NHSJ Nursing and Health Sciences Journal

Volume 2, Number 1 (March 2022)
e-ISSN: 2798-5067
p-ISSN: 2798-5059

The Characteristic of Toddlers with ARI Disease in Kanigaran Public Health Center, Probolinggo City

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Article Info:
Submitted:
13-02-2022
Revised:
28-03-2022
Accepted:
29-03-2022

DOI:
https://doi.org/10.53713/nhs.v2i2.97

ABSTRACT

Toddlers are included in the age group that is very susceptible to infections, especially those that attack the respiratory tract. Acute respiratory infection (ARI) in developing countries is one of the factors that cause the high mortality rate for children under five. This study aims to describe the characteristics of children under five with ARI disease in the working area of the Kanigaran Health Center, Probolinggo City. The research design used this quantitative descriptive with a total sample of 146 medical record data. The sampling technique used a non-probability sampling technique with the quota sampling method. Collecting data using observation sheets. The results showed that toddlers with ARI were more common at the age of 1-3 years (71.2%), female gender (53.4%), non-LBW weight (88.4%), normal weight nutritional status (75 .3%), and complete status (57.5%). The characteristics of children under five in the Kanigaran Health Center Work Area, Probolinggo City are good. As a nurse, it is necessary to provide education to parents about the prevention of ARI, because currently, ARI has attacked many toddlers with good characteristics.

Keywords: toddler; characteristic; respiratory infection

INTRODUCTION

Acute Respiratory Infection (ARI) is an acute inflammation that occurs for about fourteen days caused by very small organisms by attacking one and or more parts of the respiratory tract, starting from the nose which is the upper channel to the alveoli which are the respiratory tract. and includes adnexal tissue, namely the sinuses, middle ear cavity and pleura. The first clinical manifestation that generally appears is a cold cough, then it will be accompanied by rapid breathing and difficulty breathing. If the symptoms of the disease get worse, breathing will be difficult, unable to drink, convulsions, decreased consciousness, and if not treated immediately, they will die (Retnowati, 2019). In developing countries, acute respiratory infection is one of the factors that can lead to high mortality (mortality) for children under five. Toddlers belonging to the age group are very susceptible to infections, especially infections that attack the respiratory tract (Imelda, 2017).

In developing countries, in children under the age of five, the mortality rate is above 40 per 1000 live births, which is 15-20% per year (Sunarni, Litasari, & Deisi,2017). In Indonesia, the population mortality rate due to pneumonia was 0.11% in 2016. The mortality rate caused by pneumonia in the 1-4 years age group in 2016 was 0.13% higher than the infant age group, which was equal to 0.06% (Kemenkes RI, 2017). According to Riskesdas (2018), it was explained that the prevalence of ARI among children under five was mostly between the ages of 24-35 months with a total of 19,112 toddlers. Meanwhile, in East Java Province, the prevalence of children under five with ARI is in the second highest position out of all provinces in Indonesia, reaching 11,272 children under five (Kemenkes RI, 2018).

Based on Riskesdas East Java (2018), states that the prevalence of ARI in children under five based on the diagnostic results of medical personnel in Probolinggo City reached 22.30% and in Probolinggo Regency it was lower at 10.56% (Kemenkes, 2018). Researchers will conduct research at the Kanigaran Health Center, Probolinggo City because there has been an increase in ARI cases from 2017 to 2019 with a total of 1,144 cases per year, 1,333 cases, and 1,456 cases (Puskesmas Kanigaran, 2020). In addition, the working area of the Kanigaran Health Center in Probolinggo City is the second most densely populated area with a density of 5,245 people/km² (Pemerintah Kota Probolinggo, 2014).

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e-ISSN: 2798-5067
p-ISSN: 2798-5059

ARI until now in Indonesia is still a major health problem because it can cause death in infants and toddlers which is quite high with an estimated 1 in 4 deaths that occur. Various causes and factors for ARI in children, especially in toddlers, such as agent factors caused by microorganisms, individual environmental factors, individual behavioral factors, and individual characteristics factors themselves. Individual characteristic factors that cause ARI in toddlers such as age, gender, birth weight (BBL), nutritional status, and immunization (Niki and Mahmudiono,2019).

