




Desire to Have Children Assessed from Socioeconomic Context Post Disaster in Palu

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Abstract: An earthquake measuring 7.4 on the richter scale rocked the central part of Indonesia in Palu, Sigi, and Donggala on September 28, 2018. The earthquake that was accompanied by the tsunami and liquefaction caused 4,340 fatalities people including children. This study aims to look at the socio-economic role (age, education, occupation, income and ethnicity) on the mother's desire to have children after the disaster in Palu City. This research was conducted in Palu and the participants in this study were 382 mothers. The sampling technique uses propositional stratified random sampling. Data analysis using linear regression analysis. Research result shows that socioeconomic factors (age, education, occupation, income, and ethnicity) simultaneously contribute to the desire of mothers to have children, and age become the most dominant factor in a role. The conclusion of this study shows that the age group at risk of pregnancy and childbirth, high education, have a job, have worked have an increased desire to have children. The results of this study are expected to be a reference or guide in predicting fertility and the desire to have children in areas affected by natural disasters, especially earthquakes, tsunamis and liquefaction, viewed from the socio-economic context.


1 INTRODUCTION


Geographical impacts can create instability, risk, and uncertainty in the population process in communities in an area. One of the geographical effects that occur is natural disasters. Natural disasters are caused by hydro-meteorological, climatological, geophysical, and biological phenomena which adversely affect the affected natural environment. The effect is in terms of casualties and material damage. High-intensity external assistance is needed in the event of natural disasters (e.g., floods, landslides, storms and earthquakes, tsunamis including liquefaction) (Mata-Lima *et al.*, 2013).


An earthquake measuring 7.4 on the Richter scale shook the central part of Indonesia, to be precise in the cities of Palu, Sigi, and Donggala on September 28, 2018, which occurred at 18.02 WITA which was accompanied by a tsunami and the emergence of new

phenomenon, namely liquefaction or land subsidence due to the density of soil volume. Liquefaction, known as moving land, has buried many residents and their homes, such as in Perumnas Balaroa, Petobo Palu Village, and Jono Oge Village, Sigi Regency. This disaster caused 4,340 fatalities.

Disasters on a large scale caused many casualties, including children. Women who have lost their children or died tend to change their children to certain social groups such as extended families or ethnic groups. Previous studies have documented shifts in infertility after earthquakes, hurricanes, famine, economic crises, terrorist attacks, wars, and genocide (Finlay, 2009). According to Mason, before the demographic transition, the decision to give birth was based on groups and communities, which tended to occur through marriage time and intensity. There is a shift where the decision to give birth is based on individuals and families by looking more at the

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family's concrete conditions than accepted social norms (Reher, 2011).

Child mortality has a positive relationship with higher birth choices. The risk of child mortality and women's bargaining power plays an essential role in selecting birth for women in Ghana (Novignon *et al.*, 2019). Women with higher bargaining power tend to prefer smaller numbers of children than women with lower bargaining power. Likewise, there was an increase in childbirth after the Gujarat earthquake; this change give birth was driven by the condition of women who experienced the death of a child (or death in the family). Also, there a reduction in birth spacing (too close birth spacing) between uneducated ethnic groups and Muslim women (Nandi *et al.*, 2018). Another study conducted (Davis, 2017) showed a higher rate of post-disaster births in cities with higher rainfall in the period after Hurricane Mitch. However, births return to average among the affected areas four to six years after the hurricane.

In Aceh, with a death toll of 170,000 people, the tsunami disaster experienced increased births caused by two groups of women. First, mothers who lost their children to the tsunami were significantly more likely to give birth after the tsunami than mothers whose children survived. These births accounted for about 13% of the overall increase in giving birth due to the tsunami. Second, where the local area's mortality rate is higher, women who had not given birth before the disaster were also significantly more likely to give birth after the disaster than the same women in the community with low mortality from the tsunami (Frankenberg *et al.*, 2015). The increase in deliveries due to disasters is inseparable from socio-economic factors; In Coale's theory, it explains three conditions that affect birth in marriage, namely (i) the social context consciously allows birth planning; (ii) availability of information on effective means of birth control; and (iii) clear economic benefits of fertility control. In specific contexts such as disasters, socio-economic conditions can influence birth decisions (Wei *et al.*, 2018).

Socio-economic development has a positive influence on reproductive health in the birth process. Consequently, to examine the independent effects of natural disasters on women's reproductive health, controlling for socio-economic impacts is essential (Bradshaw, 2004). Socio-economy is a measure of an individual's position in the social order hierarchy. The three related indicators are household income, education and employment. Other measures include neighborhood income, family structure, race / ethnicity and accumulated assets or wealth. Socio-economic status is a consistent and reliable predictor

of health inequality, including in the determination of birth decisions (Seabrook, 2015). Economic and environmental instability can also influence birth changes (Lin, 2010).

