ANALYSIS OF SOCIAL DEMOGRAPHY, BEHAVIORAL HYGIENE, BREAST MILK, AND NUTRITIONAL STATUS IN CHILDREN WITH DIARRHEA IN SURABAYA CITY

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ABSTRACT

Purpose: The purpose of this research is to investigate the impact of social demographics, personal hygiene, breastfeeding, and nutritional status on the incidence of diarrhea among children. Understanding these factors is crucial for assessing and improving the quality of health services, particularly in reducing child mortality rates associated with diarrhea.

Methods: The research employed an explanatory survey research design, aimed at exploring new insights, identifying relationships between phenomena, and understanding the reasons behind certain events. Approval for data collection was obtained from the Candel Surabaya's ethics committee. Data were gathered from the Wonokromo sub-district in Surabaya in June 2023, with a sample size ranging from 300 to 400, selected through purposive sampling. Questionnaires were distributed to mothers attending Posyandu in Wonokromo village, and data were analyzed univariately using logistic regression.

Results and Discussion: Statistical analysis revealed several significant findings. Ethnicity and the number of children were found to have no significant effect on the incidence of diarrhea (p-value = 0.322 and p-value = 0.930, respectively). However, factors such as mother's age (p-value = 0.021), education (p-value = 0.000), employment (p-value = 0.000), income (p-value = 0.000), child's age (p-value = 0.000), gender (p-value = 0.019), personal hygiene (p-value = 0.000), breastfeeding (p-value = 0.000), and nutritional status (p-value = 0.000) were significantly associated with the incidence of diarrhea. These results suggest that social demographics and personal hygiene, breastfeeding, and nutritional status play significant roles in influencing diarrhea occurrence among children.

Implications of the Research: The findings of this study carry important implications for public health interventions. It underscores the necessity of promoting healthy lifestyle practices among parents, particularly mothers, to mitigate the incidence of diarrhea in children. Improving education, employment opportunities, income levels, and access to healthcare services can contribute to better health outcomes for children. Additionally, emphasizing the importance of personal hygiene, breastfeeding, and maintaining adequate nutritional status can significantly reduce the risk of diarrhea.

Originality/Value: This research contributes to the existing body of knowledge by highlighting the specific factors that influence the incidence of diarrhea among children in a particular setting. By elucidating the significance of social demographics and various health-related practices, this study provides valuable insights for healthcare

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Rev. Gest. Soc. Ambient. | Miami | v.18.n.5| p.1-17 | e05589 | 2024.

1

professionals, policymakers, and community stakeholders to develop targeted interventions aimed at reducing child morbidity and mortality associated with diarrhea.

Keywords Demography, Hygiene, Breast Milk, Nutritional Status.

ANÁLISE DA DEMOGRAFIA SOCIAL, HIGIENE COMPORTAMENTAL, LEITE MATERNO E ESTADO NUTRICIONAL EM CRIANÇAS COM DIARREIA NA CIDADE DE SURABAYA

RESUMO

Objetivo: O objetivo desta pesquisa é investigar o impacto da demografia social, higiene pessoal, amamentação e estado nutricional na incidência de diarreia entre crianças. Entender esses fatores é fundamental para avaliar e melhorar a qualidade dos serviços de saúde, principalmente na redução das taxas de mortalidade infantil associadas à diarreia.

Métodos: A pesquisa empregou um projeto de pesquisa de pesquisa explicativa, com o objetivo de explorar novos insights, identificar as relações entre os fenômenos e entender as razões por trás de certos eventos. A aprovação para a coleta de dados foi obtida do comitê de ética de Candel Surabaya. Os dados foram coletados no sub-distrito de Wonokromo em Surabaya em junho de 2023, com um tamanho de amostra variando de 300 a 400, selecionados através de amostragem intencional. Questionários foram distribuídos para mães que frequentavam Posyandu na vila de Wonokromo, e os dados foram analisados univariadamente usando regressão logística.

Resultados e Discussão: A análise estatística revelou vários achados significativos. A etnicidade e o número de crianças não tiveram efeito significativo na incidência de diarreia (valor p = 0,322 e valor p = 0,930, respectivamente). No entanto, fatores como idade da mãe (valor p = 0,021), educação (valor p = 0,000), emprego (valor p = 0,000), renda (valor p = 0,000), idade da criança (valor p = 0,000), sexo (valor p = 0,019), higiene pessoal (valor p = 0,000), amamentação (valor p = 0,000) e estado nutricional (p-valor) valor = 0,000) foram significativamente associados à incidência de diarreia. Estes resultados sugerem que a demografia social e a higiene pessoal, a amamentação e o estado nutricional desempenham um papel significativo na influência da ocorrência de diarreia entre as crianças.

