

**Does Age of First Marriage Affect Stunting?
(Ecological Analysis of the 2021 Family Data Collection and 2022 Nutritional
Status Survey)**

Authors:

Mita Dwi Ayudha^{1,2)}, Diah Herowati²⁾, Thinni Nurul Rochmah^{1,3)}

¹⁾ Department of Health Policy and Administration,

Faculty of Public Health Universitas Airlangga, Surabaya 60115

²⁾ BKKBN East Java Province, Jl. Airlangga No.31-32, Airlangga, Kec. Gubeng,
Surabaya, Jawa Timur 60286

³⁾ The Airlangga Centre for Health Policy Research Group, Surabaya, Indonesia

Corresponding Email: *mita.dwi.ayudha-2021@fkm.unair.ac.id

About the Author

1. 1st Author : Mita Dwi Ayudha, S.KM
Affiliation : Department of Health Policy and Administration,
Faculty of Public Health Universitas Airlangga, Surabaya
60115
Mailing address : Fakultas Kesehatan Masyarakat, Kampus C UNAIR, Jl. Dr. Ir. H.
Soekarno, Kec. Mulyorejo, Surabaya 60115
Email of author : (mita.dwi.ayudha-2021@fkm.unair.ac.id)
Orcid ID : <https://orcid.org/0009-0003-7257-2403?lang=en>
Google Scholar URL :
https://scholar.google.com/citations?view_op=new_articles&hl=en&imq=Mytha+Ayudha#
Phone number : 08563306944

2. 2nd Author : Diah Herowati
Affiliation : National Population and Family Planning
Board Representative of East Java Province
Mailing address : Bidang Pelatihan dan Pengembangan, BKKBN Jawa Timur,
Jalan Kalibokor Timur No. 1 Surabaya
Email of author : dherowati@gmail.com
Orcid ID : <https://orcid.org/0000-0002-5524-3427>
Google Scholar URL :
<https://scholar.google.com/citations?user=4yPDziEAAA&hl=en>
Phone number : 081332061971

3. 3rd Author : Dr. Thinni Nurul Rochmah, Dra.Ec., M.Kes.
Affiliation : 1) Department of Health Policy and Administration, Faculty of Public
Health Universitas Airlangga, Surabaya 60115. ;
2) The Airlangga Centre for Health Policy Research Group, Surabaya,
Indonesia.
Mailing address : Fakultas Kesehatan Masyarakat, Kampus C UNAIR, Jl. Dr. Ir. H.
Soekarno, Kec. Mulyorejo, Surabaya 60115
Email of author : thinni_nurul@fkm.unair.ac.id
Orcid ID : <https://orcid.org/0000-0001-8845-1153>

ABSTRACT

Adopting the WHO conceptual framework on stunting in children, the causes of stunting in growth and development are due to household and family factors, including maternal factors during pregnancy or before pregnancy, such as teenage pregnancy. This study uses the 2021 Family Data Collection (PK21) which has been verified and validated in 2022 (PK22), a census conducted by the Indonesian Population and Family Planning Agency. The prevalence of stunting uses data from the 2022 SSGI (Indonesian Nutrition Status Survey). To determine the relationship between age at first marriage and the prevalence of stunting, this study used 38 districts in East Java Province as the unit of analysis. Based on PK21 and verbal data, families at risk of stunting are defined as families at risk of giving birth to stunted children. While the dependent variable is selected from data on the number of couples who meet the requirements who are married under age (under 19 years). This research is an observational research that is analytic in nature. Bivariate analysis was performed using Spearman's correlation analysis. From the results of the analysis it was found that there was a relationship between the prevalence of marriage age and the prevalence of stunting in East Java with a p value = 0.005. This means that the higher the prevalence of young marriages in a district, the higher the prevalence of stunting. Therefore, increasing the age of first marriage is a very important measure to end child marriage.