The age of toddlers less than five years is a very important stage in life because toddlers will experience growth and development which plays an important role in their future health. In children under two years of age the formation of immunity is not optimal and also the lumen is narrow in the respiratory tract. So it is important to maintain the health of toddlers in good condition (Utami, Purniti, & Arimbawa, 2018). So that toddlers are very susceptible to disease because their immune system is still less than adults, one of the diseases is ARI. ARI disease in toddlers can be prevented and the risk reduced by carrying out complete basic immunization (IDL) from the age of 0-12 months. Toddlers who do not receive complete basic immunizations are more at risk of developing ARI than toddlers who receive complete basic immunizations (Putri and Adriyani, 2018). According to the theory, by carrying out complete basic immunization, toddlers will have immunity so they can fight various harmful things (Hidayatullah et al.,2016).

Gender has a role in the process of exposure to infectious agents and treatment of a disease. In the incidence of contracting ARI, men tend to be more than women (Maharani et al.,2017). One of the factors that influence this is genetic and hormonal differences in men and women. According to the BioEssays research, it was found that the X chromosome has microRNAs that have an effect on immunity and cancer, which is more common in women than men. Another factor is that girls tend to be more passive than boys who have the potential that boys are more often exposed to microorganisms that cause ARI (Utami, 2018).

Birth weight (BBL) in infants is very much determined and influenced by the health of the mother while pregnant. Birth weight can affect and determine the mental and physical development of children under five. Babies with low birth weight (LBW), which is less than 2500 grams, have a higher risk of illness and death due to impaired growth and organ immaturity. The immaturity of the organs in question is the respiratory control center that is still immature and perfect, lack of surfactant in the lungs, weakness of respiratory muscles and ribs, and accompanied by hyaline membrane disease so that toddlers are more susceptible to infectious diseases such as ARI (Yanti and Sari, 2018).

Nutritional status is one of the conditions that determine the value of human resources. So it can be concluded that the nutritional status of the community can be described, especially in terms of the nutritional status of their toddlers (Retnowati, 2019).Good nutrition is nutrition that comes following the body's needs to create a balance that will affect the body's resistance and immunity to the risk of disease. While malnutrition is a condition of a person's body that experiences a lack of incoming nutrients which is unable to meet the body's needs. If toddlers have good nutrition, it will improve the immune system and will increase health to be optimal. Malnutrition and lack of nutrition will slow down growth and reduce immunity so that toddlers become susceptible to infections, one of which is ARI which often attacks toddlers (Utami, Purniti, & Arimbawa, 2018).

In the world, one of the diseases that is the number one killer of children under five is ARI, when compared to other diseases such as AIDS, measles, and malaria. ARI is a health problem that dominates the main cause of morbidity and mortality of children under five in Indonesia. The Forgotten Pandemic or a forgotten pandemic is a term that is often used against ARI (Nasution, 2020). Some of the impacts of ARI on children are decreased appetite, lethargy, malaise, influenza, headaches, and feelings of discomfort (Ninta, 2020). According to Jaclyn (2018), further explaining that ARI has an impact on children's growth and development such as lack of appetite due to sore throat or difficulty swallowing, fussiness, and weakness which results in disrupted child activities and disturbed sleep quality due to nasal congestion (Jaclyn, 2018). So researchers are interested in researching the characteristics of children under five with ARI disease in the Kanigaran Health Center Work Area, Probolinggo City.

METHOD

The design of this study used a quantitative descriptive design with a retrospective approach. The sample used is 146 medical record data in 2019. The sampling technique used is non-probability sampling with a sampling quota. Data collection was carried out using an observation sheet.

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RESULT

Toddler Characteristics

The following is data from the characteristics of children under five in the Kanigaran Health Center Work Area, Probolinggo City.

