Determinant Factors of Fertility in Reproductive Age Women

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Abstract

The target of the 2015 Medium-Term National Development Plan is the fertility rate of 2.1 children. However, based on The Indonesian National Demographic and Health Survey 2017, the fertility rate of West Java Province is similar to the national, which is 2.4 children. West Java is a barometer of the national fertility rate since one-fifth of Indonesia's population is in West Java. This study aims to analyze the factors that influence fertility (number of children ever born). The design of this study was cross-sectional. Data derived from the 2018 Survey of Accountability Programs Performance covered 12,350 women aged 15-49 years. The sample was 9,814 woman who had been married. Data analysis used univariate, bivariate and multivariate analyses with a confidence level of 0.05. Bivariate results found that five variables that affected fertility were the age of first marriage, frequency of marriage, use of contraceptive, ideal family size, and wealth index, while the area of residence was not related to fertility. Indeed there are three most dominant factors that have been related to fertility were the age of first marriage, frequency of marriage, and the use of contraceptives. The conclusion was that women who marry at an older age and use contraception have lower fertility rates. This study can be considered in population control policies, especially to improve health promotion programs regarding the ideal marriage age for women and the use of contraception as an effort to control the population rate. This study can be considered in population policies.

Keywords: Age of first marriage, children ever born, fertility, reproductive-age women, use of contraception.

Introduction

The population is the core capital of development and the indicator for sustainable development (Wicaksono & Mahendra, 2016). However, its uncontrollable rise can obstruct the effort to improve and ensure the people's prosperity (Sinaga, Hardiani, & Prihanto, 2017). One of the factors that influence the number of people and growth rate is fertility (Arsyad & Nurhayati, 2017; Bongaarts, 2015).

Today, some developing countries such as Indonesia are mitigating fertility to keep balance of the number and the quality of its population. Although it has implemented the Family Planning program since 1968, the total fertility rate (TFR) remains quite high. The government's target is to curb the TFR to 2.1 in 2020 (BKKBN, 2018). However, the survey result shows that it only decreased from 2.6 children in 2012 to 2.4 in 2017 (Indonesian Health and Demographic Survey [Survey Demografi dan Kesehatan Indonesia, SDKI], 2017). The national fertility data is generally absorbed from the data in West Java province as the province with the most significant population in Indonesia, one-fifth of which lives there. The SDKI-based fertility data in West Java showed a slight decrease from 2.5 in 2012 to 2.4 in 2017.

Challenges caused by the high TFR in developing countries will impact reproductive health problems such as mother and child death, premature babies, domestic problems like emotional contention, divorce, low chance of good education, and poor socio-economic status (Ministry of Women Empowerment and Child Protection & Central Statistics Agency, 2019). Therefore, factors affecting the decrease of TFR is an important moot for the Indonesian government.

Total fertility rate (TFR) is a concrete reproduction result of someone or a group of women, while in the definition of demography is measured by the number of children ever born (ALH) (Mulmi, 2018). Bongaarts (2015) suggested the model about factors affecting fertility as the revision of (Bongaarts, 1978; Davis & Blake, 1956; Freedman, 1961). This model explains fertility affected by intermediate variables including intercourse (age of first marriage and frequency of marriage), contraception (use of contraceptives), and gestation variable. On the other hand, the background determinants include demographics, socio-economic status (wealth index, education, and occupation), and socio-cultural context including ideal family size (Arsyad & Nurhayati, 2017; Awad & Yussof, 2017; Bongaarts, 2015; Febrina, Amalita, & Murni, 2014; Lestari, Musa, & Roy, 2018a; Marlina, Normelani, & Hastuti, 2017; Mulmi, 2018; Rahmayeni Zulwida, 2016)

Therefore, the factors affecting fertility in Indonesia is worth considering. Previous research regarding determinant factors of fertility include the age of first marriage, frequency of marriage, and the use of contraceptives, results differently. Women who got married at 21-25 age have a higher chance of having more than two children, compared to those who got married at a younger or older age. Besides, previous research shows that the older the marriage, the less the children ever born is likely to happen (Arsyad & Nurhayati, 2017; Lestari, Musa, & Roy, 2018; Sinaga et al., 2017; Upadhyay & Bhandari, 2017).