Key : Age of first marriage, stunting, ecological analysis

ABSTRAK

Mengadopsi kerangka konseptual WHO tentang stunting pada anak, penyebab stunting pada pertumbuhan dan perkembangan karena faktor rumah tangga dan keluarga antara lain faktor ibu selama kehamilan atau sebelum kehamilan, seperti kehamilan remaja. Penelitian ini menggunakan Pendataan Keluarga (PK21) 2021 yang telah di verifikasi dan validasi pada tahun 2022 (PK22), sensus yang dilakukan oleh Badan Kependudukan dan Keluarga Berencana Indonesia. Prevalensi stunting menggunakan data dari SSGI

(Survei Status Gizi Indonesia) tahun 2022. Untuk mengetahui hubungan antara usia kawin pertama dengan prevalensi stunting, penelitian ini menggunakan 38 kabupaten di Provinsi Jawa Timur sebagai unit analisis. Berdasarkan PK21 dan data verval, keluarga berisiko stunting didefinisikan sebagai keluarga yang berisiko melahirkan anak stunting. Sedangkan variabel terikat dipilih dari data jumlah pasangan yang memenuhi syarat yang menikah di bawah umur (di bawah 19 tahun). Penelitian ini merupakan penelitian observasional yang bersifat analitik. Analisis bivariat dilakukan dengan menggunakan analisis korelasi dari Spearman. Dari hasil analisis didapatkan bahwa terdapat hubungan antara prevalensi usia kawin dengan prevalensi stunting di Jawa Timur dengan p value = 0,005. Artinya semakin tinggi prevalensi perkawinan muda di suatu kabupaten, prevalensi stunting juga semakin tinggi. Oleh karena itu, peningkatan usia perkawinan pertama merupakan tindakan yang sangat penting untuk mengakhiri perkawinan anak.

Kunci : Pernikahan usia dini, stunting, analisis ekologi

INTRODUCTION

Reducing stunting in children is a National Priority Project (Pro-PN) in Indonesia which is in line with the 2nd SDGs target, namely ending hunger (Beal et al. 2018) . Stunting is a problem of disturbed growth and development, where the disturbance occurs due to chronic malnutrition in children. Stunting can also be caused by repeated infections. Stunting can occur in children aged 0-59 months. There are 2 causes for stunting, namely specific causes (direct causes) and sensitive causes (indirect causes) (Perpres No. 72 2021) .

Specific causes can be due to low nutritional intake, insufficient nutritional intake, co-morbidities from under fives and other factors. This can occur before pregnancy, during pregnancy, up to 2 years of age. Environmental factors such as maternal nutritional status, feeding practices, hygiene and sanitation, frequency of infection and access to health services are key determinants of growth in the first 2 years of life (Prendergast and Humphrey 2014) .

Nutritional problems in toddlers are a public health problem that is still relatively high in Indonesia, both acute and chronic. Stunting or stunting based on age is an indicator of failure to thrive in children under five years of age (toddlers) due to chronic nutritional deficiencies and recurrent infections, especially during the 1,000 First Days of Life (HPK) period, that is, from fetus to 23 month old child. Therefore this 1,000 HPK period is also referred to as the Golden period to prevent or correct stunting problems with various specific and sensitive nutritional interventions. Specific nutrition interventions consist of various programs that aim to address the direct causes of stunting problems, while sensitive nutrition interventions are a group of programs that aim to address various indirect causes of stunting (Makripuddin et al. 2021) .

Adopting the WHO conceptual framework on childhood stunting, CP Stewart et al. (2013) stated that the causes of stunted growth and development due to household and family factors include maternal factors during pregnancy or before pregnancy, such as teenage pregnancies (Stewart et al. 2013) .

In the context of understanding the relationship between the age of first marriage and families at risk for stunting, this study aims to determine whether the age of first marriage for couples who meet the requirements has an effect on high stunting rates. Because the proximate determinants of stunting in children do not only depend on the individual level, this study works on aggregate data. This analysis focuses on how child marriage contributes to families experiencing the 4T conditions (too young, too old, too many and too frequent pregnancies).

METHOD

Participant characteristics and research design

This research is a descriptive research that is analytic in nature. The unit of analysis is districts/cities in East Java with limitations on the independent variable being married women aged <19 years, while the dependent variable is the incidence of stunting.

Sample size, power and precision

This study uses secondary data from the 2021 Family Data Collection (PK21) which has been verified and validated in 2022 , the census conducted by the Indonesian Population and Family Planning Agency. PK21 provides four main indicators, namely demography, family planning, family development and stunting. Meanwhile, the prevalence of stunting is taken from the SSGI data for 2022. The data is available at the link <https://geoportal.big.go.id/webapp/dashboard-stunting/#>. To determine the relationship between the age of first marriage and the incidence of stunting, this study used 38 districts in East Java Province as the unit of analysis.