Table 1. Frequency distribution of characteristics of children under five with ARI (n=146)

	Frequency	Percentage
Age (years old)		
1-3	104	71.2
3-5	42	28.8
Gender		
Male	68	46.6
Female	78	53.4
Weight		
Low Birth Weight	17	11.6
Non LBW	129	88.4
Nutritional status		
Very low weigh	3	2.1
Low weight	27	18.5
Normal weight	110	75.3
Obesity risk	6	4.1
Immunization status		
Full	84	57.5
Not full	62	42.5

Based on the data in table 1 regarding the age of toddlers, it is known that most of them are in the toddler age group (1-3 years). It is known that the gender of toddlers is mostly female. It is known that there are more children under five with a history of non-LBW birth weight. It is known that the nutritional status of children under five years old has a normal weight nutritional status. It is known that there are more children under five with complete immunization status.

The following is a cross-tabulation from toddlers characteristic based gender with born weight and immunization in Working Area of Kanigaran Health Center Probolinggo City.

Table 2. Cross tabulation frequency distribution of gender with birth weight and immunization status of toddler with ARI (n=146)

Gender	Birth weight				Total	
	LBW		Non LBW			
	n	%	n	%	n	%
Male	4	2.7	64	43.8	68	46.6
Female	13	8.9	65	44.5	78	53.4
Total	17	11.6	129	88.4	146	100
Gender	Immunization status				Total	
	Full		Not full			
	n	%	n	%	n	%
Male	43	29.5	25	17.1	68	46.6
Female	41	28.1	37	25.3	78	53.4
Total	84	57.5	129	42.5	146	100

Based on the data in table 2 regarding cross tabulation, it is known that gender with a history of LBW is more common in female children under five. It is known that the history of birth weight with male is more than non-LBW toddlers. It is known that the gender with incomplete immunization status is more in female children under five. It is known that the immunization status of male gender is more in toddlers with complete immunization status.

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The following is a cross-tabulation of the characteristics of children under five based on birth weight with immunization status in the Kanigaran Health Center Work Area, Probolinggo City.

Table 3. Distribution of the frequency of cross tabulation of birth weight with immunization status of children under five with ARI (n=146)

Birth Weight	Immunization status				Total	
	Full		Not Full			
	n	%	n	%	n	%
LBW	10	6.8	7	4.8	17	11.6
Non LBW	74	50.7	55	37.7	129	88.4
Total	84	57.5	62	42.5	146	100

Based on the data in table 3 regarding cross tabulation, it is known that birth weight with incomplete immunization status is more in non-LBW toddlers. It is known that immunization status with LBW birth weight is more in infants with complete immunization status.

Table 4. Frequency distribution of cross-tabulation of nutritional status by gender, birth weight, and immunization status of children under five with ARI (n=146)

Nutrition status	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
Very low weight	0	0	3	2.1	3	2.1
Low Weight	13	8.9	14	9.6	27	18.5
Normal	52	35.6	58	39.7	110	75.3
Obesity Risk	3	2.1	3	2.1	6	4.1
Total	68	46.6	78	42.5	146	100
Nutrition status	Birth Weight				Total	
	LBW		Non LBW			
	n	%	n	%	n	%
Very low weight	3	2.1	0	0	3	2.1
Low Weight	6	4.1	21	14.4	27	18.5
Normal	7	4.8	103	70.5	110	75.3
Obesity Risk	1	0.7	5	3.4	6	4.1
Total	17	11.6	129	88.4	146	100
Nutrition status	Immunization status				Total	
	Full		Not Full			
	n	%	n	%	n	%
Very low weight	1	0.7	2	1.4	3	2.1
Low Weight	13	8.9	14	9.6	27	18.5
Normal	65	44.5	45	30.8	110	75.3
Obesity Risk	5	3.4	1	0.7	6	4.1
Total	84	57.5	62	42.5	146	100

Based on the data in table 4 regarding cross tabulation, it is known that the nutritional status of the male gender is more in the under-fives with normal weight nutritional status. It is known that gender with very low nutritional status is more or less underweight in female children under five. It is known that the nutritional status with a history of LBW is more in children with normal weight nutritional status. It is known that the history of birth weight with nutritional status is more or less in non-LBW toddlers. It is known that nutritional status with incomplete immunization status is more in children with normal weight nutritional status.

