ADOLESCENT BIRTH RATE: BETWEEN WOMEN PARTICIPATION IN PARLIMENT OR WOMEN POPULATION WITH SECONDARY EDUCATION

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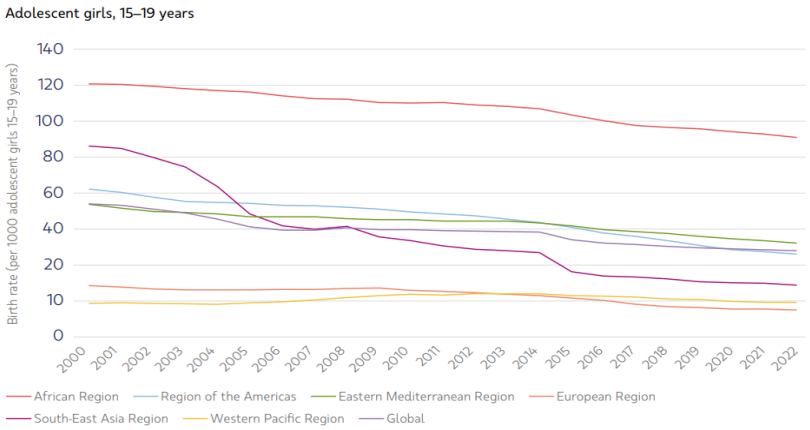
ABSTRACT

This study investigates the causal relationship between women's participation in parliament and the proportion of women with secondary education on the global adolescent birth rate. Utilizing data from the United Nations Development Programme's Gender Inequality Index, the research adopts a quantitative, explanatory design to examine how these independent variables influence adolescent birth rates across countries. Multiple linear regression analysis was employed to test the proposed hypotheses. The results reveal a divergent pattern: Women's participation in parliament (X1) shows a positive causal relationship with the adolescent birth rate (coefficient = 0.009547). In contrast, the proportion of women with secondary education (X2) demonstrates a statistically significant negative relationship (coefficient = -0.730165). These findings indicate that contrary to expectations, increased parliamentary representation alone does not significantly contribute to reducing adolescent birth rates. In contrast, a higher percentage of women receiving secondary education is significantly associated with lower adolescent birth rates. These results underscore the urgent need to prioritize female education as a more effective strategy for addressing adolescent fertility globally. While political representation remains important for broader gender equality goals, this study contributes to the existing literature by highlighting that educational attainment among women has a more direct and measurable impact on adolescent reproductive outcomes. The findings provide valuable insights for policymakers, international development agencies, and gender equity advocates seeking data-driven approaches to reduce adolescent births and improve gender-sensitive health and education policies.

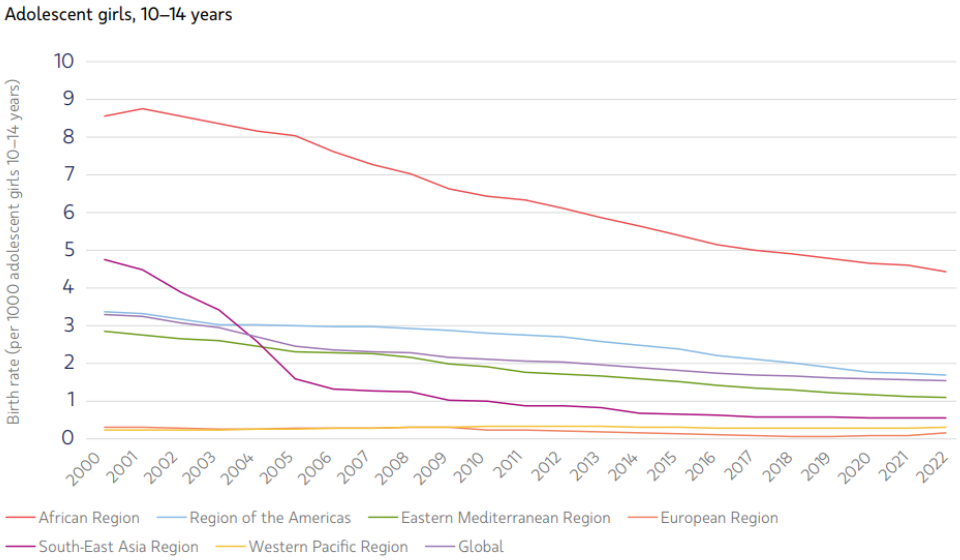
Keywords: *adolescent birth rate; education; multiple linear regression; parliament; women*