Based on PK21, the family questionnaire provides information about families at risk of stunting. Families at risk of stunting are obtained from one of the 4 too many factors, namely too young, too old, too many and too frequent pregnancies. The independent variable was selected from data on the number of eligible couples who married underage (under 19 years) on the too young variable. While the dependent variable in this analysis is the number of stunting events from the SSGI results in 2022.

Measures, covariates and data analysis

This study aims to see a relationship between early marriage and stunting in East Java. The analysis uses aggregate data on young marriage outcomes from PK21 and the prevalence of stunting from SSGI results in 2022. Prior to testing the relationship, each variable is tested for normality. The results obtained on the independent variables were not normally distributed (Sig. < α), so that bivariate analysis was carried out using Spearman's analysis. It is said there is a relationship if the significance value is less than 5%.

Table 1 Variable normality test

Variable name	N	Statistical test	asymp. Sig. (2-tailed)
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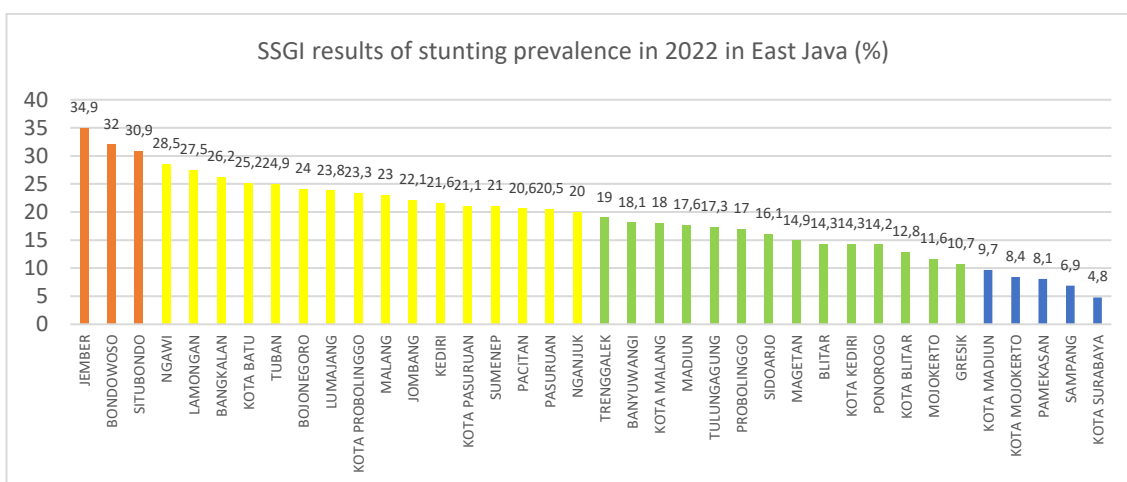
Married young (<19 years)	38	0.187	0.002
stunt	38	0.073	0.200

(Source: SPSS statistical analysis)

RESULTS AND DISCUSSION

Prevalence of stunting

The prevalence of stunting in East Java in 2022 is 19.2%, Figure 1 shows an illustration of the prevalence of stunting from the SSGI results in 2022 in East Java based on district/city, Jember recorded the highest case of 34.9% and the lowest in Surabaya City was 4.8% (RI 2022).



(Figure 1 Overview of stunting events in East Java in 2022)

The prevalence of stunting in East Java is categorized according to the level of cases as shown in table 1 which shows that most districts/cities in East Java have a high prevalence of stunting (42.1%), while regencies/cities that have a prevalence of stunting in a low category are only 13.2%. The indicators in SSGI 2022 consist of specific nutritional indicators and sensitive nutritional indicators.

The high level of stunting in East Java, according to research conducted using an ecological analysis approach, can be caused by the coverage of toddler health services, the coverage of immunizations, the coverage of families who can access healthy latrines, and exclusive breastfeeding. (Ridwanah et al. 2021) . Coverage of maternal health services means that the health of the mother during pregnancy can affect the health of the baby to be born. Mothers with high-risk pregnancies affect the health of the fetus they contain. Pregnant women and postpartum women with chronic energy deficiency indicate that they experience chronic energy deficiency, this can have an impact on the nutrients that are distributed to the fetus, the milk content of postpartum women who experience chronic energy deficiency will also decrease. In line with research from Louis (2022) which resulted that toddlers who were not given exclusive breastfeeding had a 61 times chance of experiencing stunting (Louis et al. 2022) . This is also in line with Shinta's research (2019) which states that the incidence of stunting is related to the nutritional status of the mother and exclusive breastfeeding (Roma Uli Pangaribuan et al. 2022) .

