

CORRELATION BETWEEN PREGNANCY, POVERTY, AND COVID-19 DURING THE PANDEMIC IN INDONESIA

Irzameingindra Putri Radjamin*

Raymond Lim

Puteri Riztin Perdanasari

Erisa

Olivia Margaretha Sugiarto

Natalisa Margaretha

Development Economics Department, Faculty of Business and Economics, Universitas Surabaya
Raya Kalirungkut Street, Surabaya, Indonesia, 60293

Email: irza@staff.ubaya.ac.id*, raymond.lim8852@gmail.com, riztin@gmail.com,
putrierisa20@gmail.com, olivia.margaretha06.om@gmail.com, natalisamargaretha@gmail.com

*corresponding author

Submission 16 March 2022, revision 19 April 2022, accepted 07 May 2022

ABSTRACT

The COVID-19 pandemic has raised several social issues in every global sector. One of the social issues is the fluctuation of fertility rates that varies among developed and developing countries during the pandemic. This article examines the casual correlation between COVID-19, poverty, and pregnancy. This study seeks to understand whether there is either no correlation, one-way correlation, or two-way correlation between the variables by adopting the quantitative-descriptive method using a Pair-Wise Granger causality test. Even though COVID-19 raises concern for females to have a kid globally, Indonesia shows the opposite result that the pandemic affects pregnancy.

Keywords: C23, H84, I32, J13

DOI: <https://doi.org/10.24123/jeb.v26i2.5098>

1. INTRODUCTION

Coronavirus Disease 2019 (COVID-19) is a new type of disease that humans have never previously identified. At the beginning of 2020, Indonesia was shocked by several cases of people being exposed to COVID-19. This incident originated in the Chinese city of Wuhan, and the origin of this virus has not been confirmed. COVID-19 has spread throughout the world and has had an impact on the growth of world economic activities. The COVID-19 virus is dangerous for all people, and if exposed to COVID-19, they have to spend a lot of money for treatment and self-quarantine at home or in the hospital. Many countries have locked down to anticipate the spread of the COVID-19 virus. As a result of the COVID-19 pandemic that led to the lockdown policy, many workers were affected. Most of them needed to work from home or, even worse, was laid off by the company. The mass layoff was done during the pandemic because the company experienced a loss or force majeure. This condition increases the unemployment of people in Indonesia and leads to increased poverty.

As we know, poverty is one index that can see how successful or unsuccessful a country is in development (Nurhidayati & Pandin, 2021). Low per capita income is one of the indexes to measure poverty. Poverty is not only used to understand economic phenomena but also uses to understand various related aspects or dimensions. Theoretically, poverty is categorized into two parts, namely structural poverty and multidimensional poverty. Nurhidayati & Pandin (2021) state the COVID-19 pandemic significantly impacts the number of poverty in Indonesia. The percentage of poor people in Indonesia increased from 0,41 percentage points in March 2020 to 10,19 percent in September 2020. One of the cities in Indonesia, namely Makassar. In 2019, the poverty rate in Makassar reached

4.4% or around 82,326 households then during the COVID-19 pandemic, the number of poor people increased by 3% or around 72,306 households. The poverty rate in the city of Makassar at this time is around 154,362 households. Of course, this new poverty rate occurs because hundreds of businesses or companies have closed and employees have been laid off. Based on data from the Makassar City Manpower Office (2020), it is stated that 9000 workers are at home and 4,732 of them get 20% of the remaining salary and have been laid off. The male population in Makassar is 755,968 and the female population is 770,709, bringing a total of 1,526,677 inhabitants. The number of poor and vulnerable people in Makassar is 228,091, while the poor are 66,224.4.

Financial fluctuation and economic uncertainty during the pandemic period lead to an economic recession, and increasing psychological pressure on individuals and society (Ullah, et al., 2020). One of the pressures was psychological pressure about getting pregnant. Due to the pandemic, most people do their daily activities at home, increasing sexual activity and pregnancy rates in Indonesia. But the unstable economy caused by COVID-19 makes people think twice about getting pregnant. They think that if there is a new individual in their family, it will cost quite a bit for their future, such as school and also the cost of daily life. It is fearful for parents because having children can add to the family responsibility. If their daily needs for husband and wife are not enough, having new individuals or children would be hard for them. Therefore, those unable to finance their daily lives will be increasingly poor if there are new individuals and have to bear the consequences of living a miserable life during the COVID-19 pandemic.

