Analysis of Fertility Determining Factors (Study on Poor Family in Alam Barajo District, Jambi City)

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Abstract. This study aims 1). Analyzing the characteristics of poor families based on age, house ownership, house status, size of the house owned, number of household members, number of children graduating from high school and above, asset ownership, and province of birth. Jambi. The study used primary data. The location was determined purposively (Kenali Besar and Mayang Mangurai) from 5 sub-districts in Alam Barajo Subdistrict. Consideration of easier access to the location. Total respondents are 80 heads of household (KK). Simple random sampling (Simple Random Sampling). The method of descriptive analysis and multiple linear regression. The results of the study, the average age of family members was 43.07 years. 43.75% graduated from junior high school/equivalent. The status of the house is 57.50% own house. The house area is 58.25% less than 50 m^2. JART averages 4.4 people. The number of children graduating from high school/equivalent and above is 22.50%. Household assets, washing machine 52.50%. Main occupation 45.00% construction workers. The average income is IDR 1,931,250. Age at first marriage, wife's education, husband's income, wife's employment status, and use of contraceptives, were able to explain the number of children born alive by 76.74%, and 23.26% explained other variables outside the model. Productive the head of the family, improving education and skills for labor-intensive work opportunities. Maturation of the age at first marriage, increasing the education of pre-marital women. Improving the skills of the wife Need to be selective in determining the contraceptive used.

Keywords: Analysis · Fertility · Poor Family

1 Background

The study of fertility occupies an important position in population studies for several reasons (Hatmadji and Suriastini, 1995), (1). Fertility is responsible for the biological replacement and survival of a society; (2). The fertility rate affects population growth positively, which means that an increase or decrease in the fertility rate will increase or decrease the population; (3) uncontrolled fertility can cause social and political problems, while lower fertility than mortality can result in a lack of human resources in development.

Economic growth is one of the indicators used as the impact of development policies, especially in the economic field. Economic growth will result in an increase in the number of goods and services that can be enjoyed by the community in a certain period. In essence, economic activity is an effort to increase economic growth on the one hand, and poverty alleviation as another indicator in knowing the success of a country. This success is also marked by the ability to reduce the rate of population growth.

Jambi City is one of the areas with high population growth in Jambi Province. If in 2015 population growth was recorded at 2.19 percent and by the end of 2018 it was 2.07 percent. This figure when compared to Jambi Province is at an average rate of 1.97%, even according to the 2020 Population Census (SP) Jambi's population growth has decreased to around 1.49%. At the same time, Indonesia's population growth is only 1.25% (BPS, 2020). With population growth that is still relatively high, it will have an impact on various development programs, including efforts to reduce the number of poor people, as a result of high fertility.

Fertility differs from one community group to another. Differentiating factors for fertility rates are biological, social, cultural, psychological factors, as well as economic and political conditions that work simultaneously. Like the difference in fertility based on education, it can be said that there is an inverse relationship between the level of education and fertility. The higher the education level of women, the lower their fertility. However, this relationship did not apply to women who did not attend school. Those who do not attend school have lower fertility than those who do not finish primary school (Hatmadji and Suriastini, 1995).

Poverty is one of the factors that hinders individuals from being able to consume nutritious nutrition, obtain proper education and hinder them from enjoying a supportive environment for life. These conditions will affect to produce quality human resources, so that the level of productivity is low. At the community level, the availability of infrastructure is a determinant of poverty. Availability of electricity, access to markets, availability of education and health facilities affect regional development and poverty in an area. The size of the number of poor people is strongly influenced by the poverty line as measured by absolute expenditure per capita per month.

This study tries to determine the factors that influence fertility in Jambi City with a case study on poor families in Alam Barajo District. Referring to Dinsos data (2019) from 141,887 heads of families in Jambi City, it turns out that as many as 16,632 families or equivalent to 11.72% are families that are included in the poor category. Of these, 785 families are domiciled in Alam Barajo District.

Based on the background and descriptions that have been previously disclosed, this study tries to determine the determinants that affect fertility in Jambi City with a case study on poor families in Alam Barajo District, Jambi City.

1.1 Formulation of the Problem

Based on the background that has been stated previously, the problem can be formulated with the following questions:

1. What are the socio-economic characteristics of poor families based on age, house ownership, house status, size of the house owned, number of household members,

number of children who graduated from high school and above, asset ownership, and province of place of birth?

2. Identifying factors as determinants of fertility in poor families in the research location in Alam Barajo District, Jambi City.

