KnE Life Sciences

ISMoPHS 2020
The 2nd International Scientific Meeting on Public Health and Sports (ISMoPHS 2020)
Volume 2021

Knowledge E
enriching | engaging | empowering

Conference Paper

The Relationship between Complementary Food After Exclusive Breastfeeding, Immunization and Family Income with Stunting in Kedungrejo, Malang Regency

Diash Agie Permata[1], Lucky Radita Alma[1], and Moch Yunus[2]

[1]Department of Public Health, Faculty of Sport Science, Universitas Negeri Malang, Malang, East Java, Indonesia
[2]Faculty of Sport Science, Universitas Negeri Malang, Malang, East Java, Indonesia

ORCID:
Lucky Radita Alma: https://orcid.org/0000-0001-7075-1641

Abstract

Stunting in Malang Regency has shown an increasing trend in the last three years: 22.9% in 2016, 28.3% in 2017 and 31.7% in 2018. Kedungrejo is one of Pakis Public Health Centre (PHC) working area which has an increasing prevalence of stunting. It was 38.2% in 2017, 53.1% in February 2018 and 81.8% in August 2018. This study aims to determine the factors related to stunting, which include complementary food after exclusive breastfeeding, immunization and family income. This case–control study included 30 two-to-five-year-old children diagnosed with stunting as the case group and 60 children in the same age group as the cases but not diagnosed with stunting and with no history of infectious diseases as the control group. Data were collected through interviews and documentation of the *Mother and Child Book* (Buku KIA) and analysed by Chi square test. The results showed that the majority of respondents were children aged 24–35 months (40%), male (62%), received complementary food after exclusive breastfeeding (54%), had complete immunization status (61%) and had low family income 63%. A bivariate analysis was used to show complementary feeding p = 0.017, OR= 2.98, immunization p = 0.032, OR= 2.88 and parents' income p = 0.063, OR = 2.51.

Keywords: stunting, complementary food after exclusive breastfeeding, immunization, family income

Corresponding Author:
Lucky Radita Alma
lucky.radita.fik@um.ac.id

Published: 25 March 2021

Publishing services provided by Knowledge E

Selection and Peer-review under the responsibility of the ISMoPHS 2020 Conference Committee.

1. Introduction

The incidence of *stunting* in the world in 2018 reached 21.9% and in developing countries, especially in Indonesia itself the incidence of *stunting* reached 36.4%. Entering the division of regions by province, precisely in East Java Province in 2018 the percentage of *stunting* was at 32.81% [1]. The *stunting* percentage of 32.81% in East Java Province was experienced by children aged 0 to 59 months. The occurrence of *stunting* can be based

on several direct and indirect causative factors. The direct causes of *stunting* include parental care, health services, clean water availability, sanitation. While indirect factors can be in the form of family food security, breastfeeding and MP-ASI, and utilization of health services when sick. Fulfilment of nutrition intake at the beginning of a child's life becomes a milestone for optimal growth and development of children, where when the nutritional intake of children at the beginning of a child's life is not fulfilled, the risk that occurs is growth faltering or failure to grow which causes the child to become stubborn [2].Previous studies that examined *stunting* obtained a statement that one of the factors at risk of *stunting* was the provision of MP-ASI, with an OR value of 17,756 which means that children who were given MP-ASI early had a 17 times greater risk of having *stunting* compared to children who received *stunting* The MP-ASI is right at the age of 6 months [3]. Miko et al. (2018) state that 29.2% of all stunted children are children who have a history of incomplete immunization, and it can be seen that children who do not get complete immunizations have a 4 times greater risk of *stunting* [4]. Then Eko et al. (2018) state that the factors that can influence the incidence of *stunting* are family income, whichever children with low family income have 6 times the risk of experiencing stunts [5]. The impact if a child experiences a *stunting* event is failure to thrive, which results in the child will tend to have low growth resistance, low body weight, developmental failure that focuses on cognitive growth, knowledge, to children's memory and disorders of the body's metabolism to the emergence of non-communicable diseases [6]. After conducting a research study by researchers it was found that children who experienced *stunting* in the Village of Kedungrejo, Malang Regency 60% were children aged 2 to 5 years. Based on the explanation above, the researchers conducted a study with the aim of finding out the relationship between the provision of MP-ASI, immunization, and family income to the incidence of *stunting* in Kedungrejo Village, Malang Regency.