Implicações da Pesquisa: Os resultados deste estudo trazem implicações importantes para as intervenções de saúde pública. Sublinha a necessidade de promover práticas de estilo de vida saudáveis entre os pais, particularmente as mães, para mitigar a incidência de diarreia em crianças. A melhoria da educação, das oportunidades de emprego, dos níveis de rendimento e do acesso aos serviços de saúde pode contribuir para melhores resultados de saúde para as crianças. Além disso, enfatizar a importância da higiene pessoal, da amamentação e da manutenção de um estado nutricional adequado pode reduzir significativamente o risco de diarreia.

Originalidade/valor: Esta pesquisa contribui para o corpo de conhecimento existente, destacando os fatores específicos que influenciam a incidência de diarreia entre crianças em um ambiente particular. Ao elucidar o significado da demografia social e de várias práticas relacionadas à saúde, este estudo fornece informações valiosas para profissionais de saúde, formuladores de políticas e partes interessadas da comunidade a fim de desenvolver intervenções direcionadas com o objetivo de reduzir a morbidade e a mortalidade infantil associadas à diarreia.

Palavras-chave: Demografia, Higiene, Leite Materno, Estado Nutricional.

ANÁLISIS DE LA DEMOGRAFÍA SOCIAL, LA HIGIENE DEL COMPORTAMIENTO, LA LECHE MATERNA Y EL ESTADO NUTRICIONAL EN NIÑOS CON DIARREA EN LA CIUDAD DE SURABAYA

RESUMEN

Propósito: El propósito de esta investigación es investigar el impacto de la demografía social, la higiene personal, la lactancia materna y el estado nutricional en la incidencia de la diarrea entre los niños. La comprensión de estos factores es crucial para evaluar y mejorar la calidad de los servicios de salud, en particular para reducir las tasas de mortalidad infantil asociadas a la diarrea.

Rev. Gest. Soc. Ambient. | Miami | v.18.n.5 | p.1-17 | e05589 | 2024.

2

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Métodos: La investigación empleó un diseño de investigación de encuesta explicativa, dirigido a explorar nuevos conocimientos, identificar las relaciones entre los fenómenos y comprender las razones detrás de ciertos eventos. La aprobación para la recolección de datos fue obtenida del comité de ética de Candel Surabaya. En junio de 2023 se recopilaron datos del subdistrito de Wonokromo, en Surabaya, con un tamaño de muestra de entre 300 y 400, seleccionado mediante muestreo intencional. Se distribuyeron cuestionarios a las madres que asistían a Posyandu en la aldea de Wonokromo, y los datos se analizaron de forma univariada mediante regresión logística.

Resultados y discusión: El análisis estadístico reveló varios hallazgos significativos. Se observó que el origen étnico y el número de niños no tenían ningún efecto significativo en la incidencia de la diarrea (valor p = 0,322 y valor p = 0,930, respectivamente). Sin embargo, factores como la edad de la madre (valor p = 0,021), la educación (valor p = 0,000), el empleo (valor p = 0,000), los ingresos (valor p = 0,000), la edad del niño (valor p = 0,000), el género (valor p = 0,019), la higiene personal (valor p = 0,000), la lactancia materna (valor p = 0,000) y el estado nutricional (valor p = 0,000) se asociaron significativamente con la incidencia de diarrea. Estos resultados sugieren que la demografía social y la higiene personal, la lactancia materna y el estado nutricional desempeñan un papel importante en la incidencia de la diarrea entre los niños.

Implicaciones de la investigación: Los resultados de este estudio tienen implicaciones importantes para las intervenciones de salud pública. Subraya la necesidad de promover prácticas saludables de estilo de vida entre los padres, en particular las madres, para mitigar la incidencia de la diarrea en los niños. Mejorar la educación, las oportunidades de empleo, los niveles de ingresos y el acceso a los servicios de salud puede contribuir a mejorar los resultados de salud de los niños. Además, hacer hincapié en la importancia de la higiene personal, la lactancia materna y el mantenimiento de un estado nutricional adecuado puede reducir significativamente el riesgo de diarrea.

Originalidad/Valor: Esta investigación contribuye al acervo de conocimientos existente al destacar los factores específicos que influyen en la incidencia de diarrea entre los niños en un entorno particular. Al dilucidar la importancia de la demografía social y diversas prácticas relacionadas con la salud, este estudio proporciona información valiosa para que los profesionales de la salud, los responsables de las políticas y las partes interesadas de la comunidad desarrollen intervenciones dirigidas a reducir la morbilidad y mortalidad infantil asociadas con la diarrea.