2 Literature Review

2.1 Fertility Theory

Fertility (birth) is one component of population growth that has the potential to increase the population. Fertility is the ability to produce offspring which is associated with female fertility or also known as fecundity (Adioetomo and Samosir, 2010). In contrast to fertility, the term fertility (birth rate) is a number that shows the number of children a woman has during her reproductive period, or the number of live births that a woman or a group of women has during her fertile period.

2.2 Fertility Economic Approach

Economists also argue that the possible factors that influence fertility are not only macro. They assume that the high and low births that take place in society are influenced by economic growth, the level of urbanization and modernization that takes place. According to population experts (demographers) fertility is also determined by the most basic thought, namely the husband and wife's decision in deciding the number of children. This group believes that microeconomic theory explains the husband and wife's decision to have children or increase the number of children by considering their economic conditions.

According to Leibenstein (1957) in Adioetomo and Samosir (2010) having children can be viewed from an economic point of view, namely in terms of utility and costs incurred in nurturing and raising children., children can give in the form of economic transfers (eg remittances to parents in times of need), or assist in production activities such as cultivating agricultural land. Besides, children can be a source of livelihood for parents in the future in the form of investment. In terms of costs, to raise a child to be independent is a cost that must be incurred for the ownership of the child. Another opinion was derived from Gary Becker who explained the description of fertility through an economic approach with an emphasis on analyzing the impact of the level of income on the demand for children. Becker (2000) argues that children are assumed to be consumer goods (durable goods.) As durable consumer goods, children provide certain satisfaction (utility) to parents. On the other hand, parents consider children a source of income and satisfaction. From an economic perspective, the number of children owned is influenced by family income, costs of caring for and raising children and tastes. If welfare increases, the demand for children owned will also increase, in other words there is a positive relationship between family income levels and fertility.

Several previous studies on fertility According to Ali Anis et al. (2018), socio-economic factors that affect fertility in West Sumatra, (Y) are: The occupation of the head of the household (X1) has a positive and significant effect. Household Expenditure

(X2) has a positive and significant effect, the use of family planning devices (X3) has a negative and significant effect, the mother's education (X4) has a positive and significant effect. Then the father's education (X5) has a positive and significant effect, and place of residence has a negative and insignificant effect on fertility in West Sumatra. The results of research by Hadiyanto, F (2017) in West Java on the factors that influence fertility, the following results are obtained: 1). The education level of the head of the household, especially at the university level. 2). Income is negatively related to fertility. Especially higher income levels. 3). The number of family members has a significant effect on increasing fertility. 4). The use of contraceptives, both short and long term, has no effect on increasing fertility, and 5). Households in urban areas tend to reduce fertility. In another study, Miriam Marcem (2018) where the birth rate is associated with the business cycle, with the case of European countries, concludes that the characteristics are different from the rest of the world, where most countries in Europe have higher welfare. Women in Europe tend to have their first child when they are older, and this can create difficulties with delaying the decision. This means that the age at first marriage is higher in European countries which results in delays in birth. In addition, permanent family income, joint work decisions, and job stability and the possibility of divorce have an impact on fertility. Furthermore, Cintami Apriwana (2019) concludes that family income, education, age at first marriage, working hours, have an effect on fertility levels in Tembalang District, Semarang City.

2.3   Poverty and Poor Families

Poverty is defined as the condition of a person or group of people unable to meet their basic needs, especially clothing, food and housing in maintaining and developing a better standard of living (Bappenas, 2004). Jhingan (2000) three main characteristics of developing countries that are causal factors and related to poverty. 1) Availability of educational facilities and infrastructure as a result, the number of people who are illiterate and do not have skills or expertise is still high. 2). Availability of health facilities and poor consumption patterns have resulted in a limited number of working age population who can be relied upon as productive workers, and 3). The dominance of the population in the agricultural and mining sectors with simple production methods and low productivity.

Poverty is a vicious circle that starts with low productivity due to lack of capital, imperfect market conditions and economic backwardness (Amir, 2007). Observing poverty can be approached from three approaches. From the economic side, poverty can be seen from the limited resources used to meet the needs of life and increase the welfare of a group of people. The political side, can be seen from access to power, to reach and use resources. From a psychological point of view, poverty is seen from the weakness of social networks and structures that support opportunities to increase productivity.