2. Material and Method

This research is a correlational analytic study with quantitative type. Using a case control design approach. The study was conducted in Kedungrejo Village, Pakis District, Malang Regency in December 2019 - April 2020. The research sample was taken using purposive sampling technique with a sample of 126 children. This research instrument uses interview guides adopted from the RISKESDAS questionnaire, namely the 2018 Basic Health Research (RKD18), Indonesian Family Surveys (IFLS-4) adopted from SUKERTI (Indonesian Household Life Aspect Survey), and observation sheets to obtain data on *stunting* events. Data was collected by conducting interviews with respondents who

met the inclusion criteria in the control group; children aged 2 to 5 years, biological mothers who agreed to informed consent and were willing to be representatives of their biological children who were respondents in this study, domiciled in the Village of Kedungrejo, Malang Regency, are children who are not indicated as having been stunted according to 2019 weighing data, children no history of infectious disease. Analysis using Chi square test.

3. Results

3.1. Overview of respondent's gender, respondent's age, stunting incident, giving complementary foods, immunization and family Income

TABLE 1: An overview of respondent's gender, age, stunting incident, giving complementary foods, immunization and family income.

Variable	*n*	%
Age (months)		
24–35	36	40.0
36–47	26	28.9
48–60	28	31.1
Gender		
Male	56	62.2
Woman	34	37.8
Stunting		
No	60	66.7
Yes	30	33.3
Giving complementary foods		
Right	49	54.4
Incorrect	41	45.6
Immunization		
Complete	35	38.9
Incomplete	55	61.1
Family income		
High	33	36.7
Low	57	63.3

Source: Author's own work.

Based on Table 1, the characteristics of respondents seen from the age range of 24-60 months. Most of the respondents were children in the age range of 24 to 35 months with 36 children (40.0%), the least were children in the age range 36 to 47 months with 26 children (28.9%). More than half of respondents were boys with

56 children (62.2%). In the *stunting* event variable 60 respondents were respondents who experienced *stunting* and 30 other respondents were respondents who did not experience *stunting*. In the variable of giving MP-ASI as many as 49 (54.4%) respondents were given MP-ASI with the right time. Then as many as 55 (61.1%) respondents did not get complete immunization and on the family income variable obtained as many as 57 (63.3%) respondents with low family income.

3.2. Analysis of the relationship between complementary feeding, immunization and family income against stunting in Kedungrejo Village, Malang Regency

Table 2: The relationship between complementary feeding, immunization and family income against stunting.

Variable	Stunting		Not Stunting		Value	*P-value*	OR
	f	%	f	%			
Giving complementary foods					0.245	0.017	2.98
Right	11	12.2	38	42.2			
Incorrect	19	21.1	22	24.4			
Immunization					0.220	0.032	2.88
Complete	7	7.7	28	31.1			
Incomplete	23	25.2	32	35.5			
Family Income					0.0192	0.063	2.51
High	23	25.2	24	26.6			
Low	7	7.7	26	28.8			

Source: Author's own work.

Based on table 2 shows that the results of the bivariate analysis test of the relationship between giving MP-ASI to the *stunting* event using the Contingency Coefficient Correlation Test obtained a significance value of 0.017 <0.05 so it can be concluded that there is a relationship between giving MP-ASI to the *stunting* event. In addition, the correlation strength was 0.245, which means weak with a positive correlation strength. Furthermore, the relationship between immunization against the incidence of *stunting* using the Contingency Coefficient Correlation Test obtained a significance value of 0.032 <0.05 so that it can be stated that there is a significant relationship between immunization against the event of *stunting*. In addition, a correlation strength of 0.220 is obtained which means weak with a positive correlation strength. For the relationship between family income to the incidence of *stunting* using the Contingency Coefficient Correlation Test obtained a significance value of 0.063> 0.05 so that it can

be concluded that there is no significant relationship between family income to the incidence of *stunting*. In addition, a correlation strength of 0.192 was obtained which was very weak with a positive direction of correlation.