Palabras clave: Demografía, Higiene, Leche Materna, Estado Nutricional.

1 INTRODUCTION

Toddlers are an age group that is vulnerable to nutrition and disease. Children under five must get protection to prevent diseases that can cause developmental delays or even death. Diarrheal disease is one of the highest causes of death in toddlers (WHO, 2010). Diarrheal disease is a health problem in the world, including Indonesia. According to WHO and UNICEF, there are around 2 billion cases of diarrheal disease worldwide each year, and about 1.9 million children under five die from diarrheal disease each year, mostly in developing countries. An estimated 2.5 billion people do not have proper sanitation facilities, and nearly one billion do not have access to safe drinking water. An unhealthy environment allows pathogens that cause diarrhea to spread more easily (Cairo et al., 2020). Most people with diarrhea die from dehydration or loss of fluids in large quantities. One of the causes of diarrhea is family personal

Rev. Gest. Soc. Ambient. | Miami | v.18.n.5 | p.1-17 | e05589 | 2024.

3

hygiene, especially mothers in providing good nutrition, breastfeeding, solid food sanitation, infections, and so on.

According to the Sustainable Development Goals (SDGs) program, one of the targets in 2030 is to reduce the under-5 mortality rate to as low as 25 per 1,000 live births. According to the 2021 Health Profile, the most common causes of death are infectious diseases in the postneonatal period (29 days-11 months), namely pneumonia and diarrhea, with 14.4% due to pneumonia and 14% due to diarrhea. Meanwhile, the most common causes of death in the toddler group (12-59 months) were diarrhea at 10.3% and pneumonia at 9.4% (Ministry of Health, 2021). Based on data from the East Java Provincial Health Office, the incidence of diarrhea cases in the city of Surabaya in 2021 ranks third, namely 13,747 (East Java Provincial Health Office, 2021). The incidence of diarrhea in Wonokromo village is increasing from year to year. The Wononokromo Village area consists of 8 Rukun Warga (RW) and there are 35 Posyandu, with a total of 1451 children under five and an average of 15 children being treated at the Wonokromo Health Center, while according to the Ministry of Health's coverage, the coverage of deaths from diarrhea is 0% (Kes Profile 2021).

In several previous studies, including (Subekti et al., 2022) results review, there was a significant relationship between exclusive breastfeeding and the incidence of diarrhea in toddlers. Research (Cairncross et al., 2010) focused on the effect of washing hands with soap on diarrhea, improving water quality reduced the risk of diarrhea by 48%, 17%, and 36%. Research (Turin & Ochoa, 2014) on children in developing countries, explains the main component of breast milk which is responsible for its effects, especially in children. Research (Pour, 2021) analytic descriptive research method on children 66 Results; This study shows the relationship between the availability of clean water (ρ=0.001), hand washing habits (ρ=0.004), food sanitation (ρ=0.024), availability of latrines (ρ=0.000), and waste management (ρ=0.003).) with the incidence of diarrhea in children.

According to the above research (Subekti et al., 2022), hygiene and sanitation for diarrhea (Cairncross et al., 2010), in research (Turin & Ochoa, 2014) and (Pour, 2021) and previous research on cases of diarrhea, only based on one or two factors, so, of course, it still does not describe the actual situation. This study aims to analyze the factors that influence the number of cases of diarrhea in toddlers in the city of Surabaya. Researchers are interested in examining sociodemographics, clean living behavior, breastfeeding, and nutritional status on the incidence of diarrhea.

Rev. Gest. Soc. Ambient. | Miami | v.18.n.5 | p.1-17 | e05589 | 2024.

4

2 MATERIALS AND METHODS

2.1 MATERIAL

Mother and child are active in the Integrated Service Post (POSYANDU). The data source was taken from the Surabaya area of Wonokromo Village in June 2023.