Immunization coverage describes the completeness of complete basic immunization obtained by toddlers. Toddlers who do not receive complete basic

immunization are expected to be susceptible to disease. Children who do not have complete immunizations are also expected to be immunized, their health conditions will not be good and they will lose the opportunity to get complete basic immunization. Unfavorable health conditions can put children at risk of stunting. In line with research from Sukma (2019), there is a relationship between the completeness of basic immunization and the incidence of stunting (Juwita et al. 2019) .

The coverage of families accessing healthy latrines is an illustration of the clean and healthy lifestyle of families of toddlers. A healthy latrine is one that is closed and has the shape of a goose neck. A clean and healthy lifestyle with healthy latrines can prevent the transmission of various diseases caused by bacteria such as diarrhea, typhus, etc. This disease can cause chronic malnutrition and is a recurrent infection. If this situation is allowed to occur in families of toddlers, it will increase the risk of stunting. In line with Shinta's research (2020) states that there is a relationship between environmental factors (personal hygiene, access to garbage latrines and sources of clean water) and the incidence of stunting (Roma Uli Pangaribuan et al. 2022) .

Apart from this, the cause of stunting in East Java can be due to the low wealth index of people in East Java. The wealth index in East Java according to the results of the 2019 SKAP is mostly medium and there are still families with a low wealth index (BKKBN 2019) . In line with research from Nur Fitriana Zahra, et al (2023) states that there is a relationship between early marriage, mother's knowledge and family income with the incidence of stunting in Sukadana Village, Pujut District, Central Lombok Regency (Zahra et al. 2023).

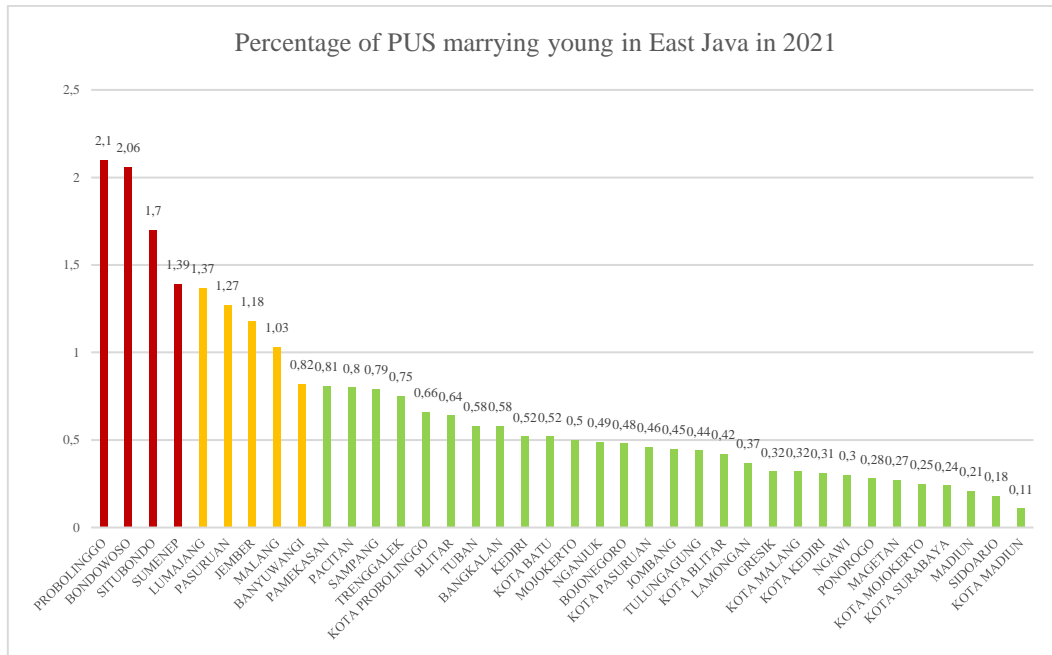
Table 2 Distribution of stunting status in 38 districts/cities in East Java in 2022

Stunting category	n	%
Low	5	13,2
Currently	14	36,8
Tall	16	42,1
Very high	3	7,9
Total	38	100.0

(Source: SSGI, 2022)

Early-age marriage

Young marriages in this study were limited to <19 years of age. Figure 2 shows that Probolinggo District has the highest percentage of PUS marrying young at 2.1% and City of Madiun is the lowest with the percentage marrying young at 0.11%.