The frequency of marriage can affect the number of children ever born, but not many previous research discussing the former relating to the latter. Stone (2018) shows that since 2009, the fertility of women who got married in America is getting lesser, but those who are widowed and have been married for more than once have a higher fertility rate because those women want to have children from their partners. The more-than-one frequency of marriage may increase the risk of having many children.

Arsyad and Nurhayati (2017); Bongaarts (2015), the use of contraceptives has a direct impact on children ever born or fertility rate. It enables couples to reach the expected ideal family size and prevent unwanted births. It also has a positive impact on the fertility rate Arsyad and Nurhayati, (2017); Wicaksono nd Mahendra, (2016) so that it can help prevent birth or manage birth intervals. However, Mulmi, (2018) claims that there is no relationship between the use of contraceptives and the number of children ever born because most respondents did not use contraceptives. Research from also has a similar view, saying

that contraceptives are only used to measure birth intervals but not to limit it.

Based on the theory of Bongaarts (1978), Bongaarts (2015) and Davis and Blake (1956) Indirect factors affecting fertility include socio-economic factors reflected by wealth index, ideal family size as the socio-cultural factor, and the area of residence as a demographic factor. Based on Lestari et al. (2018) the higher the family's income, the higher the number of children ever born because parents feel financially capable of giving more births. The amount of primary needs borne by the parents with the number does not prevent them from increasing the number of births. Indonesia has the belief that having many children equals future economic privileges. The research goes against that of Arsyad and Nurhayati (2017), saying that the amount of wealth has a negative correlation to children ever born. It concludes that the number of children ever born may lower once the wealth quantile index rises.

The values held in a community or society can have an impact on the fertility rate (Freedman, 1961). The impact of norms on the fertility rate was first coined by Freedman (1961) with a revision argument on the model developed by Davis and Black 1956 and Bongaart 1978. On the latest proposed model from Bongaarts 2015 through the scheme on "Modelling the Fertility Impact of the Proximate Determinants: Time for a Tune-Up," saying that the values or norms will become environmental index that determines the fertility in a region. The research by Arsyad and Nurhayati, (2017) shows that there is a significant relationship between the number of children wanted and children ever born. This study is supported by (Khongji, 2013) that the ideal family size may influence fertility in a region. This condition is affected by the cost factor, including socioeconomic status, cultural values, and religious values growing in that region. Therefore, this factor becomes vital to observe within the context of Indonesians with deeply-rooted cultural and religious values.

The area of residence is divided into villages, cities, or abandoned and developed regions. These categories can influence fertility because an individual's area of residence will impact social behaviors (Gee,

1990; Sunaryanto, 2012). Sunaryanto (2012) states that women living in metropolitan cities tend to have a low fertility rate. It is because respondents are working women that want lesser children. This research is supported by Raharja (2014) and Arsyad and Nurhayati (2017), claiming that women living in the city have a lesser chance of giving birth compared to those in villages.

Factors affecting fertility are the age of first marriage, frequency of marriage, use of contraceptives, wealth index, ideal family size, and area of residence. Knowing the always dynamic demographic situation in Indonesia, it is necessary to update factors regarding fertility. Therefore, this research aims to identify the fertility determinant factors, both immediate and non-immediate. This study is expected to provide information on dominant factors affecting fertility rate and become a suggestion for the decision-makers in formulating a policy of population control through The Program of Population, Family Planning, and Family Building.

Method

This research uses secondary data from Survey of Performance of Program Accountability (Survey Kinerja dan Akuntabilitas Program [SKAP]) 2018. SKAP is a national-scale survey that collects data about women's reproductive health program, family planning, and media exposure on information about citizenship, family planning, women's reproductive health, and family endurance and empowerment.

This research uses a cross-sectional approach, specified to the data in West Java Province. The population consists of reproductive-age women in West Java as much as 22.712.982 million people. The samples are 12.350 women aged 15 to 49 years old. The available samples are 9.814 reproductive and married women. The dependent variable in this research is measured by children ever born. Meanwhile, the independent variables include direct factors: the age of first marriage, frequency of marriage, use of contraceptives, and non-intermediate factors such as wealth index, ideal family size, and the area of residence.