2.2 DATA COLLECTION PROCEDURES

Candel Surabaya's ethics committee approved data collection. This research is explanatory, namely explaining the relationship or influence of a variable with other variables. The population of this study was all mothers who had toddlers in Wonokromo District, Surabaya City, totaling 1451 mothers. The sample size for mothers and toddlers is 312 respondents. The sampling technique in this study used a non-probability sampling method with purposive sampling, namely bringing active mothers and children to integrated service posts. Data collection was carried out by submitting a research permit to the Surabaya City Health Office in the Wonokromo Village to take samples in the area. Researchers will work closely with 18 Wonokromo village cadres by distributing questionnaires accompanied by researchers. Researchers will explain in detail to the cadres who help regarding the aims and objectives of the research. Measuring tools by filling out the Social Demographic questionnaire include 1) mother's data consisting of ethnicity, mother's age, education, occupation, number of children, and income, 2) child data, namely child's age, sex, while special data consisting of 3): a. personal hygiene were asked about the behavior of washing bottles, disposing of diapers, and so on. with the Good rating category. $\geq 50\%$, less $< 50\%$, b. data on exclusive and non-exclusive breastfeeding, c. as well as nutritional status data measured by anthropometric measurements using the BB/TB index with the following categories: Malnutrition, if Z-score < -3 SD). Malnutrition, if the Z-score is from -3 SD to <-2 SD, good nutrition if the Z-score is from -2 SD to +1 SD. Overnutrition, if Z-score $>+2$ SD to +3 SD. How to distribute questionnaires by distributing integrated service posts (Posyandu).

Rev. Gest. Soc. Ambient. | Miami | v.18.n.5 | p.1-17 | e05589 | 2024.

5

2.3 DATA ANALYSIS

analysis was carried out with bivariate, univariate, and multivariate analysis, with the test using logistic regression

3 RESULTS AND DISCUSSION

3.1 RESULT

The survey collected 312 respondents, from which the questionnaire was distributed to the Integrated Service Post (Posyandu) distribution

Table 1

Frequency distribution of Respondents socio-demographic 312

Karakteristik	Frekuensi (n)	Percentage (%)
Date Parent		
Ethnic group		
Java	138	44,2
Madura	174	55,8
Age		
< 30	84	26,9
30 - 40	162	51,9
≥ 40	66	21,2
Education		
Low	108	34,6
Enough	168	53,8
tall	36	11,5
Work		
Work	126	40,4
Doesn't work	186	59,6
Number of children		
≤ 2	222	71,2
>2	90	28,8
Income		
< Rp 5.000.000	264	84,6
≥ Rp 5.000.000	48	15,4
Child		
Age		
1 year	60	19.2
2 years	78	25.0
3 years	36	11.5
4 years	66	21.2
5 years	72	23.1
Gender		
Man	144	46.2

Rev. Gest. Soc. Ambient. | Miami | v.18.n.5 | p.1-17 | e05589 | 2024.

6

Woman	168	53.8

Source: Prepared by Authors (2024)

Table 2

Frequency distribution of hygiene behavior, breastfeeding, and nutritional status

Hygiene Behavior	Frekuensi (n)	Persentase (%)
Not enough	174	55.8
Good	138	44.2
Breastfeeding		
Exclusive breastfeeding	114	36.5
Non Exclusive ASI	198	63.5
Nutritional status		
Bad nutrition	6	1.9
malnutrition	66	21.2
normal nutrition	216	69.2
more nutrition	24	7.7

Source: Prepared by Authors (2024)

Table 3

Sociodemographic frequency distribution, hygiene behavior, breastfeeding, nutritional status on the incidence of diarrhea

	No Diarrhea		Diarrhea		total	
	fre	%	fre	%	fre	%
Date Parent						
Ethnic group	60	4.5	78	56.5	126	100
Java	66	3.9	108	62.1	186	100
Madura						
Age	42	50	60	50	99	100
< 30	66	40.7	37	59.3	100	100
30 - 40	18	0.0	34	29.1	117	100
> 40						
Education	72	42.9	96	57.1	168	100
Low	24	22.2	84	77.8	108	100
Enough	30	83.3	6	16.7	36	
tall						
Work	96	51,6	90	48,4	186	
Work	30	23.8	96	76.2	126	
Doesn't work						
Number of children	90	40.5	132	59.5	222	
≤ 2	36	40	54	60	90	
>2						
Income	90	34.1	174	65	264	
< Rp 5.000.000	36	75	12	25	48	
≥ Rp 5.000.000						
Child						
Date Parent	30	50	30	50	60	

Rev. Gest. Soc. Ambient. | Miami | v.18.n.5 | p.1-17 | e05589 | 2024.