4. Discussion

4.1. Relationship between complementary feeding (MP-ASI) and stunting

The results of this study stated that there was a significant relationship between giving MP-ASI to *stunting* in Kedungrejo Village, Malang Regency with a significance value of 0.017. Similar research results obtained a significance value of 0,000 and an OR value of 17.756 with the understanding that having a risk of 17 times greater for children who are given MP-ASI before entering the exact age of 6 months to experience *stunting* [3]. Other studies with similar results also obtained a significance value of 0.001 and an OR value of 26.91 which concluded that toddlers and children given MP-ASI at the wrong time had a 26 times greater risk of experiencing *stunting* [7]. MP-ASI is complementary food for the fulfilment of children's nutrition obtained from food or drink, which is started given at the age of up to 24 months. The goal of children getting MP-ASI is to complete all nutritional needs as long as the child has not reached the age of 6 months in order to achieve optimal growth [8].

In this study, the results obtained that the provision of MP-ASI with the right time and not right have a meaningful relationship with the incidence of *stunting* in Kedungrejo Village, Malang Regency. Research in Bule Hora, Southern Ethiopia states that the cause of dwarfism is feeding behaviour before breastfeeding, this is due to an increase in digestive infections that interfere with the child's growth and development [9]. The results of this study are similar, conveying the same results with a total of 155 respondents getting MP-ASI early before reaching the age of 6 months and causing *stunting* in children because the digestive organs are not fully able and ready to process food properly so that it is easy for children to experience digestive infections that will interfere with child growth and development [10].

The results obtained in this study which states that the provision of MP-ASI has a relationship with the incidence of *stunting* and is the variable which is the most dominant factor influencing the incidence of *stunting*. Similar to the results of research which states that the practice of feeding is a major factor causing *stunting* in children aged 2 to 5 years, supported by obtaining an OR value of 30.565 [11]. The results in

this study are in accordance with the theory which states that before reaching the age of 6 months the child's digestive organs are still not perfect for processing foods other than breast milk, so if the child gets MP-ASI before the age of 6 months the risk for children experiencing infectious diseases in the digestive organs such as diarrhoea that can reducing appetite causes the growth and development process in children to be disturbed and not optimal [12].

4.2. Relationship between immunization and stunting

Based on the results of statistical tests, the significance value of 0.032 shows that there is a significant relationship between immunization and the incidence of *stunting*. Consistent results of the study stated that there was a significant relationship between the history of immunization with the incidence of *stunting* as evidenced by the significance value of 0.027 [13]. In addition to these studies, research by Imelda et al. (2018) provides a statement of the results of the study that as many as 76.7% of children who experience *stunting* are children who get incomplete basic immunizations, this is evidenced by the acquisition of an OR value of 7.667 which states that children those who did not get complete basic immunizations will be 7 times more likely to experience *stunting* [11]. In contrast to the results of research conducted by Ibrahim et al. (2019) that no significant relationship was found between immunization status and the incidence of *stunting*, which was expressed as a significance value of 0.111 [14].

Immunization is an attempt to make someone more resistant and stronger against exposure to disease so that a person is not susceptible to disease [15]. Basic immunization must be provided for children aged 0 to 9 months in full and on time [16]. Research conducted in Shinille Woreda, Ethiopia with an AOR value of 9.20 states that immunization status is one of the factors causing *stunting*, children aged 6 to 59 months who do not get vaccines in this area are more susceptible to infectious diseases such as diarrhoea, and channel disorders breathing which makes growth and development in children stunted [17]. Research by Batiro et al., (2017) states that 6 times the child has a risk of *stunting* due to not being fully vaccinated which results in the child becoming susceptible to early infectious diseases that interfere with growth, supported by obtaining an AOR value of 6.38 [18].

In this study, a significant relationship was found between immunization and the incidence of *stunting*, with a significance value of 0.032 and with a total of 23 stunted children with incomplete immunization information. The results of this study are in accordance with the theory proposed by the Indonesian Ministry of Health, (2016)

that the provision of complete basic immunizations to children will have an impact on the child's growth and development process, which is when children get complete immunizations or stimulants as early as possible the risk of irregularities in growing child development caused by infectious diseases will be smaller [19].

4.3. Relationship between family income and stunting

Based on the results of the statistical test found that as many as 57 respondents have a family income that is in the low category. Then as many as 33 respondents have family incomes that are in the high category. From the results of the correlation test using the contingency coefficient correlation test obtained a significance value of 0.063> 0.05 which indicates that there is no relationship between family income and the incidence of *stunting* in Kedungrejo Village, Malang Regency.

