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Marriage Pattern and Fertility in DKI Jakarta Province

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Abstract

Birth rate or fertility is one of the elements playing a role in determining the population number and age structure in an area. To maintain stable population growth, it is necessary to strive for a total fertility rate (TFR) of around 2.1 children per woman. DKI Jakarta Province had reached this condition before the 2000 period. But in the next period, there was an increase ranging from 2.2 - 2.3 children per woman. Fertility is affected by various factors, including marriage patterns and contraception usage. This study aims to determine the effect of marriage patterns on fertility in DKI Jakarta Province by using the concept of fertility decomposition. The data used are the results of the Indonesian Demographic and Health Survey (IDHS) 2002/03 and 2017 with the unit of analysis for women aged 15-49 years. The results showed that there was a slight increase in the effect of the marriage pattern on fertility restrictions, from 14% or preventing 1.89 births in the 2002/03 IDHS to 19% or preventing the occurrence of 2.1 births in the 2017 IDHS. in DKI Jakarta Province by 2.2 children per woman in the 2017 IDHS, although there was a sharp decline in the effect of contraceptive use. It is necessary to study the relationship between the pattern of marriage and the use of contraception because these two variables play an important role in determining the fertility rate in DKI Jakarta Province.

Introduction

Apart from being the nation's capital and government center, DKI Province is also an economic, educational, social, and cultural center that attracts many immigrants from outside the region. The DKI Provincial Government has succeeded in suppressing the population growth rate, but the population continues to increase, from 8.35 million in 2000 to 10.15 million in 2015 (BPS Provinsi DKI, 2016). The population density continues to increase as DKI Jakarta becomes the province with the highest population density in Indonesia. In 2015, the population density in DKI Jakarta Province reached 15,330 people/km2. While Indonesia's population density was only 134 people/km2. Population growth in DKI Jakarta Province is affected by births, deaths, and migration (BPS Provinsi DKI, 2016).

Before the 2000 period, the total fertility rate in DKI Jakarta Province had reached a condition known as the replacement level, namely a TFR of 2.1 children per woman (Gietel-Basten & Scherbov, 2020; DHS, 2017). If the TFR 2.1 can be maintained for a long time and there is no migration, then the population in the new generation will be the same or replace the population of the previous generation. It refers to balanced population growth. However, the enactment of Law no. 22/1999 on Regional Government, which delegated the authority to manage development programs including family planning programs to local governments,

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seems to have affected efforts to regulate births in DKI Jakarta Province. The total birth rate in DKI Jakarta Province increased from 2.0 children per woman in the 1997 Indonesian Demographic and Health Survey (IDHS) to 2.2 children in the 2002/03 IDHS. Subsequent survey results showed a slight increase to 2.3 in the 2012 IDHS and back to 2.2 in the 2017 IDHS (DHS, 2017). To stabilize population growth in DKI Province, fertility rates need to be maintained at replacement level conditions. In addition, it is also necessary to pay attention to the flow and pattern of migration into the DKI Jakarta Province. As an economic center, Jakarta attracts many immigrants from outside the region.

The results of the 2015 Inter-Census Population Survey show that 7 percent of the population of DKI Jakarta Province are recent migrants (change of residence within 5 years before the survey) (BPS Provinsi DKI, 2016). The highest proportion of the population who have recently migrated is the age group 15-39 years and the highest peak in the age group 25-29 years. The high number and proportion of young people followed by an increase in fertility in DKI Jakarta Province potentially cause population growth if not managed properly. The results of research on the fertility of the migrant population in DKI Province show that the fertility rate of migrant women tends to be higher than that of non-migrant women (Utomo et al., 2013).

The theory of fertility proposed by Davis dan Blake (1956), is widely used in analyzing fertility. It identifies sociological factors affecting fertility through intermediate variables. Economic and environmental factors refer to indirect variables. Bongaarts (1978) then identified four intermediate variables having the highest effect on inhibiting fertility. The variables are: 1) the proportion of women with marital status, 2) the prevalence of contraceptive use and effectiveness, 3) the duration of infertility during breastfeeding (postpartum amenorrhea), and 4) the prevalence of intentional abortion. These four variables refer to "proximate determinants of fertility", the concept widely used in analysing fertility decomposition..

The fertility decomposition analysis conducted using the 2017 IDHS data indicates that the strength of the influence limiting the fertility of the four variables varies by province (Samosir, 2019). The effect of marriage patterns on fertility restriction is highest in DKI Jakarta Province. Marriage pattern is one of the vital variables between fertility, especially in a country like Indonesia, where almost all births occur in marriage. Marriage patterns such as age at first marriage and the proportion of currently married women will affect fertility levels.