Regarding poverty and poor families, it is necessary to explain the terminology of family and household. The terms family (families) and household (household) are rather difficult to distinguish. According to Dick in Doriza (2015) distinguishing between family and household, the difference is so vague. Households are those who live together, using collective resources to achieve goals. Families of people who have socio-biological ties through marriage, birth or adoption, do not live together, and use resources together (collectively) to achieve goals. In Plato's sense, the family is the smallest unit of social

organization. The family is the first group, the smallest degree of grouping compared to other groupings, because the family is not a combination of several groups, but the combination of individuals as parts to form a group. In this study, the term used is poor families, they are part of the number of poor people living in Jambi City. Based on data from the Jambi Province Social Service in 2019, there were 16,632 poor families, 785 of which were in Alam Barajo District.

3 Research Objectives and Benefits

3.1 Research Purposes

1. Analyzing the socio-economic characteristics of poor families based on age, house ownership, house status, size of the house owned, number of household members, number of children who graduated from high school and above, asset ownership, and province of place of birth.
2. Analyzing the determinants of fertility in poor families at the study site in Alam Barajo District, Jambi City.

3.2 Benefits of Research

1. The results of this study are expected to be useful to enrich information about, socio-economic characteristics of poor families, especially in the research location, in Jambi City, Jambi Province.
2. Can be used as input for the government and related parties in take policies related to birth (fertility) in the family poor in Jambi City, and Jambi Province in general.
3. It is hoped that it can be used as an additional reference for research related to fertility, especially in poor families.

4 Research Methods

4.1 Research Methods

The scientific research method is essentially the operationalization of the scientific method. In other words, the structure of thinking behind the steps in a scientific research is the scientific method. Which research method will be chosen in conducting a study is largely determined by the problems posed (Amri, et al. 2019).

This study analyzes various cases (multiple case studies) where the research location is selected based on the level of development (stratified by level of development), and accessibility (accessibility). Based on the location of poor families, Kenali Besar and Mayang Mangurai Villages were determined in Alam Barajo District, Jambi City.

4.2   Population and Sample

The population is the head of the family or poor families who live in Kenali Besar Village and Mayang Mangurai Village, Jambi City. The target population is poor households domiciled in the two kelurahan. The next stage is to determine the sample of fertile age couples (PUS) at the time of the study his wife is 30 (thirty) years old and above. For this purpose, it is determined purposively 2 Rukun Tetangga (RT) in the selected kelurahan. Then a simple random sample was drawn (random sampling) of 20 respondents (EFA) per RT so that the total respondents were 80 PUS.

4.3   Types and Sources of Data

Primary data obtained by using a list of questions (questionnaire). In addition to using structured interviews, interviews were conducted with key informants who were considered to know fertility issues in poor families.

4.4   Analysis Tools

Answering the purpose of the first study, a descriptive analysis was carried out on individual household data. The second research objective was to use multiple linear regression with the following formulation (Gujarati, 2012).

$$Y = o + 1X1 + 2X2 + \beta 3X3 + \beta 4X4 + 5X5 + e.$$

Information:
Y = Number of live born children owned
bo = constant
b1, b2, b3, b4, b5. = KRegression coefficient
X1 = age of marriage first
X2 = Mother's education
X3 = husband's come
X4 = Job status
X5 = Use of contraceptives
e = error ter

5   Results and Discussion

5.1   Characteristics of Poor Families in Jambi City

5.1.1   Age of Family Head

Age affects behavior and individual decision-making patterns. The average age of the poor family heads (KK) in the study area is 43.07 years. This means that KK are in the productive age group (40–49 years), and this group is 52.50%. For households aged (30–39 years) as many as 18.75 percent, the distribution in Kenali Besar is 20.00 percent, and in Mayang Mangurai 17.5 percent. Around 20.00 percent of respondents are 50 years old and over, only 8.75 percent of the KK are under 30 years old.

5.1.2 Family Head Education

The formal education that the respondent has taken is classified into the groups of elementary school graduates/equivalent, junior high school graduates/equivalent and senior high school graduates/equivalent. The results of the study were that the most KK graduated from education were junior high school graduates/equivalent (43.75%), then high school graduates/equivalent 28.75 percent and 27.50% elementary education/equivalent. The education that the KK graduated was based on the location of the study was not much different.

5.1.3 Home Ownership

As many as 57.50 percent of respondents have their own house. The number of respondents who have boarding status is 17.50 percent, and in Kenali Besar the number is greater than Mayang Mangurai. Then the respondents who contact/rent are 13.75 percent, and there are still 11.25 percent who live at their parents' house. Of the house status, 53.75% are permanent, 40% are semi-permanent, and 6.25 percent are emergency. Based on the widest floor, 70% is cemented, 20% is ceramic, and the rest is still earth. The widest types of walls and roofs are 77.50% brick walls, and 22.50% boards, 82.50% zinc roofs, and the rest are tiles.