(Source: PK 21)

Figure 2. The incidence of young marriage (<19 years) in East Java in 2021.

Table 3 shows that most districts/cities in East Java have a low coverage of young marriages (19 years) (76.3 %), while districts/cities with a high coverage are 10.5%. Young marriages that occur in East Java can be caused by high family burdens without being matched by income. Parents of teenagers who do not have the cost of education for their children tend to marry off their children at a young age . This is in line with the qualitative research conducted by Rani in Sumberdanti Village, Jember. The research resulted that the factors of low economic level and education level are the reasons for marrying young (14-16 years) (Fitrianingsih 2015) .

Looking at the characteristics of the districts/cities in East Java, all urban areas in East Java have a low rate of young marriage, this is possible because urban areas are more developed and provide promising employment opportunities. In line with Mariyatul's research (2014) which was conducted in Tuban Regency, this study found that area of residence and education affect young women's representation in Tuban (Qibtiyah 2014) . This is in line with the study of dai Africa (2017) which states that young marriage is due to a low economy and can cause stunting (Efeverba et al. 2017) .

Low education makes it difficult for someone to receive information, the difficulty of receiving this information will cause women to have low knowledge. Research in Bondowoso conducted by Intan (2017) concluded that the lower the knowledge of women about early marriage, the higher the tendency to marry at an early age (Arimurti and Nurmala 2017) .

Marrying too young causes early birth. Evidence shows that Indonesian women who have been married underage have children at a much younger age . Study by Lisa, 2021 found that around one in 10 women who married early had their first child by the age of 18 . This study also concluded that those who married early on average had more children (Cameron, Suarez, and Wieczkiewicz 2021) . A study from Ingka (2019) in Serdang found that women who marry young are associated with the incidence of getting pregnant too young and causing stunting (Pangaribuan et al. 2020) .

Early marriage can be prevented by increasing youth's knowledge about stunting. This is in line with the results of research by Nur Isfatayati, et al (2022) which states that providing knowledge about stunting has quite an impact on reducing the risk of early marriage (Isfatayati et al. 2022) .

Table 3 Distribution of young married status (<19 years) in 38 districts/cities in East Java in 2022

Young marriage category	N	%
Low	29	76,3
Currently	5	13,2
Tall	4	10,5
Total	38	100.0

(Source: PK21)

The relationship between early marriage and the incidence of stunting

One of the goals of the National Strategy for the Acceleration of Stunting Prevention is to improve the quality of preparation for family life through increased communication on behavior change and community empowerment. For this reason, BKKBN has developed a national action plan with an at-risk family approach. With the availability of data on families at risk of stunting, BKKBN carries out sensitive intervention services with a family approach, such as accompanying and guiding families by a family assistance team. Due to the government's target to reduce the prevalence of stunting in Indonesia to 14 percent by 2024, there are only two years left to achieve this target. The government is starting to focus on addressing the main cause of stunting by implementing programs targeting couples considering marriage and pregnancy.

Table 4 shows that most of the districts/cities with a moderate prevalence of stunting have a high rate of young marriage (<19 years) (75.0 %) .

Table 4. The prevalence of stunting based on early-age marriage status (<19 years).

Young married	stunt								Total	
	Low		Currently		Tall		Very high			
	F	%	F	%	F	%	F	%	F	%
Low	5	17,2	9	31.0	15	51,7	0	0.0	29	100.0
Currently	0	0.0	2	40.0	0	0.0	3	60.0	5	100.0
Tall	0	0.0	3	75.0	1	25.0	0	0.0	4	100.0

Apart from the indicators that cause the risk of stunting accommodated by PK21 (sanitation and access to clean water), this study focuses on indicators that are of concern to the BKKBN in the program, namely the 4Ts, especially factors related to early pregnancy. Table 5 shows that there is a significant relationship between the attainment of young marriage (<19 years) and the incidence of stunting in East Java with a *p value* = 0.005. This means that the higher the attainment of early marriage, the higher the prevalence of stunting in these regencies/cities.