To identify the effect of marriage patterns on fertility in DKI Jakarta Province, this study conducted a fertility decomposition analysis using the 2002/03 IDHS and 2017 IDHS data. As previously stated, the total fertility rate in DKI Jakarta began to increase in the 2000 period after the autonomy policy area implementation. The fertility in DKI Jakarta during this period is reflected in the 2002/03 IDHS data. It continues to increase as shown by the results of the 2017 IDHS. By this study, we expect the marriage patterns in DKI Jakarta province and the effect on fertility restrictions will be known. The analysis was carried out using the proximate determinants of the fertility model developed by Bongaarts (1978).

Method

This study uses a descriptive analysis method with a quantitative approach. Data analysis used was the proximate determinants model from Bongaarts (1978, 2015). This model analyzes the contribution of the four intermediate determinants, namely the pattern of marriage, contraceptive use, abortion, and infertility during breastfeeding to fertility restrictions. However, according to the purpose of the study, the discussion will focus on the contribution of marital patterns to fertility restrictions.

This study uses data from the 2002/03 IDHS and 2017 IDHS in DKI Jakarta Province with the unit of analysis for women aged 15-49 years. The IDHS is a population and health survey conducted jointly by BPS, BKKBN, and the Ministry of Health every five years. The IDHS design refers to the Demographic and Health Survey (DHS) design developed by ICF International and used in many countries

(DHS, 2017).

The relation between proximate determinants with fertilities is formulated by Bongaarts (1978, 2015) in below equation:

TFR = □□ × □□ × □□ × □□ × TF

Where,
TFR : total fertility rate
TF : total fecundity rate
Cm : marital index
Cc : contraception usage index
Ca : abortion index
Ci :infertility index during breastfeeding

The four indices have values between 0 and 1. The lower the index value (closer to 0), the stronger the effect in limiting fertility. On the other hand, the higher the index value (closer to 1), then the lower the effect of these factors in limiting fertility. Data regarding accurate intentional abortions are not yet available in Indonesia, so in this study, the Ca value is assumed to be 1, or it is assumed that no women have had intentional abortions. The assumption that Ca is equal to 1 due to the unavailability of data is also used in the fertility decomposition analysis using DHS data in Ethiopia (Lailulo & Sathiya Susuman, 2018), Zambia (Chola & Michelo, 2016), Uganda (Rutaremwa et al., 2015), and Palestine (Hammoudeh & Hogan, 2012).

In the Bongaarts formula, TFR is a function of the four determinant indexes with TF. The total fertility rate (TFR) is the average number of children a woman will have at the end of her reproductive life if the woman follows the fertility pattern in a given year. The total fecundity rate is the average number of births to women who during their reproductive years were married, did not use contraception, did not have intentional abortions, and did not breastfeed. TF rates generally range from 13-17 births, with an average of about 15.3 births per woman (Bongaarts, 1978). TFR will be the same as TF if the value of all indexes is 1.

Results and Discussions

By using the Bongaarts formula (1978), the results of the 2002/03 IDHS and 2017 IDHS are obtained as follows (Table 1):

Table 1. Fertility Measures for DKI Jakarta Province IDHS 2002/03 and IDHS 2017

Fertility Measures	IDHS 2002/03	IDHS 2017
Total Fertility Rate (TFR)	2,20	2,24
Total Marital Fertility Rate (TMFR)	4,09	4,35
Marital Index (C_m)	0,54	0,52
Contraception Usage Index (C_c)	0,27	0,39
Total Natural Marital Fertility Rate (TNMFR)	15,1	11,06
Infertility index during breastfeeding (C_i)	0,96	0,83
Total fecundity rate (TF)	15,71	13,27

Source : Processed results of the 2002/2003 IDHS and 2017 IDHS

Table 1 shows that the total fertility rate in DKI Jakarta Province in the 2002/03 and 2017 IDHS is relatively the same, around 2.2 children per woman. This TFR figure is generated by the intermediate variable indicated by the marital index (Cm), the index of contraceptive use (Cc), and the index of infertility during breastfeeding (Ci). There was a decrease in the marital index and the infertility index during breastfeeding, indicating an increase in the effect of these two factors on fertility restrictions. On the other hand, an increase in the index of contraceptive use indicates a decrease in the contraceptive use effect on fertility restrictions. From the values of these three indexes, it can be seen that the increase in fertility restrictions caused by the marriage pattern and the breastfeeding pattern is covert by the decrease in the effect of contraceptive use. Therefore, TFR cannot be lowered, and there is a slight increase in TMFR.