INTRODUCTION

The high adolescent birth rate is still the main focus nationally and globally which has serious consequences in the health, social, and economic sectors. If we refer to The Sustainable Development Goals (SDGs) adolescent girl are 15 to 19 years of age while younger adolescent girl can be categorized from 10 to 14. In addition, for adolescent birth rate (ABS) according to World Health Statistics (2023) the trend has been declining yet it happened very slow and uneven. An deniable fact that globally the the progress in diclining ABS quite promising yet not all only countries equally experiencing a positive improvement. As we can se from the chart below:



Source: World Health Statistics (2023)



Source: World Health Statistics (2023)

As we can see in the charts above, there are a declining yet it is not significan and not in equally pace and levefor each region. To reduce the ABR is crucial not only for the mother but also for the child. According to World Health Statistics (2023)" Early childbearing poses increased health risks to adolescent mothers, as well as hampering their access to education". Supportted(Expert Group, 2020) that Maternal conditions are a leading cause of death among adolescent girls globally. The issue of the adolescent birth rate is supported by Unicef (2024) that Globally in 2022, an estimated 13 per cent of adolescent girls and young women give birth before age 18. Early childbearing, or pregnancy and delivery during adolescence, can derail girls' otherwise healthy development into adulthood and have negative impacts on their education, livelihoods and health. It is also in line with McQueston (2012) who argues that giving birth during adolescence can lead to unfavorable socioeconomic conditions, such as dropping out of school, loss of productivity, and intergenerational transmission of poverty. This phenomenon is disturbing because it is significant across all types of gender as Klepinger (1995) found that women who gave birth to children under the age of 20 had reduced school performance by almost 3 years for white, black, and Hispanic races. If we refer to

the urgency of protecting each citizen's life which becomes every state's interest, then this issue is needed to be put into high consideration as the adolescent birth rate can cause mortality in women.

In line with this discussion, researchers found that the cause of the high adolescent birth rate was due to child marriage (WHO, 2022). Therefore, we assume that decreasing child marriage logically can reduce the adolescent birth rate as a result the death among adolescent women can be avoided. Among the ways that can be used to reduce the number of early marriages is through regulations or policies that are written officially confirming that early marriage, especially for women, is prohibited and it will be even more effective if it is emphasized that a woman can only get married when she is 20 years old. Of course, this regulation can easily be realized if women have involvement in parliament since women theoretically are highly creating or encouraging policy that in favor of their gender (Wangnerud, 2009 in Halimatusa'diyah and Arif, 2020) as it is also mentioned by Satris & Sabilla (2021a) where they found that women political participation in parliament can give effect to advocacy, especially in terms of gender issues.

The form of policy and advocacy for gender issues or women, when they are in parliament, can be related to the adolescent birth rate due to the urgency of the issue nationally and internationally. From that assumption, we can see logical causal inferences that the more women are involved in the parliament, the higher possibility for the adolescent birth rate in a certain state can be reduced. It means that there is a possibility that the existence of women in the parliament will not give a significant effect on any policy such as policy related to the issue of adolescents. Therefore, researchers argue the first hypothesis that a higher women's political participation in a parliament can create a lower adolescent birth rate in a state.

On the other hand, education also matters in reducing women's adolescent birth rate. According to Black, et al (2008), education may also operate through a delay of first births during the teenage years through a pure 'incapacitation' or 'incarceration' effect: keeping teenagers in school, under adult supervision, limits their time/opportunities to engage in risky behavior like unprotected sex. Such birth postponement may also be related to the role incompatibility of enrolment in the educational system and motherhood. Marked by several negative effects following the phenomenon of adolescent birth, it is highly suggested that all children should finish basic school, eliminate gender differences at all levels of education and reduce the adolescent birth rate.