The results of this study are in line with the results of research conducted by Aisyah et al., (2019) stating that there is no relationship between family income and the incidence of *stunting*, supported by the significance value of 0.295 which is above the average income of many respondents owned by respondents who experience *stunting* [20]. Through the same results and with a significance value obtained of 0.736 it was stated that families with high incomes would be completely free from the incidence of *stunting*, as well as families with low incomes [21]. Different research found contradictory results Dake et al., (2019) stated that research conducted in Sodo Zuria, Southern Ethiopia with the problem of the incidence of *stunting* caused by household monthly income, evidenced by the results of the study obtained an AOR value of 2.5 which states that children with household incomes <750 TB have a risk that is 2 times more likely to experience *stunting*, this is because monthly household income affects the ability to buy food for the fulfilment of children's nutrition [22]. A similar study states the same thing that family income has a relationship with the nutritional status of children which is focused on the ability to fulfil children's nutrition, as evidenced by the acquisition of a significance value of 0.018 [23].

In this study it was stated that there was no significant relationship between family income and the incidence of *stunting*. This result is reinforced by the statement made by Wulandari, (2015) that family income is one factor which can determine a person's nutritional status, but not necessarily poor nutritional status can be caused by low family income or vice versa [24].

5. Conclusion

From the results of the research that has been done, it is concluded that there is a relationship between the provision of MP-ASI to the incidence of stunting in Kedungrejo Village, Malang District, then through statistical tests it is also known that there is a relationship between immunization and stunting, and for the results of research between family income not Significant results were obtained with the occurrence of stunting. In addition, the provision of MP-ASI, immunization, and also family income are risk factors for stunting by giving MP-ASI which is the factor that has the greater influence on the incidence of stunting in Kedungrejo Village, Malang Regency.

Acknowledgement

None

Conflict of Interest

The authors declare that there is no conflict of interest.

References

[1] Kementerian Kesehatan Republik Indonesia. (2018). Hasil Utama Riskesdas 2018. Jakarta: Kementerian Kesehatan Republik Indonesia.

[2] Fikawati, S., Syafiq, A. and Karima, K. (2015). *Gizi Ibu Dan Bayi. Kedua*. Jakarta: Rajawali Pers, p. 236.

[3] Prihutama, N. Y., Rahmadi, F. A. and Hardaningsih, G. (2018). Pemberian Makanan Pendamping Asi Dini Sebagai Faktor Risiko Kejadian Stunting Pada Anak Usia 2-3 Tahun. *Jurnal Kedokteran Diponegoro*, vol. 7, issue 2, pp. 1419–30.

[4] Rahmad, A. H. A. L. and Miko, A. (2016). Kajian Stunting pada Anak Balita Berdasarkan Pola Asuh dan Pendapatan Keluarga di Kota Banda Aceh. *Jurnal Kesmas Indonesia*, vol. 8, issue 2, pp. 63–79.

[5] Setiawan, E. and Machmud, R. M. (2018). Faktor-Faktor yang Berhubungan dengan Kejadian Stunting pada Anak Usia 24-59 Bulan di Wilayah Kerja Puskesmas Andalas Kecamatan Padang Timur Kota Padang Tahun 2018 Eko. *Jurnal Kesehatan Andalas*, vol. 7, issue 2, pp. 275–84.

[6] Izwardy, D. (2019). Policy and Strategy of Stunting Management in Indonesia. Retrieved from https://www.persi.or.id/images/2019/data/FINAL_PAPARAN_PERSI_22_FEB_2019_Ir._Doddy.pdf.

[7] Sastria, A. and Hasnah, F. (2019). Faktor Kejadian Stunting Pada Anak Dan Balita Pendahuluan Metode. *Jurnal Ilmiah Keperawatan Stikes Hang Tuah Surabaya*, vol. 14, issue 2, pp. 100–8.

[8] Susilowati, K. (2016). *Gizi Dalam Daur Kehidupan.* Bandung: PT Refika Aditama, p. 292.

[9] Asfaw, M., *et al*. (2015). Prevalence of Undernutrition and Associated Factors among Children Aged between Six to Fifty Nine Months in Bule Hora District, South Ethiopia. *BMC Public Health*, vol. 15, issue 1, pp. 1–9.