5.1.4 Number of Household Members (JART)

Approximately (62.50%) are in the number (4–5) people. For households with JART between 2–3 people as much as 25.00 percent, there are still households with JART between 6–7 people by 12.50 percent. When compared to the Jambi Province JART average of 4.2 people according to the 2020 SP the number of JART in the Jambi City Research location is greater.

5.1.5 Number of Children Finished High School Education and Above

Overall, children from poor families who completed high school education/equivalent and above were only 22.50%. When compared with the School Participation Rate (GER) for both the City of Jambi and Jambi Province, the figure is lower because the APK of Jambi Province and Jambi City is already above 60.00%.

5.1.6 Household Asset Ownership

Household assets such as cars, motorcycles, washing machines and refrigerators. (92.50%) own a motorcycle, a few have more than one two-wheeled vehicle. More than half (52.50%) in the research area have a washing machine. Refrigerator ownership is more than two-thirds (73.75%) of respondents, and no household owns an asset in the form of a car.

5.1.7 Occupation of Head of Household (Husband)

Generally, the heads of poor households in the research area work as construction workers, drivers, casual workers (non-permanent work) and farmers/farm labourers.

Table 1. Multiple linear regression analysis

Dependent Variable: JALH				
Method: Least Squares				
Date: 07/26/21 Time: 09:46				
Samples: 1 80				
Included observations: 80				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.943558	0.416211	14.28014	0.0000
UKP	-0.054441	0.023491	-2.317566	0.0232
PDDK	-0.119535	0.024589	-4.861316	0.0000
HUSBAND'S INCOME	-6.10E-07	1.77E-07	-3.436529	0.0010
STATUS OF PEKER(D1)	-0.479323	0.120521	-3.977090	0.0002
CONTRACEPTION(D2)	-0.158861	0.174338	-0.911225	0.3651
R-squared	0.767399	Mean dependent var		2.225000
Adjusted R-squared	0.751682	SD dependent var		1.090523
SE of regression	0.543424	Akaike info criterion		1.690184
Sum squared resid	21.85289	Schwarz criterion		1.868836
Likelihood logs	-61.60734	Hannan Quinn Criter.		1.761810
F-statistics	48,82820	Durbin-Watson stat		1.745075
Prob(F-statistic)	0.000000			

Source: Processed data (2021)

Construction Workers by 40.00%. Drivers are 32.50%, and farmers/farm laborers are 6.25%.

5.1.8   Income of the Head of the Family (Husband)

The average income of respondents is Rp. 1,931,250. Based on income group, the largest share of income is between (Rp 1,600,000 - 1,999,000) as much as 35.75%. The income group is Rp. 2,000,000 - Rp. 2,399,000, - by 27.50%, and by 26.25% of respondents with incomes between Rp. 1,200,000 -Rp. 1,599,000.

5.2   Determinants of Fertility in Poor Families in Jambi City

5.2.1   Multiple Regression Analysis

Based on the test results using E-views 9, the following results were obtained.

Based on the calculation results, the following regression equation is formulated:

JALH = 5, 943558-0.054441 UKP-0.119535PDI-0.10E-07PDS-0.479323D1–0.158861D2

Prob = (0.0000) (0.0232) (0.0000) (0.0010) (0.0002) (0.3651)

F count = 48, 82820
Prob. F count = 0.00000
R^2 = 0.767399
Adj R^2 = 0.751682
From the equation gives the following meaning:

5.2.2 Statistical Test

Furthermore, based on Table 1 to find out more accurate estimation results, further ecometric testing can be carried out. The interpretations of these parameters are carried out on the variables in the form of simultaneous testing (F-test), partial test (t-test) and knowing the coefficient of determination (R).^{2}).

1. **Coefficient of Determination (R^2)**
   Value (R^2) is used to determine how much influence the independent variable has on the dependent variable. The results of data processing obtained value (R^2) = 0.767399. This figure means that the independent variables (age at first marriage, wife's education, husband's income, employment status, and use of contraception) together (simultaneously) are able to explain variations or changes in the number of children born alive by 76.74%. Meanwhile 23.26% is influenced by other variables not discussed in this research.