Then in 2030 ensure universal access to sexual and reproductive healthcare services, including family planning, information and education, and the integration of reproductive health into national strategies and programs. From the theory, we can conclude that the female population with a secondary education level can also reduce the adolescent birth rate by providing an understanding of the negative impacts that occur when they experience early marriage. In addition, a female who has a high level of education will certainly understand the negative impact that can be experienced when giving birth in their teens (15-19). Adolescents who educate enough will have the ability to sort out information and finally choose to distance themselves from being part of the problem. Moreover, a female who has access to the secondary education level will be

focused on her education at that age and distracted her from any tendency toward early marriage which systematically decrease the adolescent birth rate issue. Due to the theory and assumption above, the researcher promotes a competing hypothesis as the second hypothesis that argues countries that have a higher woman population with secondary education are more likely to have a lower adolescent birth rate.

To sum up, many researches were conducted on population on secondary education (Kim & Kim, 2014; Mikkonen et al., 2018; Tieben & Wolbers, 2010; van Rhijn et al., 2016), women participation in the parliament (Balance, 2019; Francesca Lu & Leilanie LU, n.d.; Kireyeva et al., 2021; Koszela & Ochnio, 2014; Mutiara Bahari et al., 2019; Preeti Sharma, 2020; Satris & Sabilla, 2021b), and adolescent birth rate (Oliveira et al., 2021; Yaya et al., 2020) yet rarely research was done to see causal inference among those variable. Furthermore, WHO (2022) claims that the factors which can affect the adolescent birth rate are related to child marriage, child sexual abuse, violence against women, and limited access to contraceptives but none of them mentioned other factors such as education or women's involvement in politics. These facts urge the importance of this study as it would be significant for filling the literary gap in relevant fields. This study tried to prove the causal inference of women's participation in parliament and women population with secondary education level on reducing adolescent birth rate in the world. To see the meaningful relation between each variable, researchers develop research question as follow: 1) to what extent that women's participation in parliament affects the adolescent birth rate, and 2) to what extent the women population with secondary education can reduce adolescent birth rate in the world in 2021?

RESEARCH METHOD

Data and Research Method

To explain any meaningful correlation between the dependents and independent variables, researchers used the data from UNDP which scores the Gender Inequality Index based on certain variables. The data can be accessed through this link website https://hdr.undp.org/sites/default/files/2021-22_HDR/HDR21-22_Statistical_Annex_HDI_Table.xlsx The data is in the form of aggregate data at the national level which is consisted of 195 countries states. From the data, we will explain the independent variable 1 and 2, the reason for choosing two independent variable due to at least two reason. First is methodological logic and previous study reasoning. Based on methodology approach that researchers used which is quantititave multivariete, we tend to know the causal inference of by involving more then one independent variabel that will be regressed to know each affect toward th dependent variabel. Meanwhile, as we based on this reseach with several previous literature, we found that both independent variabe might effect dependent variable. Therefore, those two variabel can be considered to assess. Hopefully, we migh found which one among the involvemnt women in the parliment or Population Women with secondary education that actually really effect to reduce the adoloscent birth rate. For the first independent variable (X1) which is the Women's Participation in Parliament, we can estimate using high and low values regarding how much share seats in the parliament that women earn.