This study is a secondary analysis of the SKAP 2018 survey. The procedure of this research was carried out with stratified multistage sampling, with the following stages: 1) The first stage of the sample framework was a list of villages throughout West Java, supplemented by urban/rural classification information. 2) The second stage of the sample framework was the list of clusters in the selected village; 3) The third stage of the sample framework was the listing of households or the results of listing households in selected clusters conducted door-to-door by enumerators. Then, the enumerator will choose 35 households by systematic random sampling based on the results of the household listing conducted by door to door. Determination of 35 households based on the sufficiency of the number of cases to be able to provide information per cluster containing about 200-250 households. The enumerator then retrieves data using a household questionnaire, which contains a questionnaire about reproductive-age women's health, the history of children ever born and the factors that influence it. This research was conducted by upholding the ethical principles of research. This study has been approved by the Ethics Review Board, based on a Certificate of Ethics Review from the National Population and Family Planning Agency, Number 1281/PD.101/H4/2018 on April 30, 2018.

The analysis of data used univariate, bivariate, and multivariate analysis. The univariate analysis described the distribution of frequency of all variables, including independent and dependent. Bivariate is an analysis of the relationship between each independent and dependent variables. Multivariate is to determine the most dominant variable that contributes to the number of children ever born using logistic regression. The steps in the modeling of compound logistic regression are as follows: Doing a bivariate analysis to determine which variable to be the model candidate. Each independent variable is correlated to dependent variables (chi-square test used as a bivariate test). Then a selection of variables will be included in the multivariate modeling if the p-value<0.25. In this research, all independent variables go into the modeling (the age of first marriage, frequency of marriage, use of contraceptives, wealth index, ideal family size, and the area of residence).

The next step is multivariate analysis using logistic regression. In this step, where variables have p-value >0.05 is indicated and issued one by one from the model. This step is done chronologically starting from variables with the biggest p-value, which is the ideal family size (p=0.999), then the wealth index (p=0.128). Therefore, we will
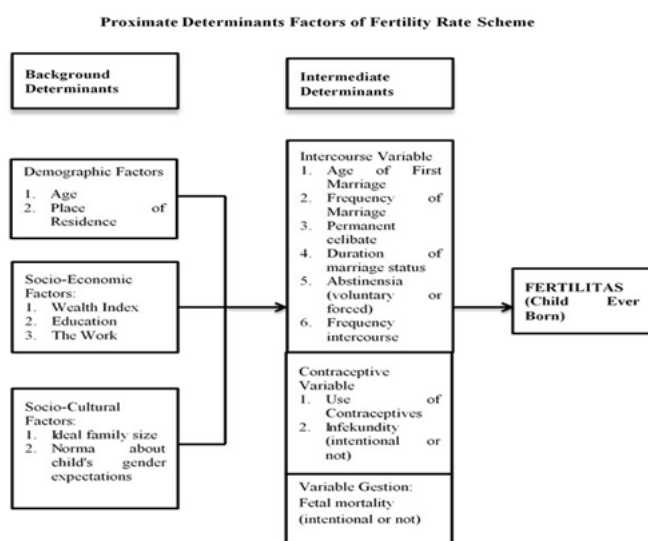
Picture 1 Proximate Determinants Factors of Fertility Rate Scheme

get the latest multivariate modeling. Below will be explained the scheme of the design in this research.

Results

Table 1 Frequency Distribution of Children Ever Born, Age of First Marriage, Frequency of Marriage, Use of Contraceptives, Wealth Index, Ideal Family Size, and Area of Residence on Respondents (n=9814)

Variable	Frequency	Percentage (%)
Children Ever Born:		
0-2	6826	69.6
>2	2988	30.4
Age of First Marriage:		
<15 years	784	8
15 – 20 years	4771	48.6
20 – 30 years	4053	41.3
>30 years	206	2.1
Frequency of Marriage:		
Only Once	8552	87.1
More Than Once	1262	12.9
Use of Contraceptives:		
Using	8685	88.5
Not Using	1129	11.5
Wealth Index:		
Lower Wealth index	3399	34.6
Middle Wealth index	4158	42.4
Upper Wealth index	2258	23.0
Ideal family size:		
1	11	2
1–2	5786	59.0
3–4	3700	37.7
>4	317	3.2
Area of Residence:		
City	6581	67.1
Village	3233	32.9

Table 2 Analysis of Relationship between Age of First Marriage, Frequency of Marriage, Use of Contraceptives, Wealth Index, Ideal Family Size, and Area of Residence with Children Ever Born on Respondents (n=9814)