Thus, the economic recession resulting from the COVID-19 pandemic could long-term impact fertility rates, even after the pandemic has subsided or been resolved, the phenomenon called “baby bust”, where *economic shocks reduce fertility rates* (Lin, Law, Beaman, & Foster, 2021). The Guttmacher Institute said that amid the COVID-19 outbreak, 36% of women wanted to delay childbirth and 27% wanted to have fewer children than originally planned. But in a few previous research, women desire to get pregnant increased during the pandemic, 41% said they wanted to get pregnant more, 25% wanted to get pregnant less, and 34% did not explain changes or other things. More than a third 37% said the pandemic made them afraid to get pregnant and 1 in 7 (13%) the rest reported it was more difficult to have children (Lin, Law, Beaman, & Foster, 2021).

Studies show that fertility rates are affected by economic recession and poverty. Poverty rates in both developing and developed countries lead to further variations in fertility rates. In October 2009, the Pew Research Center reported that 14% (ages 18-34) and 8% (ages 35-44) were still planning to postpone having children because of the previous financial crisis. Nowadays, children are considered as the workforce of the household to generate household income and as insurance against old age. The demand for children is higher in low-income families. If a household gains higher income and wealth, they tend to have fewer children either through quantity-quality trade-off (Becker & Lewis, 1973). Women will not be able to plan their fertility careers and not be able to avoid unintended pregnancies (Easterlin & Crimmins, 1987). Newly born children may decrease the mother productivity, either taking more resources (such as food) from her or taking her away from work when she is a primary earner in the household. On the other hand, children may bring more resources to a household by working for wages or transferring from other relatives. Therefore, the net effect of childbearing poverty is unclear (Aassve, Engerhardt, Francavilla, & Kedir, 2005). and Indonesia households choose to have a high quantity of children as a means to boost household resources and thereby reduce poverty risk. Because of that, Indonesia has started implementing policies to prevent the harmful effect of increasing the pregnancy rate via a family planning program.

This virus outbreak requires people to stay at home and many people have not found jobs after graduating from studies so the job opportunities that can be obtained are also getting narrower and require more effort to get them. The impact of this epidemic has changed many people's lives, for example, at first many people lived well enough, and the business also ran smoothly. Now. Many

business goes bankrupt and even falls into poverty and has nothing. Because of that, our team wants to research the current problem by combining three variables: poverty, pregnancy (unwanted pregnancy), and COVID-19 cases. With the correlation of those three variables, we want to find out more deeply by calculating the data from the world bank. With the existing data and journals related to the problems above, we will be able to know clearly how the real relationship between the three variables above is through the conclusions we make later.

2. RESEARCH METHODOLOGY

This study aims to comprehend and delineate the causal correlation between poverty, pregnancy, and COVID-19 in Indonesia through quantitative-descriptive methods. This study uses poverty headcount at national poverty lines as a poverty parameter. At the same time, unwanted pregnancy used as the parameter of pregnancy. The total COVID-19 case is used as the proxy for COVID-19. This research data was obtained from secondary sources: the Indonesia Central Bureau of Statistics, World Bank, and supporting websites for March 2020 to October 2021, including 18 monthly observations. Granger causality test is employed as the methodology and calculated using EVIEWS 9 in this study. They are either a one-way, two-way, or no relationship. Two-period lag was taken in this calculation. Due to the lack of provided data, interpolation and trends applied to the raw data.

1. Validity Test Result

Causality is one of the statistical analyses generally used to create forecasting models and describe causality relationships. Historically, the application of causality in economics was formulated by Granger (1969). Granger causality test is a method for determining whether one time series is significant to forecast another (Granger C. W., 1969). The Granger causality test aims to analyze whether one past variable values help predict changes in another variable (Granger C. W., 1988). In other words, the Granger causality test assesses how the information given by one variable explains the other variable. It also says that variable Y is a Granger caused by variable X if variable X assists in predicting the value of variable Y (Sharmiladevi & Ali, 2013). If the probability value is less than any significance level or alpha, then the hypothesis will be rejected at that level (Wei, 2016).

1. Hypothesis

Examining the causality relationships between poverty and pregnancy, COVID-19 and pregnancy, and COVID-19 and pregnancy in Indonesia was based on the hypothesis in table 1.