For the second independent variable (X2) researchers used the female population with secondary education. To measure it, researchers used low and high values. The researchers also used a control variable, in this case, gross national income. The control variable is used to see another trend of the causal relation with the involvement of another variable besides the dependent variables. Meanwhile, for the dependent variable, we chose the adolescent birth rate with the high and low values for measurement. The table of the variables used in this research can be seen below:

Table 1. Variables

A	B
Independent Variable 1	Share of seats in parliament
Indicator	a. High b. Low
Dependent Variable	Adolescent birth rate
Indicator	a. High b. Low

A	B
Independent Variable 2	Female population with secondary education
Indicator	a. High b. Low
Dependent Variable	Adolescent birth rate
Indicator	c. High d. Low

Research design and analysis

Researchers choose a quantitative method to reveal whether the dependent variables are affecting the dependent. For the design, explanatory is chosen with multi-linear regression. The design is used to answer and test the hypotheses of this study. The multiple regression analysis is applied to assess the impact of woman's participation in parliamentary and women population with secondary education on reducing the adolescent birth rate. Multiple regression is the linear regression model using two or more independent (or explanatory) variables to predict a dependent variable (Jenkins; 2017). The equation of the models can be expressed as:

Table 2. Equation

Model 1	$Y = A + BX1 + BX2 + E$	**(Equation 1)**
Model 2	$Y = A + BX1 + BX2 + BX3 + E$	**(Equation 2)**

In which, Y is the result of the regression between the dependent variable and the independent variable which is equipped with possible errors that occur. A is the mean alpha, alpha represents the dependent variable. While B is beta which is an independent variable, and E is an error. In every regression, the calculation needs to put an error. Because we are not 100% sure with the data we have. As it has explained that this research is also used a control variable, the equation of it can be seen in model 2. Where BX1 + BX2 are independent variables while BX3 is the control variable.

RESULT AND DISCUSSION

Results

Multiple linear regression analysis was carried out to determine the extent to which the Independent-Woman participation in Parliamentary and woman population with secondary education variable influences the level affected to adolescent birth rate. The analysis consists of 2 models. The first model tries to find the causal inference between 2 independent variables and 1 dependent variable, while the second model is putting the control variable to see another variant of the causal inference.

The first model shows women's participation in parliament (Hypotheses 1) but does not show statistics significant in association with the adolescent birth rate. It is illustrated that the representation of women in parliament does not have a significant impact on reducing the adolescent birth rate in the world because it has a positive correlation with coefficient score BX1 = 0.009547 which means that every 1-point increase in women's participation in parliament in association with 0.009547 increase in the adolescent birth rate.

On the other hand, the female population in secondary education shows negative linear regression with a coefficient around -0.730165 (BX2). It means that there is a causal inference that is in line with the second hypothesis, or we can firmly say that female education in secondary education can reduce adolescent birth rate. Furthermore, the coefficient shows statistically significant. The result also shows that the adjusted R squared is 0.3864. It means that there is a 38% contribution of women participation in parliament and population with secondary education toward adolescent birth rate. The result of the regression can be seen in the figure below.

Table 3. Model 1

Parliament	0.009547 (0.173)
Education	-0.730165 *** (0.067)
Intercept	86.67*** (5.700)
Adj. R Square	0.3864
N	188

Note: Standard errors in bracket. *p< 0,05, ** p< 0,01, ***p<0,001, #p <0,10

For the second model, the same trend also appeared although the scores are slightly different where gender is not statistically significant with only a coefficient score of 0.1660647. Meanwhile, the female population with secondary education shows a coefficient score of -0.5138832 and it is statistically significant once again it shows meaning the correlation or the female population on secondary education can decrease the adolescent birth rate. However, since this regression involves the control variable, which is gross national income, we also found that the control variable shows negative linear regression which is statistically significant. The adjusted R-squared in the second model is 0.4416 which is higher than the first model and it is logically possible since this

model consists of 3 variables which assumably affect the dependent variable compared to the first model which only consists of 2 variables. The result of the second model analysis can be seen below:

Table 4. Model 2

Parliament	0.1660647 (0.169)
Education	-0.5138832 *** (0.080)
Income	-0.0007607*** (0.0001)
Intercept	80.64*** (5606)
Adj. R Square N	0.4416 188
Note: Standard errors in bracket. *p< 0,05, ** p< 0,01, ***p<0,001, #p <0,10	