Variable		Children Ever Born Category				Total		p-value	Odds Ratio
		0 – 2		>2					
		f	%	f	%	f	%		
Age of First Marriage:	<20 years	3464	62.4	2091	37.6	5555	100	0.000*	341.440

	20 – 30 years	3165	78.1	888	21.9	4053	100		
	>30 years	197	95.6	0	4.4	206	100		
	Total	6826	69.6	2988	30.4	9814	100		
Frequency of Marriage:	Only Once	6124	71.6	2428	28.4	8552	100	0.000*	131.907
	More Than Once	702	55.6	560	44.4	1262	100		
	Total	6826	69.6	2988	30.4	9814	100		
Use of Contraceptives	Yes	5844	67.3	2841	32.7	8685	100	0.000*	183.322
	No	982	87.1	146	12.9	1128	100		
	Total	6826	69.6	2987	30.4	9813	100		
Wealth index:	Lower Wealth index	2170	63.8	1229	36.2	3399	100	0.000*	80.026
	Middle Wealth index	3019	72.6	1138	27.4	4157	100		
	Upper Wealth index	1636	72.5	621	27.5	2257	100		
	Total	6825	69.6	2988	30.4	9813	100		
Ideal family size:	0	5	100	0	0	5	100	0.000*	506.553
	1–2	4526	78.2	1260	21.8	5786	100		
	3–4	2139	57.8	1561	42.2	3700	100		
	>4	156	49.2	161	50.8	317	100		
	Total	6826	69.6	2982	30.4	9808	100		
Area of Residence	City	4536	68.9	2045	31.1	6581	100	0.056	3.631
	Village	2290	70.8	943	29.2	3233	100		
	Total	6826	69.6	2988	30.4	9814	100		

Table 3 Modeling of the End of Analysis on Determinant Factor Most Impactful to the Number of children ever born to Respondents

Variables	B	SE	Wald	OR (95%CI)	p-Value
Age of First Marriage	2.355	0.337	48.929	10,543 (5,449-20,397)	0,000*
Frequency of Marriage	0.551	0.064	74.484	1,735 (1,531-1,966)	0,000*
Use of Contraceptives	-1.120	0.093	143.954	0,326 (0,272-0,392)	0,000*
Area of Residence	-0.330	0.049	44.944	0,719 (0,653-0,792)	0,000*
Constants	1.852	3.64	25.921	0.157	0,000*

Table 1 is the result of distribution analysis of the frequency of children ever born, age of first marriage, frequency of marriage, use of contraceptives, and area of residence on respondents (n=9814). The result shows that most respondents (69.6%) have 0 to 2 children ever born. Nearly half (48.6%) of the respondent's age of first marriage is 15 to 20 years old, but 8% of respondents got married above 15 years old. In terms of the norm of ideal family size or the expected number of children, almost 60% of the respondents want to have 1 to 2 children, while 40% others want more than three children. In the wealth index category, nearly half of the respondents (42.4%) are in the middle category, but 34.6% are in the lower wealth index category. According to the area of residence, most respondents (67.1%) live in the city. Almost all respondents (87.1%) have been married once. Regarding the use of contraceptives, almost all respondents (88.5%) have used contraceptives.

Table 2 explains the relationship analysis between the age of first marriage (UKP), frequency of marriage, use of contraceptives, wealth index, ideal family size, and the area of residence with children ever born on respondents (n=9,814). The result of relationship analysis between all independent variables with the number of children ever born, showing that five (5) variables with valuable relationships. Those variables are: 1) the age of first marriage (p=0.000); 2) frequency of marriage (p=0.000); 3) history of use of contraceptives (p=0.000); 4) wealth index (p=0.000); and 5) ideal family size (p=0.000). Meanwhile, the area of residence does not have any valuable relationship with the number of children ever born (p=0.056), but it still included in the multivariate analysis because the p-value was <0.25.

The respondents whose first marriage age is younger (<20 years) tend to have higher children ever borns (>2 people). It is also seen in this study, that respondents having 0 to 2 children ever born are those only married once. The more the frequency of marriages increases, the more chance a woman has more children. Respondents using contraceptives mostly have <2 children ever borns. Respondents having 0 to 2 children ever born tend to have higher of respondents having a wealth index on the medium and high category. Conversely, respondents having children ever born >2, most respondents have a lower wealth index.