Table 1.
Hypotesis

Null Hypothesis	Alternative Hypothesis
Poverty does not granger cause COVID-19	Poverty granger cause COVID-19
COVID-19 does not granger cause poverty	COVID-19 granger cause Poverty
Pregnancy does not granger cause COVID-19	Pregnancy granger cause COVID-19
COVID-19 does not granger cause pregnancy	COVID-19 granger cause pregnancy
Pregnancy does not granger cause Poverty	Pregnancy granger cause Poverty
Poverty does not granger cause pregnancy	Poverty granger cause pregnancy

Source: Primary data processed, 2022

3. RESULT AND DISCUSSION

The Pair-wise Granger causality test shows a variety of correlations between poverty, COVID-19, pregnancy, and dan poverty. The result was shown in **table 2.** which includes the null hypothesis, number of observers, F-Statistic, and probability. 5% significance level was applied in this discussion.

Table 2.
Pair-wise Granger Causality Tests

Pairwise Granger Causality Tests			
Date: 03/27/22 Time: 19:22			
Sample: 1 20			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
POVERTY does not Granger Cause COVID	18	0.29187	0.7516
COVID does not Granger Cause POVERTY		2.96713	0.0868
PREGNANCY does not Granger Cause COVID	18	1.77648	0.2079
COVID does not Granger Cause PREGNANCY		5.35695	0.0201
PREGNANCY does not Granger Cause POVERTY	18	2.01402	0.1730
POVERTY does not Granger Cause PREGNANCY		0.73256	0.4995

Source: Primary data processed, 2022

If the probability of showing an outcome is less than 5%, then there is a relationship showing the significance and a one-way correlation. Still, if the probability is more than 5% then the relationship means no significant things. Looking at the 0.0201 probability number of COVID-19 against pregnancy, it can be said that COVID-19 has a large and significant effect on events as we said in the introduction section, these things are caused by families who choose to spend more time at home, so having sex with a partner is also increasing. In the first COVID-19 era in Australia (March - April 2020), in fact, there were baby boomers detected when many women already knew the age of the womb 6-10 weeks known as “unwanted pregnancy” (Moaven & Brown, 2021). When the COVID-19 rate tends to rise, the pregnancy rate also increases, which illustrates this point. However, many of them said that they did not expect the pregnancy to happen (Lin, Law, Beaman, & Foster, 2021). The conditions between variables of COVID-19 to pregnancy lead to increased birth rates. Still, in terms of the health of pregnant women, because COVID-19 is very dangerous, health facilities for women pregnancy are not as good as before COVID-19. On the other hand, the pregnancy rate has no significant effect on COVID-19 and shows a probability of 0.2079.

The probability number of poverty against COVID-19 is 0.7516 and COVID-19 to poverty is 0.0868, both of which show insignificant results and do not influence each other but have a slight difference. According to Wiwad, etc (2021), many people whose incomes are getting smaller and lose their jobs because the company cannot pay them. But, there are also ideal conditions for entrepreneurs owning a big business in the COVID-19 era to make employees work as productive as possible. In the end, we can conclude that up or down the movement of COVID-19, people will still be able to earn income and be kept out of poverty. The probability numbers that appeared on our side and the research references we found are actually the opposite. The statistical result shows that COVID-19 against poverty does not significantly influence, but we know that because of COVID-19 many people are fired, lose their jobs, and become poor. As reported in Kata Data, the number of people experiencing poverty in Indonesia since September 2019 increased by 11% from 24.8 to 27.5 million people in September 2020 was 27.5 million. This condition became the lowest point in the last five years. Not only that, during the COVID-19 pandemic, Indonesia economic inequality also widened.

Nowadays, the problem of (unwanted) pregnancy and poverty still continues in Indonesia. For example, some poor families took advantage of the presence of children so they can be used as

insurance in the future. Many of them think that having many children will make them more prosperous. In fact, many new babies born in Indonesia were stunted, lowering the future welfare possibility. This condition happened because his mother could not buy healthy and nutritious food during pregnancy. Based on the poverty to pregnancy data we have interpolated, it shown probabilities of 0.4995 and 0.1730. This data also proving that the relationship between these variables is insignificant due to pregnancy affairs and economic interests as a benchmark are things that do not affect each other, although in the end for pregnancy purposes it must be accompanied by financial support. Among pregnancies to poverty, there will never be a factor from pregnancy that can determine the level of property owned by a person, the existence or absence of money precisely all women are unable to avoid unwanted pregnancies (Easterlin & Crimmins, 1987). Poverty to (unwanted) pregnancy is an insignificant relationship that cannot be assumed for obvious reasons because poverty can happen to anyone regardless of time and place.