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DISCUSSION

Age

Based on the results of research on the age characteristics of toddlers, it shows that the most ages of toddlers with ARI occur in the age range of 1-3 years as many as 104 toddlers (71.2%) compared to toddlers with an age range of 3-5 years as many as 42 toddlers (28.8%). This study is in line with the research of Mahendrayasa & Farapti (2018) which revealed as many as 1 toddler (25%) at the age of 0-12 months, as many as 12 toddlers (37.5%) in the age range 13-36 months, and as many as 9 toddlers (56 months). ,2%) in the age range of 37-60 months experienced ARI [18]. The results of another study also stated that the same thing was done by Putri & Andriyani (2018) in Tumapel Village, Mojokerjo Regency as many as 13 toddlers (36%) in the 1-2 year age range, as many as 7 toddlers (19%) in the 2-3 year age range. , as many as 11 toddlers (31%) in the age range of 3-4 years, and as many as 5 toddlers (14%) in the age range 4-5 years experienced ARI (Putri and Adriyani, 2018).

Toddler is an important phase for a child's life because it will be the foundation for his future health because at that time growth and development occurs. Toddlers are very susceptible to various diseases because their immunity and airway lumen are still narrow (Utami, Purniti, & Arimbawa, 2018).One of the infections from diseases that are very easy and often encountered in toddlers is ARI. Toddlers are more infected with ARI than adults. The incidence of ARI experienced by toddlers gives signs of more severe clinical symptoms, because those caused by ARI in toddlers are usually the first infection events that occur before an optimal and natural immune process is formed. While adults are better off because of the previous experience of infection that they often experience. This statement is following the theory which states that age has a considerable influence on the incidence of ARI (Sari and Ardianti,2017).

ARI is a disease that occurs more than once or repeatedly and often occurs in toddlers (Sienviolincia et al.,2017). The incidence of ARI in toddlers, especially at the age of 1-3 years, is usually the first infection that occurs before the optimal and natural immune process is formed and from immunization. So according to researchers that as a person ages, the organs in the body become more mature and the immune process can be more optimal and the immune system formed is better than before.

Gender

More than half of children under five with ARI in this study were female, namely 78 children under five (53.4%) compared to 68 children under five (46.6%). The results of this study are the same as those conducted by Wibowo & Ginanjar (2020) that as many as 41 toddlers (41%) women and 26 toddlers (26%) experienced ARI [21]. The results of another study said the same thing was done by Yanti & Sari (2018) in the Work Area of the Sukaraja Nuban Health Center, Nuban Regency, East Lampung Regency, as many as 44 (57.9%) female under-five respondents and 40 (70.2%) male under-five respondents. men have ARI (Yanti and Sari, 2018). The results of the two studies showed that there was no relationship between gender and the incidence of ARI.

According to Yanti & Sari (2018), there is generally no difference in the incidence of ARI caused by viruses or bacteria in men and women. This is due to a shift in children's habits. For now, both men and women have the same tendency in terms of playing. In this decade, children often play indoors with existing facilities rather than playing outside (Yanti and Sari, 2018). According to Sukamawa (in Nora et al, 2018) states that there is no relationship between gender and the incidence of ARI. ARI is a disease experienced by everyone regardless of ethnicity, race, religion, age, gender, and social status (Nora et al.,2018).

In this study, researchers associated gender with other characteristics such as a history of low birth weight, underweight nutritional status, and incomplete immunization status. The results found that there were 13 more girls under-five (8.9%) than boys 4 (2.7%) with a history of LBW. There were 14 girls (9.6%) more toddlers than 13 boys (8.9%) with underweight nutritional status. There are 37 girls (25.3%) more than 25 boys (17.1%) with incomplete immunization status. There are many female children under five with a history of low birth weight, underweight nutritional status, and no immunization status than male infants, so that more female children under five experience ARI.

According to researchers at the Kanigaran Health Center, Probolinggo City, boys and girls have the same tendency to play. It was found that more female children under five had a history of low birth weight, underweight nutritional status, and incomplete immunization status. So that there is no difference between the gender of men and women in experiencing the incidence of ARI.

