causing unsafe abortions that contribute to increased maternal mortality (MMR) [19]. Unwanted pregnancies can adversely affect the health, social, and psychological well-being of mothers and babies, thereby not only increasing maternal morbidity and mortality but also resulting in high-risk fetuses and babies, such as impaired growth and development [29], [30].

In addition, the consequences of an unwanted pregnancy event will affect, i) Inadequate prenatal care which adversely affects the health of women and children due to lack of preparation for parenthood. This unwanted pregnancy besides having a factor of delay risk, the unwanted pregnancy has the risk of being mistimed (not on time); ii) Unwanted pregnancy hinders opportunities for cure for sexually transmitted diseases (STDs) before pregnancy. Untreated sexually transmitted diseases in pregnant women can lead to premature birth, infection of newborns, or infant death; iii) Women with unwanted pregnancies are more likely to suffer from depression during or after pregnancy; iv) Impact on maternal mental health; v) Increased risk of physical violence during pregnancy; vi) Reduce the chance of breastfeeding, so the child is less healthy; vii) The quality of the mother-child relationship is lower; viii) Deterioration in the health status of the mother and the baby; ix) The relationship between the mother and the baby is less harmonious; x) More likely to delay the initiation of prenatal care.

Other effects that could potentially affect children with unwanted births are: i) Babies are at greater risk of low birth weight. This is triggered by an increased risk of premature birth. In the USA, eliminating unwanted pregnancy events reduces the risk of severely low birth weight by 7% for blacks and 4% for whites; ii) Higher infant mortality. If all sexually active couples regularly used effective contraception it would reduce abortions, unwanted live births, and infant deaths, iii) Infants may potentially suffer from mental and physical disabilities during childhood; iv) Higher risk of child abuse and neglect; v) Children have the potential to have learning difficulties in school; vi) More likely to live in poverty and need public assistance; vii) More likely to experience economic hardship and criminal behavior; viii) The child has a weakness in intelligence; ix) tends to have a close relationship with their mother [31].

4. CONCLUSION

Mothers who have two children are 4.7 times more likely to give birth than unwanted mothers. Mothers who have easy access to information have a 1.6 times greater risk of developing a desired pregnancy than those with difficult information. The age of the mother and the number of children that affect pregnancy are undesirable. Mothers younger than 20 years have a 2.5 times risk of getting unwanted pregnancies compared to mothers over 20 years old after controlling for the number of children and mothers who have two children were 4.4 times more likely to get unwanted pregnancies than mothers who have more than two children after controlling for maternal age. The number of children is the most dominant factor affecting

unwanted pregnancy. The government needs to expand access and quality of information and counseling centers for women in providing friendly and inclusive reproductive health information and counseling, expand access and quality of women's health services, provide specific reproductive health services as needed, and collaborate to develop capacity building standards for educators and counselors.

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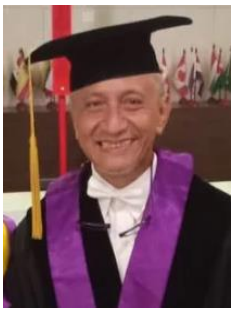

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