4. CONCLUSION AND SUGGESTION

The very contrasting matter of Pairwise Granger Causality Tests in the relationship between COVID-19 on pregnancy; COVID-19 on poverty, both of which we found things that were not previously in worldwide research. Therefore, our research helps to analyze and uncover something as a new light in a similar study. The influence of COVID-19 on pregnancy, in addition to significantly increasing the number of unwanted pregnancies, we analyzed the influence of high COVID-19 can also harm pregnant women, and health facilities become inadequate. We want to relate this to further research to be complete information in the world of health and pharmacy, so there is new innovation and protection for pregnant women during COVID-19. The phenomenon of COVID-19 to poverty shows insignificant numbers and no correlation a person life will not be possible to survive without income if he loses his job due to a pandemic, although it may be that the probability data we obtained is pure poverty. However, the number of poverty is increasing, and the poor people are getting poorer because of COVID-19. The research we read about both variable relationships is also less supportive to prove that the data we encountered follows the circumstances of poverty. This study also needs further research to detect poverty indicators more complexly (affected by COVID-19 or not). Last but not least, there is a potential correlation between COVID-19 and poverty moderated by another variable that needs further research.

REFERENCES

- Aassve, A., Engerhardt, H., Francavilla, F., & Kedir, A. (2005). Poverty and Fertility in Less Developed Countries: A Comparative Analysis. *Discussion Papers in Economics*.
- Becker, G., & Lewis, H. (1973). On the Interaction between the Quantity and Quality of Children. *Journal of Political Economy*, 81(2), 279-288. Retrieved from <https://www.jstor.org/stable/1840425>
- Easterlin, R. A., & Crimmins, E. M. (1987). The Fertility Revolution: A Supply-Demand Analysis. *review*, 15(1), 157-161.
- Granger, C. W. (1969). Investigating causal relations by econometric models and cross spectral methods. *Econometrica*, 37, 424-438.
- Granger, C. W. (1988). Some Recent Developments in a Concept of Causality. *Journal of Econometrics*, 39, 199-211.
- Lin, T., Law, R., Beaman, J., & Foster, D. (2021). The impact of the COVID-19 pandemic on economic security and pregnancy intentions among people at risk of pregnancy. *Contraception*, 103(6), 380-385. doi:<https://doi.org/10.1016/j.contraception.2021.02.001>
- Moaven, L., & Brown, J. (2021). COVID-19 "Baby Boom". *Medical Journal*, 214(8), 386-386.

doi:10.5694/mja2.51010

- Nurhidayati, R. P., & Pandin, M. (2021). Analysing Poverty during Covid-19 Pandemic in Indonesia Based on Historical Perspective. *Preprints*. doi:10.20944/preprints202106.0307.v1
- Sharmiladevi, J., & Ali, M. (2013). A Granger Causality Analysis Between Foreign Direct Investment and Economic Growth. *Global Journal of Arts & Management*, 3(1), 15-17.
- Ullah, M., Moin, A. T., Araf, Y., Bhuiyan, A. R., Griffiths, M. D., & Gozal, D. (2020). Potential Effects of the COVID-19 Pandemic on Future Birth Rate. *Front. Public Health*, 8. doi:10.3389/fpubh.2020.578438
- Wei, W. (2016). Vertical specialization and increasing productive employment: Comparing impacts of conventional trade and processing trade patterns on labor market in China. *If probability value is less than any level, then the hypothesis would be rejected at that level.*, 71-138. doi:https://doi.org/10.1016/B978-0-08-100627-6.00004-7
- Wiwad, D., Mercier, B., Piff, P., Shariff, A., & Aknin, L. (2021). Recognizing the Impact of COVID-19 on the Poor Alters Attitudes Towards Poverty and Inequality. *Journal of Experimental Social Psychology*, 93. doi:https://doi.org/10.1016/j.jesp.2020.104083