Birth Weight

The birth weight of toddlers with ARI was the most non-LBW children under five with 129 children (88.4%) compared to 17 children with LBW (11.6%). The results of this study are the same as the research conducted by Syahidi et al (2016) which showed that as many as 68 toddlers (73.1%) with non-LBW and under-five with LBW as many as 8

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e-ISSN: 2798-5067
p-ISSN: 2798-5059

toddlers (72.7%) had ARI [23]. Another study also showed the same thing by Yanti & Sari (2018) at the Sukaraja Nuban Health Center, East Lampung Regency, explaining that toddlers with ARI were more common in toddlers who were born non-LBW as many as 56 toddlers (65.9%) than toddlers who were born with LBW as many as 56. 28 children under five (58.3%) experienced ARI [14]. The results of the two studies explained that there was no relationship between birth weight and the incidence of ARI in children under five.

According to Yanti & Sari (2018), a history of birth weight does not affect the incidence of ARI because viral infections are self-limiting diseases. So that toddlers with a history of LBW are given exclusive breastfeeding and complete immunizations will have body defenses like children with a history of normal birth weight. This statement is supported by Yanti & Sari's research (2018) that as many as 65 toddlers (75.6%) with non-exclusive breastfeeding and 19 toddlers (40.4%) with exclusive breastfeeding experienced ARI. Which states that there is a relationship between exclusive breastfeeding and the incidence of ARI in toddlers (Yanti and Sari,2018)

Non-LBW referred to in this study are toddlers born with a body weight of more than 2500 grams. Toddlers with non-LBW or with normal birth weight have a good initial foundation in growth and development. However, it is not impossible not to be exposed to diseases, especially ARI which is often found in toddlers. Toddlers with poor nutritional status and incomplete immunization status as well as an unhealthy home environment can cause susceptibility to infectious diseases because the body is not sufficiently capable of defending itself so that the history of BBL under five does not significantly affect the incidence of ARI (Nora et al.,2018).

In this study, researchers associated birth weight with other characteristics such as male sex, nutritional status, underweight, and incomplete immunization status. The results found that more toddlers with non-LBW 64 (43.8%) than toddlers with LBW 4 (2.7%) were male. More toddlers with non-LBW 21 (14.4%) than toddlers with LBW 6 (4.1%) have underweight nutritional status. More toddlers with non-LBW 55 (37.7%) than toddlers with LBW 7 (4.8%) had incomplete immunization status. Many non-LBW toddlers with male gender, underweight nutritional status, and no immunization status than LBW toddlers. Although the toddler has a history of non-LBW, other characteristics are not good so that it triggers many non-LBW toddlers to experience ARI.

According to researchers at the Kanigaran Health Center, Probolinggo City, toddlers with non-LBW experienced more ARI than toddlers with LBW. Because toddlers with a history of LBW are given exclusive breastfeeding and complete immunizations will have body defenses like children with a history of normal birth weight and non-LBW toddlers with poor nutritional status and incomplete immunization status will easily experience ARI. So it is necessary to take preventive measures, both toddlers with non-LBW and LBW so that they are not easily exposed to ARI.

Nutrition Status

The results of the study on the characteristics of toddlers with ARI based on nutritional status showed that most of the nutritional status was normal weight as many as 110 toddlers (75.3%), very underweight 3 toddlers (2.1%), underweight as many as 27 toddlers (18 .5%), and the risk of being overweight was 6 toddlers (4.1%) according to anthropometric measurements in 2020 with BB/U. This study is in line with the research conducted by Suci & Kuswandi (2016) which showed that 46 toddlers (56.8%) with normal nutrition were more than 8 toddlers (50.0%) with ARI [24]. Another study also showed similar results conducted by Halim & Pambudi (2019) showing 19 children with frequent ARI and 31 children with rare ARI, while children with poor nutritional status were 11 children with frequent ARI and 15 children with ARI are rare (Halim and Pambudi,2017). The results of the two studies explained that there was no relationship between nutritional status and the incidence of ARI in children under five.

In this study, researchers associated nutritional status with other characteristics such as male gender, history of low birth weight birth weight, and incomplete immunization status. The results found that more toddlers with normal weight nutritional status were 52 (35.6%) than boys with 13 (8.9%) underweight nutritional status. More toddlers with nutritional status of normal weight 7 (4.8%) than toddlers with nutritional status of less than 6 (4.1%) had a history of low birth weight. More toddlers with normal weight nutritional status 45 (30.8%) than toddlers with underweight nutritional status 14 (9.6%) with incomplete immunization status. More toddlers with normal weight nutritional status with less good characteristics than toddlers with underweight nutritional status. So that toddlers with normal weight more experience ARI. Meanwhile, toddlers who are underweight but have other characteristics are better so that only a few have ARI.