The results of this study are in line with the results of a systematic review from Suhariyati (2019) that previous research from 2014-2019 showed that early marriage has a relationship with both the mother's and child's health (Suhariyati, Haryanto, and Probowati 2019) . Research from Susilawati is also in line with the results of this study which states that there is a relationship between young marriage and the incidence of stunting (Susilawati and Yuliwati 2023) . Heru's research (2019) also states that stunting

is an impact of young marriage (Kasjono et al. 2020) . Research in Wonosobo by Abdulloh and Farihah (also supports the results of this study, they say that child marriage has a risk of 1,982 times giving birth to stunted children compared to marriage at the ideal age (Mustajab, Abdulah Azam; Indriani, Farihah 2023) .

Other findings that are in line with this research are research by Mira Sani (2019). Mira Sani (2019) found that women who became pregnant at risky ages (<20 years and >35 years) were more found in respondents who had a history of early marriage and were more at risk of having short and very short children (Sani, Solehati, and Hendarwati 2020) . Trihono, et.all (2015) also found that the group of mothers who were married at the age of <19 years were more likely to have a high proportion of stunted children (37 percent) than in married mothers age group 20-34 years (31.9%) (Trihono et al. 2015) .

In terms of factors related to the age of the mother and the risk of the child's health status, there are findings that support this analysis, namely the research of Dedi Alamsyah and Otik Widyastutik (2021), Herlina Alivianti (2021). Dedi Alamsyah and Otik Widyastutik , 2021 concluded that the age of mothers who give birth for the first time is under 20 years old, the risk of experiencing stunting is 2.70 times greater than the age of mothers who give birth. the first time more than > 20 years (Alamsyah and Widyastutik 2021) . Meanwhile Herlina Alvianti's research, 2021 found that there was a significant relationship between maternal age and parity with the incidence of low birth weight babies in the Bluto sub-district in 2019 (p=0.001). Mother's age of 35 years and high parity increases the risk of Low Birth in eight babies (Indriyani and Alvianti 2021) .

This is also in line with Rifai's research (2022) which states that there is a relationship between early marriage and impaired child growth and development (Rifai et al. 2022) . Suhartiningsih (2018) also stated that stunting increases the risk of LBW (Suhariyati, Haryanto, and Probowati 2019) .

Mother's readiness in parenting also plays an important role in child development. Mothers with less readiness can have an impact on poor child nutrition so that it can increase the incidence of stunting. In line with research from Nur Hidayah, et al (2022) with the result that psychosocial stimulation has a relationship with stunting in Lebong (Hidayah et al. 2019) . Research from Evy Noorhasanah (2021) found a relationship between parenting style and stunting in children aged 12-59 months (Noorhasanah and Tauhidah 2021) .

Table 5 Correlations between marrying young (<19 years) with the incidence of stunting

		Early marriage outcomes (<19 years)		Stunting incident	
Spearman's rho	Early marriage outcomes (<19 years)	Correlation coefficient	1,000	0.444	
		Sig. (2-tailed)	.	0.005	
		N	38	N	
	Stunting incident	Correlation coefficient	0.444	1,000	
		Sig. (2-tailed)	0.005	,	
		N	N	38	

(Source: SPSS analysis results)

LIMITATION OF THE STUDY

The researcher limited the research only to the analysis of the number of early marriages at PUS in 2021, not the incidence of early marriages during 2021.

CONCLUSIONS AND RECOMMENDATIONS

Child marriage and early childhood delivery have significant implications for families to become children at high risk of experiencing stunting. Younger mothers are at greater risk of having children at a younger age, having more children during their lifetime and getting pregnant too often. Therefore, by getting married early, these families have the potential to be classified as families that give birth to stunted children.

These results suggest that the BKKBN continues to intervene in youth programs through all channels targeting the millennial generation, such as PIK-R based on formal-informal schools, communities and peer groups, especially to postpone marriage. This also requires strengthening cooperation with the Ministry of Education and Religion to reject underage marriages.

ETHICAL CONSIDERATIONS

Scientific work is still in the process of reviewing ethical approval from the Ethics Committee of the Faculty of Dentistry, Airlangga University.

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COMPETING INTEREST STATEMENT

There are no possible conflicts of interest with respect to the authoring and publishing of this work, according to the authors

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