Discussion

Based on the results of multiple linear regression analysis, we can conclude that the null hypothesis failed to reject and hypothesis 1 where women's participation in parliamentary affects to reduce the adolescent birth rate is not proven. In models 1 and 2 with coefficients 0.009547 and 0.1660647. In model 1, we can interpret that 1 unit increase in women's participation in parliament in association with 0.009547 in the adolescent birth rate. If we refer to the second model, we can interpret that a 1-unit increase in women's participation in parliament is associated with 0.1660647 in the adolescent birth rate. Both models show positive causal inferences or meaningful correlations. However, if we refer to the hypothesis that higher women's political participation in a parliament can create a lower adolescent birth rate in a state, the hypothesis testing using multiple linear regression prove that the higher participation in parliament does not decrease the adolescent birth rate. It increases the adolescent birth rate, either the coefficient value is 0.009547 or 0.1660647.

Although indirectly we know that women's representation in parliament is expected to be able to raise beneficial rights for women through policies set. However, it turns out that the high representation of women in parliament cannot have an impact on reducing the teenage birth rate. This may be because not all women in parliament have access to make policies that support reducing the teenage birth rate, such as setting the age for marriage. This is in line with research that was conducted by the Center for Political Studies, University of Indonesia, it shows empirical evidence that approximately 40% of female MPs in Indonesia have never been involved in budgeting and legislation processes (Sasmita, 2013 in Halimatusa'diyah and Arif, 2020).

On the other hand, the female population in secondary education based on the analysis is proven to decrease the adolescent birth rate, either -0.730165 or -0.5138832 in a model 1 or 2. The result of the regression in the female population with secondary education toward adolescent birth rate shows negative linear regression. Using 1 unit

increase in the female population with secondary education in association with either -0.730165 (model 1) or -0.5138832 (model 2) decrease in adolescent birth rate. If we refer to the competing hypothesis where countries which have a higher woman population with secondary education are more likely to have a lower adolescent birth rate. Then, the hypothesis testing is successful in rejecting the null hypothesis. In conclusion, the women population with secondary education is indeed decreasing the adolescent birth rate and the result is statistically significant the finding endorses the theory on the Important of education to prevent adolescent birth rate. This finding endorses a report from the World Bank (2022) which founds that in Latin America and the Caribbean, girls with higher education are highly unlike to have children at the age of 18 compared to primary or no-education girls.

In line with the discussion, the adjusted R-squared in the two models shows either 0.3864 or 0.4416 which means around 38% or 44% contribution of women participation in parliament, female population with secondary education, and gross national income toward adolescent birth rate which means 62% in the first model and 56% in the second model is affected by other variables. The increase of adjusted R-squared from 38% to 44% show that the more variables involved in predicting the dependent variable, the higher percentage of contribution will appear.

In the second model regression, we also put the control variable and try to regress it to predict the causal inference toward the independent variable and it is found that the gross national income is statistically significant by -0.0007607 coefficient score. It means that a 1 unit increase in gross national income is associated with a -0.0007607 decrease in the adolescent birth rate. From this finding, we can see that gross national income can reduce the adolescent birth rate compared to women's participation in parliament although the result is lower than the female population in secondary education.

CONCLUSION

This study addresses the research question concerning how women's participation in parliament and the female population with secondary education influence the adolescent birth rate. The findings indicate that women's participation in parliament has a minimal and statistically insignificant effect (0.009547), failing to support the hypothesis that it reduces adolescent birth rates. In contrast, the study provides robust evidence that a higher proportion of women with secondary education significantly reduces adolescent birth rates by -0.730165 in model 1 and -0.5138832 in model 2, confirming the critical role of education in preventing early pregnancies. Additionally, gross national income is shown to be a stronger determinant than political representation in reducing adolescent birth rates. These results emphasize the importance of socioeconomic and educational interventions over political representation alone. The variation in adjusted R-squared across models also highlights the influence of including more explanatory variables in understanding the complexity of adolescent birth rates. A mixed-methods approach is recommended for future research to complement these quantitative findings with qualitative insights, offering a deeper understanding of the

underlying social, cultural, and institutional factors driving adolescent births and informing more holistic policy solutions.

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