This study differs from several previous studies in which research has focused on a catastrophic impact on fertility and the desire to have children. Our research focuses on the effects of three disasters at once, namely earthquake, tsunami, and liquefaction, to know the extent of the relationship or socio-economic role (age, education, occupation, income, and ethnicity) on mother's wishes. The expected contribution of this research is to get an overview of the fertility level and the mother's desire to have children after the disaster, which will later be used as a reference or guideline in population policy.

2 METHOD

Conducted this research in Palu. Participants in this study may be 382 mothers who fall into the inclusion criteria, namely fertile age couples (PUS) and mothers affected by natural disasters (earthquake/tsunami /liquefaction). The sampling technique used is proportional stratified random sampling. Before collecting the data, the researcher recommends a research permit to the Central Sulawesi Provincial Government through the One-Stop Investment Service and Integrated Services. After getting the recommendation, the researcher then carried out the data collection process. All mothers were informed about the purpose of this study and how to complete the questionnaire. After all, mothers understand the meaning of the research and how to fill out the questionnaire, the mother can immediately fill out the questionnaire. Data analysis used linear regression analysis to examine the relationship between the independent and dependent variables and how much socioeconomic variables (age, education, occupation, income, and ethnicity) could predict the dependent variable and see the dependent variable's predictor contribution.

3 RESULT AND DISCUSSION

A total of 382 respondents were studied, most of the age group >35 years as much as 50.3% compared to the age group <20 years and the age group 20-35 years although not much different. Most of the respondents had a high school education level of 42.9%. On average, 75.1% of respondents do not

have a job, and this also affects their income, where most of their income is not suitable, namely 79.6% of respondents or below the average minimum wage (UMR). Meanwhile, the largest ethnic group in this study was the original ethnic group (Kaili) at 55%. Can see detail in table 1 below:

Table 1: Frequency distribution of socio-economic characteristics and desires having children in post-disaster mothers.

Variable	n %
Age	
• <20 years	5 (1.3)
• 20-35 years	185 (48.4)
• > 35 years	192 (50.3)
Education	
• Never went to school	0 (0)
• Did not graduate from elementary school	4 (1)
• graduated from elementary school	78 (20.4)
• graduated from junior high school	87 (22.8)
• graduated from high school	164 (42.9)
• College	49 (12.8)
Profession	
• Does not work	287 (75.1)
• Work	95 (24.9)
Income	
• Not corresponding	304 (79.6)
• Corresponding	78 (20.4)
Ethnicity	
• Original	210 (55)
• Comer	172 (45)
Desire to have children	
• Want	234 (61.3)
• Not	148 (38.7)

Based on the tests carried out on the F value, I was that the calculated F value was 8,010, and the significance value was 0,000 or <0.05, even less than 0.01. meaning that the variables age, education, occupation, income and ethnicity simultaneously contributed to the desire to have children in post-disaster mothers. Meanwhile the variable coefficient model can be seen in Table 2 below:

Table 2: Variable coefficient model.

Variable	Desire to have children		
	Beta	t	sig
Age	0.253	4.959	0.000
Education	0.142	2.117	0.035
Profession	0.107	2.055	0.041
Income	0.062	0.940	0.348
Ethnicity	0.062	1.250	0.212

Based on the coefficient model obtained in table 2, the t value of the age variable is 4.95, and the significance value is 0.000 or less than 0.05, which means that age significantly plays a role in the desire to have children. The educational variable obtained a value of 2.117 and a significance value of 0.035 less than 0.05, which means that education plays a role in the desire to have children. For the work variable, the t value is 2,055 with a significance of 0.041, more diminutive than 0.05, meaning that work plays a role in the desire to have children. The t value of the income variable is 0.940. The significance value of 0.348 is more significant than 0.05, meaning that income does not play a role in the desire to have children. For the ethnic variable, the t value is 1.250, and the significance value is 0.212, which is greater than 0.05, meaning that the ethnic variable does not play a role in the desire to have children. The beta test results or the absolute number of the three variables found that the variable that had the most dominant position in the desire to have children was the variable age of 0.253 or 25.3%.

This paper reports a study on the socio-economic role of wanting to have children in the aftermath of the Palu City disaster. Study results do base on the F test of 8,010 and a significance value of 0,000, indicating that age, education, occupation, income, and ethnicity play a role in mothers' desire to have children after the disaster. Age plays a more dominant position in the desire to have children.

Based on table 2, maternal age has a significant role in the desire to have children after the disaster in Palu. This study is consistent with Davis' research (2017), where young women of reproductive age mainly contribute to childbearing in the first years after Hurricane Mitch. In addition, it was also found that women (couples of childbearing age) who have a well-established economy contribute less to births than women who belong to a weak economy (Davis, 2017).