In Table 1, the marital index (Cm) in DKI Province was 0.54 in the 2002/03 IDHS and then decreased to 0.52 in the 2017 IDHS. The 2017 IDHS results show that the marriage index in DKI Jakarta Province is the lowest compared to other provinces and well below

the national index (0.71). The decline in the marriage index indicates an increase in the age at first marriage in DKI Jakarta Province. The median age at first marriage for women is 25-49 years in DKI Jakarta Province increased from 21.4 years in the 2002/03 IDHS to 23.1 years in the 2017 IDHS. The median age at first marriage in DKI Jakarta Province is higher than the national figure, which is 19.2 years in the 2002/03 IDHS and 20.8 years in the 2017 IDHS. This condition is in line with the statement by Bongaarts (1978), who mentioned that the lower the marriage index, the higher the age at first marriage, and the greater the contribution to fertility decline.

Table 2 shows the relative contribution of each intermediate determinant to fertility restrictions in DKI Jakarta Province according to the results of the 2002/03 IDHS and the 2017 IDHS. The intermediate determinant with the largest contribution in both the 2002/03 IDHS and the 2017 IDHS is contraceptive use. However, there was a decrease in the effect of contraceptive use. From 81% or preventing 11.01 births in the 2002/03 IDHS to 61% or preventing the occurrence of 6.7 births in the 2017 IDHS. In contrast, the effect of marriage patterns increased. From 1.89% or preventing the occurrence of 14 births in the 2002/03 IDHS to 2.1% or preventing 19 in the 2017 IDHS. Likewise, the effect of infertility during breastfeeding. It increased from 0.6% or preventing five births in the 2002/03 IDHS to 2.2% or 20 in the 2017 IDHS. Overall, the three fertility determinants' effect in preventing births has decreased from 13.1 in the 2002/03 IDHS to 11.03 in the 2017 IDHS. This picture is different from the general condition in Indonesia. The results of the 1991 IDHS and 2017 IDHS show that nationally there is a decrease in the strength of the effect of limiting fertility on the pattern of marriage and infertility during breastfeeding. While the effect on limiting fertility from the contraceptive pattern use has increased (Samosir, 2019). These results are in line with research by Hertrich (2017) and Islam (2017) , showing the decreasing influence of marital patterns and increasing use of contraception in limiting fertility. Overall, the effect of the three determinants of fertility in preventing births has also increased.

Table 2. Effect of Intermediate Determinant Fertility Restriction IDHS 2002/03 and 2017 results

Intermediate Determinant	**IDHS 2002/03**		**IDHS 2017**	
	Prevented birth	% Contribution	Prevented birth	% Contribution
Marital pattern	1,89	14	2,1	19
Infertility During Breastfeeding	0,6	5	2,2	20
Contraception Usage Pattern	11,01	81	6,71	61
TF-TFR	**13.51**	**100**	**11.03**	**100**

Source : Processed results of the 2002/2003 IDHS and 2017 IDHS

Research on the determinants of age at first marriage in DKI Jakarta Province is very limited. Referring to the Islam dan Rahman (2020) research, based on DHS results in 15 Asian and African countries, Jones dan Yeung (2014), and DHS and UNPD data in 16 Asian countries, the high median age at first marriage may be related to the socio-economic characteristics of the population in the Province of DKI Jakarta is generally better than other provinces. In addition, the results of 2002/03 and 2017 IDHS show that in Indonesia, the median age at first marriage for women living in urban areas is higher than those living in rural areas (DHS, 2017). The relationship between age at first marriage and socioeconomic status is also proven by research conducted by Muharry et al. (2018); Wahyudi et al. (2019), and Islam (2017). The three studies revealed a significant relationship between education and economic status with age at first marriage. Similarly, research conducted by Bongaarts et al. (2017) using DHS data in 43 countries (including Indonesia), and Amoo (2017) research which also uses DHS data in 3 African countries show education as an important factor in increasing the age at first marriage. Research in other Asian countries also shows a positive relationship between women's education and employment and age at first marriage (Bongaarts et al., 2017; Islam, 2017; Lee et al., 2020; Marphatia et al., 2017; Nahar et al., 2013).

The significant relationship between socioeconomic characteristics and age at first marriage is also seen in the 2002/03 IDHS and 2012 IDHS data, analyzed by MacQuarrie (2016). There is a significant relationship between age at first marriage and women's participation in decision-making, women's education and employment, household economic status, place of residence (urban/rural), and husband's education and occupation. The research by MacQuarrie (2016) and Marphatia et al. (2017) in 4 Asian countries illustrated that participation in decision-making in the family is one indicator of gender context that is positively related to age at first marriage. According to Bongaarts et al. (2017), Kim (2010), and Marphatia et al. (2017), increasing education affects reproductive behavior because education can build self-autonomy to decide to marry and give birth at a more mature age, especially for women.