Respondents having 0 to 2 children ever borns are mostly found on those wanting two children or less. Conversely, those having >2 children ever borns are respondents wanting to have more than two children. In terms of the area of residence, the research result shows there is no significant difference between the area of residence and the number of children ever born, but the respondents having more than two children ever born mostly live in the city.

From the overall analysis process, it can be concluded that out of six variables thought to be related to children ever born, there are four variables that are significantly related: the age of first marriage, frequency of marriage, use of contraceptive, and the area of residence. The respondents with marriage age of 15 to 30 years have a chance of 10.53 times higher to have children ever born>2 compared to those with marriage age of >30 years old after controlled by other variables. In this study, the village residence is a protective factor for having more than two children. Respondents who lived in cities are 0.719 times more likely than respondents who live in villages to have more than two children. The equity (1) is an equity model of logistic regression, as explained below:

Children Ever Born = -1,852 -2,355* Age of First Marriage – 0,330* Area of Residence +0,551* Frequency of Marriage - 1,120* Use of Contraceptives

The equation model (1) can be estimated that the number of children ever born using three intermediate variables (first marriage age, frequency of marriage and use of contraceptives) and one non-intermediate variable, that is the area of residence. If the coefficient B value is positive, the coefficient B value is negative. For example, in the variable of use of contraceptives -1.120, meaning there is a decrease of childbirth 1.120 if the respondents use contraceptives, controlled by the age of first marriage, frequency of marriage, and area of residence.

Age of first marriage and frequency of marriage have a significant relationship on the increase of children ever born. Respondents with the age of first marriage below 20 years old has a risk of 2.55 times to have children ever born >2. The respondents with the frequency of marriage +0.551 will increase the chance of children ever born as much as 0.551 after being controlled with the variable of the age of first marriage, use of contraceptives, and the area of residence. Living in villages becomes the protective factor to have children ever born >2 as much as 0.33 times, meaning that respondents living in the city have a risk of 0.33 times higher to have children >2.

On the Beta column, we can identify which variable is the biggest in determining the dependent variables (children ever born). The bigger the Beta value, the more significant the impact on dependent variables. In this research, it can be concluded that the younger the first marriage age, the marriage frequency >1, does not use contraceptives and live in the city can lower the risk of having children ever born >2.

Discussion

Viewed from the result of the multivariate test, the age of first marriage is the most dominant factor that determines the fertility rate. The age of first marriage may sustain the chance of reproduction (Arsyad & Nurhayati, 2017; Mulmi, 2018; Upadhyay & Bhandari, 2017). The explanation about the relationship between the age of first marriage and the fertility rate is inverse, meaning that the higher the age of first marriage, the lesser the fertility rate (Larasati et al., 2018; Pratiwi & Herdayati, 2014). A society where most are women does their first marriage at a young age. The birth rate is higher than those whose first marriage is done at an older age in their life (Ekawati, 2008). Research in India states that teenage marriage will increase the chance of a higher fertility rate as much as 2,355 times. This research reveals that married respondents less than 20 years old are the greatest contributor for the family with children ever born >2. Therefore, it is necessary to educate about the ideal marriage age for women or would-be brides.

Another dominant factor affecting children ever born in this research is the frequency of marriage. It affects the fertility rate because most of the respondents are at a young age. Therefore, the time of reproduction increases and is the potential to marry again if divorced. It causes the increase of children ever born. This research also shows a positive relationship between the frequency of marriage and the number of children ever born, meaning that the more frequent a woman marries, the higher the chance of having more children ever born.

The last modeling in table 3 shows that the use of contraceptives is very much related to the number of children ever born with B value -1,120 (p=0.000). A negative beta value means that contraceptive use is a protective factor. It means that the use of contraceptives will reduce the chances of a woman to have more than two children. The results of this study are in line with Arsyad & Nurhayati, (2017; Bongaarts, (1978), Bongaarts, (2015); Davis and Blake, (1956); Wicaksono and Mahendra, (2016) which states that the use of contraceptives are the main protective factor to control fertility rate in a region. Therefore, the program of population control through The Family Planning Program is still relevant to the problem context of Indonesians today. Although some research reports that the family planning program is out of date, as stated by Lestari et al., (2018) that report in Samarinda villages, the use of contraceptives do not affect fertility rate. Mulmi, (2018) also report that the same thing happens in India. However, there are some weaknesses in Lestari, Musa, and Roy, (2018) study, including the limited number of samples that

only cover one village in the Kalimantan region, while in this study the sample is large, covering villages and cities throughout West Java, so it is quite comprehensive representing households in West Java Province.