The results showed that the maternal age group was 20-35 years and age > 35 years, after the disaster in Palu, which contributed significantly to the mother's desire to have children. The same research results were also found in India, where mothers aged 20-30 years experienced a relatively high increase in the birth rate of 3.1% after the earthquake. In addition, births also increased in younger women (\leq 20 years) by 2.3% and older women (> 30 years) by 1.1%. For the period 2000 – 2004, the estimated TFR (Total Fertility Rate) data is 2.18 and 2.74 in areas with and without a tsunami disaster. After the tsunami, the birth rate by zone changed, with mortality in the community, there was an increasing

birth especially for women aged 20–34 years, and the overall figures for 2006–2009 were TFRs of 2.67 and 2.52, respectively (Nobles *et al.*, 2015).

In table 2, the study results show that a mother's education plays a role in the desire to have children after the disaster in Palu. The results obtained in Palu are closely related to research on the effects of the great earthquake in India. The study found those uneducated women or did not complete their education experienced an increase in childbirth. In contrast, women with higher education experienced a decrease in birth rates. However, something different was found in Palu. Although the number of women with higher education had a relatively low desire for children, the proportion of women with higher education wanted more children than those who did not want to have children (Mason, 2017). Education creates choices and exerts a strong influence on women in society (Buyinza & Hisali, 2014). Most education at the community level is associated with lower births and longer birth intervals (Axinn & Barber, 2001).

The study results in table 2 show that work plays a role or is related to the desire to have children after the disaster in Palu. The crippled economy and disrupted working conditions resulting from the disaster forced families and women to work hard to meet their daily needs who did not only depend on life support from the government. The results of this study are in line with research conducted by Glavin *et al.* (2020), which shows strong evidence of a strong relationship between women's work and childbirth decisions, where women's social location is thought to play an essential role in shaping their reactions to work (Glavin *et al.*, 2020). Besides that, there are apparent biological differences in the choice to give birth to children; women are considered more responsible for most of the upbringing of children, especially in the early years of a child's life compared to men (Ball & Daly, 2012).

Women's employment status affects their fertility; women who do not work tend to have more children than those who work. Data shows that 63.9% of women of childbearing age who work and live in villages do not have children (Indraswari & Yuhan, 2017). Interestingly enough, in Palu City, of the 49 working women mostly want children; this confirms that although several studies have shown that working women tend not to want children, the effects of disasters change women's decisions to have children.

The study results in table 2 show that income does not play a role in the desire of mothers to have children after the disaster in Palu. The study results are following the findings of research conducted by

Somer (2016), which explains that an increase in family income affects the decision to have children both in terms of number and time of birth. This is based on observations made from the 1970s to the 1990s in Washington, during which time the number of births continued to decline, and most of them occurred in people with good income levels (Sommer, 2016). But unlike what happened in Turkey, about 28% of women with high incomes desire to have more children after the disaster. This also confirms that in disaster conditions or after a disaster, women with good economic conditions also desire to have children, or births can occur because of the increased welfare status of women (Ocalan *et al.*, 2018).

Table 2 also shows that ethnicity does not play a role in a mother's desire to have children in Palu. There is a contrast to other studies. After the earthquake among caste, minority groups experienced the most significant increase in delivery rate (2.8% increase), and deliveries among underdeveloped caste women also increased by 0.9% (Nandi *et al.*, 2018). Another study shows different fertility outcomes among ethnic groups, with reduced chances of pregnancy for Asians and a reduced likelihood of live births for all groups than Caucasians (Butts & Seifer, 2010). Likewise, a study by Seltzer & Nobles (2017) explains that after Hurricane Katrina, the population of women of reproductive age decreased by 61% in the same time period, from around 123,000 in 2005 to 48,000 in 2006. In 2006, the total birth rate (TFR) was lower before the disaster; for black women, the TFR decreased from 2.0 to 1.7. In contrast, TFR increased among white women and increased substantially among Hispanic women.

4 CONCLUSIONS

Natural disasters (earthquake, tsunami, and liquefaction) in Palu caused massive casualties and infrastructure damage, which affected the joints of people's lives. The socio-economic impact affects the population's concept, including fertility, which is the main factor causing high population growth. The research result on mothers' desire to have children after the disaster by looking at socio-economic factors (age, education, occupation, income, and ethnicity) together and simultaneously play a role in the desire to have children, and age is the most dominant factor playing a role.

The results of this study are expected to be a reference or guide in predicting fertility and the desire

to have children in areas affected by disasters, especially earthquakes, tsunamis, and liquefaction seen from the socio-economic context so that if they occur in other places with the same type of disaster, they can find out the description of mothers who have the same kind of disaster. Desire to have more children. The findings of this study can be generalized by considering some methodological limitations. To find out more fully and in depth, it is better for the next research to use a qualitative approach by involving policy makers, especially the government, health service workers (doctors and midwives), the role of families and husbands and other sectors. In addition, other variables can also be used to find out more about why after the disaster the desire to have children increases.

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