[10] Tariku, A., *et al*. (2017). Stunting and its Determinant Factors among Children Aged 6-59 Months in Ethiopia. *Italy Journal Pediatric*, vol. 43, issue 1, pp. 1–9.

[11] Imelda, R. N. and Nur, R. (2018). Faktor risiko kejadian stunting pada anak umur 2-5 tahun di Puskesmas Biromaru. *Jurnal Gizi dan Kesehatan*, vol. 2, issue 1, pp. 39–43.

[12] Rahmawati, R. (2014). *Gambaran Pemberian MPASI pada Bayi Kurang*. Jakarta: Program Studi Kesehatan Masyarakat Fakultas Kedokteran dan Ilmu Kesehatan Universitas Islam Negeri Syarif Hidayatullah.

[13] Syam, I., Yulianita, M. E. and Annisa, I. (2019). Factors Associated with Stunting in Toddlers in Working Area of Buntu. *Jurnal Kesehatan Masyarakat Mulawarman,* vol. 1, issue 2, pp. 8–16.

[14] Ibrahim, I. A., *et al*. (2019). Analisis Determinan Kejadian Growth Failure (Stunting) Pada Anak Balita Usia 12-36 Bulan Di Wilayah Pegunungan Desa Bontongan Kecamatan Baraka Kabupaten Enrekang. *Al-sihah Public Health Science Journal*, vol. 11, issue 1, pp. 50–64.

[15] Kemenkes RI. (2019). *Buku Ajar Imunisasi*. Retrieved from: http://www.depkes.go.id/article/view/17070700004/program-indonesia-sehat-dengan-pendekatan-keluarga.html.

[16] Kementerian Kesehatan RI. (2016). *InfoDatin Imunisasi Situasi dan Analisis Imunisasi*. Retrieved from: https://www.kemkes.go.id/resources/download/ pusdatin/infodatin/InfoDatin-Imunisasi-2016.pdf.

[17] Ma'alin, A., *et al*. (2016). Magnitude and Factors Associated with Malnutrition in Children 6–59 Months of Age in Shinille Woreda, Ethiopian Somali Regional State: A Cross-Sectional Study. *BMC Nutrition*, vol. 2, issue 1, pp. 1–12.

[18] Batiro, B., *et al*. (2017). Determinants of Stunting among Children Aged 6-59 Months at Kindo Didaye Woreda, Wolaita Zone, Southern Ethiopia: Unmatched Case Control Study. *PLoS One*, vol. 12, issue 12, pp. 1–15.

[19] Kementerian Kesehatan Republik Indonesia. (2016). *Pedoman Pelaksanaan Stimulasi, Deteksi dan Intervensi Dini Tumbuh Kembang Anak*. Retrieved from https://www.cambridge.org/core/product/identifier/CBO9781107415324A009/type/book_part.

[20] Aisyah, S. and Rahfiludin, M. Z. (2019). Faktor-Faktor Yang Berhubungan Dengan Stunting Pada Anak Kelas Satu Di Sdi Taqwiyatul Wathon, Daerah Pesisir Kota Semarang. *Jurnal Kesehatan Masyarakat*, vol. 7, issue 1, pp. 280–8.

[21] Wati, E. P. (2018). Faktor-Faktor yang Berhubungan dengan Kejadian Stunting pada Balita di Wilayah Kerja Puskesmas Gabus II Kabupaten Pati. *Pros Hefa 2*, vol.1, issue 1, pp. 34–9.

[22] Dake, S. K., *et al*. (2019). Predictors of Stunting among Children 6–59 Months of Age in Sodo Zuria District, South Ethiopia: A Community Based Cross-Sectional Study. *BMC Nutrition*, vol. 5, issue 1, pp. 1–7.

[23] Kawulusan, M., *et al*. (2019). Pola Asuh Dan Pendapatan Keluarga Dengan Kejadian Stunting Pada Anak Usia 2-5 Tahun Di Wilayah Kerja Puskesmas Bohabak. *Jurnal GIZIDO,* vol. 11, issue 2, pp. 88–95.

[24] Wulandari, D. (2015). *Sumbangan Pendapatan Ibu Rumah Tangga Pekerja Konveksi Kelambu Terhadap Tingkat Kesejahteraan Keluarga Perantau Di Desa Sumampir Kecamatan Rembang Kabupaten Purbalinggan*. Purwokerto: Universitas Muhammadiyah Purwokerto.