This study indicates that the socio-economic status reflected in the wealth index has a significant relationship to fertility rate. The respondents with fewer children ever born (0-2) are middle class and above, while those with low wealth index has more children ever born (>2). This research aligns with that of Upadhyay and Bhandari (2017) in India, stating that family with the lowest income in India has the highest fertility rate, compared to those with lower economic status. It might correlate with other factors, including families with low economy or education status (Upadhyay & Bhandari, 2017).

The results of this study indicate that respondents with middle to upper economic levels have fewer children due to several possible factors. One factor is the shift in perspective of the upper-middle class in having children (Sunaryanto, 2012). The children are not only seen in terms of universal usability but also economic burden due to some costs in life aligned with the number of children ever born (Sunaryanto, 2012). Furthermore, Sunaryanto explains that the costs to spend while having children include: education, health, operational needs, and nutrition improvement. Therefore, families with a high wealth index with a higher education level will have to think about whether they should add more children ever born. However, in this research, the wealth index is not a dominant factor in determining the fertility rate in West Java. The following image is the summary of dominant factors affecting the fertility rate in West Java (Image 2).
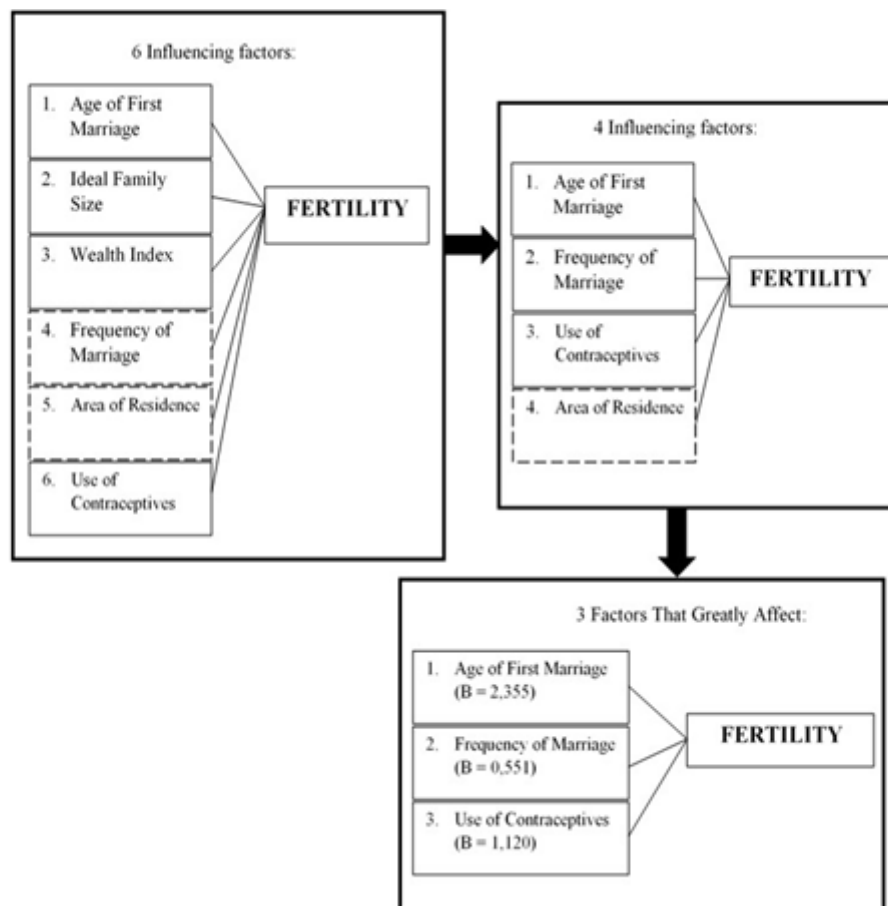
Picture 2 The Stages of Multivariate Analysis

Conclusion

Based on the analysis result, it can be concluded that the dominant determinant factor of fertility is the first marriage age, frequency of marriage, and the use of contraceptives. This research can be a means of consideration to make decisions about population control, specifically in West Java Province and the education about the ideal marriage age for women or to-be brides as well as the education on the use of contraceptives in the family planning program.

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