Although the marriage index (Cm) in DKI Jakarta Province shows a downward trend, the proportion of women aged 15-49 years who are currently married in DKI has increased, from 58.8% in the 2002/03 IDHS to 62% in the 2017 IDHS. It is different from the Bongaarts (1978) model, where the more women are married, the lower the effect of marriage on fertility restrictions. This difference may also be related to the increase in the median age at first marriage for women in DKI Jakarta Province, as described above. With a higher age at first marriage, the reproductive period spent by women in married status is shorter. It is a motivating factor for newly married couples to immediately have children and get the desired number of children as long as the wife is still of reproductive age. The desire to have children immediately is seen in the first birth interval in DKI Jakarta Province, which is lower than the national figure for both the 2002/03 IDHS and the 2017 IDHS.

In short, the distance between first births in DKI Jakarta is in line with the study by MacQuarrie (2016) , which uses DHS data in 7 Asian countries, including Indonesia. In the last decade, in Indonesia and several countries in Asia, there has been a significant increase in the age at first marriage, followed by a shorter first birth interval. The study indicated that age at marriage was the main factor affecting the distance between the births of their first child. Other studies in several countries in Asia and Africa also show that women with older age at first marriage have a shorter first birth interval than women who marry at a younger age (Alam, 2015; Dommaraju, 2011; Gurmu & Etana, 2014; Kamal & Pervaiz, 2013; Obite et al., 2021; Xu, 2019). Socioeconomic characteristics of the population in DKI Jakarta Province may also be related to the first birth interval. The study conducted by Hidayat et al. (2014) in Indonesia; Rahman et al. (2013) in Bangladesh; Gurmu and Etana (2014) in Ethiopia, Obite et al. (2021) in Nigeria, and Islam (2017) in Oman revealed a relationship between socioeconomic factors such as place of residence, education, wealth and work with the first birth interval. Women living in urban areas with higher socioeconomic status tend to have shorter first birth intervals.

In short, the first birth interval may also be related to the decline in contraceptive use in DKI Jakarta Province. This assumption is in line with the results of the 2017 IDHS, which show that one of the main reasons for not using contraception in DKI Jakarta Province is the desire to have children (32%). Since the 2002/03 IDHS, there has been a downward trend in contraceptive use in DKI Jakarta. From 63% in the 2002/03 IDHS to 57% in the 2017 IDHS. This figure is lower than the national figure. Which 60% in the 2002/03 IDHS and 64% in the 2002/03 IDHS. IDHS 2017 (DHS, 2017). If disaggregated according to the type of contraception used, it can be seen that in DKI Province, there has been a decrease in the proportion of modern contraceptive use. But on the contrary, there has been an increase in the proportion of traditional contraceptive use.

Research on the determinants of contraceptive use in DKI Jakarta Province is very limited. When referring to research with national data, contraceptive use is influenced by socioeconomic status, including place of residence, the number of children, education level, economic status, work status, and access to information sources (Gayatri & Utomo, 2019; Idris, 2019). However, there are differences in the results of these studies. The research conducted by Idris (2019) showed a

positive relationship between socioeconomic characteristics of the level of contraceptive use. On the other hand, Gayatri dan Utomo (2019) got a negative relationship. In both studies, women who live in rural areas have a greater chance of using contraception than those in urban areas. This finding is associated with the Family Planning program, which focuses more on rural areas.

Conclusions

The analysis results show a slight increase in the effect of marriage patterns on fertility restrictions in DKI Province. The marriage pattern effect increased from 14% or preventing the occurrence of 1.89 births in the 2002/03 IDHS to 19% or preventing the occurrence of 2.1 births in the 2017 IDHS. This increasing influence of the marriage pattern helped maintain the TFR in DKI Jakarta Province of 2.2 children per woman, although there was a sharp decline in the effect of contraceptive use. The contraception use effect decreased from 81% or preventing 11.01 births in the 2002/03 IDHS to 61% or preventing 6.71 births.

It is necessary to conduct further studies on the determinants of age at first marriage in DKI Jakarta Province. In addition, it is necessary to study the relationship between the pattern of marriage and the contraceptive use pattern to formulate a comprehensive family planning program strategy. These two intermediate variables play an important role in determining the fertility rate in DKI Jakarta Province.

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