2. **Simultaneous Test (F-Test)**
   Simultaneously (over all test) using the P-value criterion of F count, the conclusion is that the variables of age at first marriage, wife's education, husband's income, employment status, and use of contraceptives have a very significant effect on the number of children born alive. Through the E-views 9 program, the value of Sig = 0.000000 < 0.5 means that together the variables of age at first marriage, wife's education, husband's income, employment status, and use of contraceptives affect fertility in poor families in Jambi City.

3. **Partial Test (t Test)**
   Partial testing is intended to determine whether the independent variables, age at first marriage, wife's education, husband's income, employment status, and use of contraceptives significantly affect the dependent variable (number of children born alive). Testing is done by comparing the value of t statistics at the 5% confidence level. If the significance level is less than alpha (5%), this means that partially the independent variable has a significant effect on the dependent variable. If the significance level is greater than alpha (5%), it means that partially the independent variable has no significant effect on the dependent variable. In the following, multiple linear regression is presented for the t-test of Fertility Statistics in poor families in the Jambi City Research location.

1. **Age of first marriage**
   The statistical t value for the variable age at first marriage is -2,317566 with a probability of age at first marriage of 0.0232. This number is smaller than the alpha value of 5% or (0.0232 < 0.05). Age at first marriage has a significant effect on the number of children born alive. The negative coefficient sign means that the lower the age at first marriage, the greater the number of live births, and vice versa.

2. **Wife's Education**

   The t-statistical value for the wife's education is -4.861316 this number with an alpha of 5% smaller (0.0000 < 0.05). It is concluded that the wife's education has a significant effect on the number of children born alive. The negative coefficient indicates that the higher the education of the wife, the fewer the number of children born alive, and vice versa.

Husband's Income

The t-value of husband's income statistic is -3.436529 with an alpha of 5% smaller (0.0010 < 0.05). In conclusion, husband's income has a significant effect on the number of children born alive. With a negative coefficient, the higher the husband's income, the fewer the number of live-born children he has, and vice versa.

3. **Job status**

   Employment status used qualitative measurements, working with (Dummy = 1) and not working (Dummy = 0). The t-value of the employment statistic is -3.977090, with an alpha of 5% smaller (0.0002 < 0.05). This means that employment status has a significant effect on the number of children born alive. So wives who are working have fewer children born alive, and vice versa.

4. **Use of Contraceptives**

   For contraception (D = 1), and not using contraception (D = 0). The statistical t-value of contraceptive devices is -0.911225, with an alpha of 5% greater (0.3651 > 0.05). It was concluded that the use of contraceptives had no significant effect on the number of live births. This means that there is no significant difference between those who use contraceptives and those who do not. This is supported by JART, which is greater in the poor families of Jambi City, (4.4 people) compared to Jambi Province only (4.2 people) in 2020.

6   Conclusions and Suggestions

6.1   Conclusion

Based on the analysis of the results and objectives of this study, several important conclusions were obtained in this study.

1. In general, the productive age family members (40–49 years), the average is 43.07 years. Education Level 43.75% Junior High School/Equivalent. Status of the house 57.50% own house. As much as 53.75% of the poor families in Permanent homes. The area of the house owned is 58.25% less than 50 m^2. The average number of household members is 4.4 people. The number of children from poor families who finished high school/equivalent and above was 22.50%. Asset ownership: Motorcycles 92.50%, refrigerators 73.75%, and washing machines 52.50%. The main occupation is 45.00% as construction workers. The average income is IDR 1,931,250. The province where 66.25% was born is Jambi Province.

2. Age at first marriage, Wife's Education, Husband's Income, Wife's Employment Status, and Use of contraceptives, simultaneously affect and are able to explain the number of live births by 76.74%, and the remaining 23.26% is explained by other variables not discussed in this research. Partially, the variables of age at first marriage, wife's education, husband's income, and employment status have a negative and significant effect on the number of children born alive in poor families in Jambi City.

6.2 Suggestions

1. It is necessary to make the head of the family more productive, with an increase in education and skills in the future. Improving the education of children of poor families by opening up wider opportunities for access to higher education. Opening wider job opportunities, especially those that are labor-intensive, to increase the income of poor families.
2. It is necessary to mature at the age of first marriage, to increase the education of pre-marital women to be more open. Improving the skills of the wife as a provision to increase family income. Be more selective in determining the contraception used.
3. There is a difference in the number of children born alive to working and non-working women. Further research is needed, by increasing the sample and expanding the scope of the area that is the object of research, as well as analytical tools to be used in the future.

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