Toddlers with good nutrition have good and optimal growth and development according to their age. So they are not susceptible to disease because they have a good immune system. After all, they fulfill their nutritional needs. However, toddlers are one of the vulnerable groups so they are very likely to be exposed to infectious diseases, especially ARI(Suci and Kuswandi, 2016). Nutritional status is not the only factor causing ARI, but there are still characteristic factors in toddlers. Although toddlers have good nutritional status but are still exposed to ARI, this is due to other characteristic factors in this study in the form of gender, history of birth weight, and immunization status.

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e-ISSN: 2798-5067
p-ISSN: 2798-5059

According to researchers in the Kanigaran Health Center Work Area, Probolinggo City, more toddlers with normal weight nutritional status experienced ARI. This is because toddlers with normal weight nutritional status have other characteristics that are less good than toddlers with underweight nutritional status. So that nutritional status does not affect the incidence of ARI in children under five.

Immunization status

The most immunization status for children under five with ARI disease in the Kanigaran Public Health Center working area, Probolinggo City, was complete with 84 toddlers (57.5%) compared to incomplete immunization status of 62 toddlers (42.5%). Aisyah et al (2021) in their research showed the same thing that 41 toddlers (39%) without ARI had complete immunization status and 18 toddlers (17.1%) with ARI had complete immunization status or it could be said that there was no relationship between immunization status and incidence of ARI. ARI [26]. Another study also showed the same thing that was done by Suci & Kuswandi (2016) as many as 48 toddlers (54.5%) with complete immunization status, and incomplete immunization status as many as 6 toddlers (66.7%) with ARI (Suci and Kuswandi, 2016). The results of the study explained that there was no relationship between immunization status and the incidence of ARI in children under five.

Immunization is one of the efforts to increase or cause active immunity to disease, where when exposed to disease, you will not get sick or suffer from mild illness. The purpose of immunization is to stimulate the formation of antibodies in the body. The antibodies formed are the primary response in the form of formation of immunoglobulin M (IgM) which plays a role in the opsonin and lysine processes, and immunoglobulin G (IgG) plays a role in the neutralizing process. Immunization will also stimulate the activation of B cells and memory T cells which are useful in enhancing the immune response, and also trigger the activation of CD8+ T cells which are useful in destroying intracellular viruses so that it will limit the spread of infection (Hidayatullah et al.,2016).

ARI is a disease caused by exposure to viruses and bacteria. This disease experienced by toddlers is not directly affected by complete basic immunization, although the purpose of immunization is to generate and increase immunity. Most cases of ARI in children under five are preceded by diseases that develop from preventable diseases such as measles, diphtheria, and pertussis (Desiyana et al.,2018). Measles is a disease that can be prevented through the provision of complete basic immunization. Therefore, giving complete basic immunization is not to create immunity against ARI disease directly, but only to prevent or minimize the occurrence of measles which triggers ARI (Suci and Kuswandi,2016).

ARI in toddlers is still high even though they have received complete basic immunization, because no vaccine can prevent ARI directly. Even though a child has received complete immunization, the possibility of suffering from ARI still exists (Suci and Kuswandi,2016). According to researchers in the Kanigaran Health Center working area, toddlers with complete immunizations experience more ARI. This is because immunization only prevents measles, diphtheria, and pertussis which are factors that cause ARI and no immunization directly prevents ARI.

CONCLUSION

This study shows that the age of toddlers is mostly in the toddler age group (1-3 years), gender of the toddlers is mostly female, the birth weight of toddlers is more with a history of non-LBW, the nutritional status of the most toddlers is underweight nutritional status. the immunization status of children under five had complete immunization status. Future research is expected to be able to research to determine other factors that can affect the incidence of ARI in children under five or interventions that can reduce the incidence of ARI.

ACKNOWLEDGEMENT

Thanks to research participants in this section, the lecturers, and the Faculty of Nursing, Universitas Jember.

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e-ISSN: 2798-5067
p-ISSN: 2798-5059

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