7

Ethnic group	36	46.2	42	53.8	78	
Java	18	50	18	50	36	
Madura	12	18,2	54	81,8	66	
Age	30	41,7	42	58,3	72	
< 30 year						
30 – 40 year	48	33.3	96	66.7	144	
≥ 40 year	78	46,4	90	53,6	168	
Custom Data						
Hygiene Behavior						
Not enough	30	17,2	144	82,8	174	
Good	96	69,6	42	30,4	138	
Breastfeeding						
Exclusive breastfeeding	108	94,7	6	5,3	114	
Non Exclusive	18	9,1	180	90,9	198	
Nutritional status						
Bad nutrition	0	0	6	100	6	
malnutrition	12	18.18	54	81,8	66	
normal nutrition	114	52,8	102	47,2	216	
more nutrition	0	0	24	100	24	

Based on Table 1 on the characteristics of respondents based on socio-demographics, half (55.2%) are Javanese, half (51.9%) are mothers aged 30-40 years, half (55.3%) are mothers with sufficient education, half (59.6%) are mothers not working, most (71.2%) have families with children <2, most (84.6%) families have incomes of more than Rp. 5,000,000, a small portion (25%) of toddlers aged 2 years, and half (53.2%) of toddlers are girls. Then, based on special data, half (55.8%) of mothers had poor personal hygiene behavior, most toddlers (63.5%) did not get exclusive breastfeeding and most toddlers (69.2%) had normal nutritional status.

Based on Table 2 and Table 3, this study pattern experienced diarrhea. - Sociodemographic factors:

Data from mothers: Out of 186 respondents with Javanese ethnicity had diarrhea (62.1%), out of 100 respondents aged 30-40 years had diarrhea (77.8%) out of 168 respondents with low education had diarrhea (57.1%) out of 186 respondents who worked had diarrhea (48.4%), out of 264 respondents who thought <5 million had diarrhea (65%). Data on children: Out of 178 respondents, children less than 2 years old had diarrhea (53.8%), 186 sexes out of 186 respondents had diarrhea (53.6%) Specific Data: Out of 178 respondents who behaved less they had diarrhea (82, Out of 198 non-breastfeeding respondents had diarrhea (90.9%), Out of 6 malnourished respondents had diarrhea (81.8%).

Rev. Gest. Soc. Ambient. | Miami | v.18.n.5 | p.1-17 | e05589 | 2024.

8

Table 4

Characteristics of influential respondents

Variable		B	S.E.	Wald	df	Sig.	Exp(B)
Ethnic group	Java	0.230	0.232	0.982	1	0.322	1.259
Age	>40 year	0.981	0.352	7.758	1	0.005	2.667
Education mather	Low	0.965	0.279	11.960	1	0.001	6,677
mother's job	Doesn't work	1.228	0.255	23.089	1	0.000	3.413
Number of children	<=2	0.022	.255	0.008	1	0.930	1.023
Income	< Rp. 5.000.000	-1.758	0.358	24.147	1	0.000	5.813
Child Age	4 Year	1.504	0.411	13.424	1	0.000	4.500
gender	man	-0.550	0.235	5.483	1	0.019	0.577
Hygiene Behavior	Not enough	-2.395	0.273	77.008	1	0.000	0.91
Breastfeeding	Exclusive breastfeeding	5.193	0.487	113.776	1	0.000	180.000
Nutritional status	Bad nutrition	0.000	18345.754	0.000	1	0.000	1.000

Source: Prepared by Authors (2024)

3.2 DISCUSSION

3.2.1 Socio Demography

Based on the results of the tribal statistical test, it was found that the value of p = 0.322 means that there is no effect on the incidence of diarrhea in toddlers at the integrated service post in Wonokromo Village. This is because respondents who are ethnic Madurese have a different culture or culture. Some mothers give reasons for not implementing a healthy life and a clean environment. If children are accustomed to unhealthy lifestyles, they will easily get sick.

Based on the number of children obtained, p-value = = 0.930, there is no effect. The number of children does not affect the incidence of diarrhea. Mothers who have less than 2 children are referred to as primiparous mothers, while mothers who have more than 2 children are referred to as multiparous mothers so in this study, the respondents fall into the category of primiparous mothers. Multiparous mothers have a greater proportion of no diarrhea than primiparous mothers. This is not in line with research conducted by (Zicof & Idriani, 2020) which says there is a relationship between the number of family members and the incidence of diarrhea, in children from households where the number of family members is > 4 people in one household has a 2.3 times chance of being at risk of contracting diarrhea compared to toddlers from households with <4 family members. According to (Susanti & Sunarsih, 2016)

Rev. Gest. Soc. Ambient. | Miami | v.18.n.5 | p.1-17 | e05589 | 2024.

9

infectious diseases >4 people in the household greatly affect toddlers who experience diarrhea because diarrhea is an infectious disease that does not only occur in toddlers but also occurs in adults. If an adult in the household has diarrhea, children under five who live in the same household are also at risk of experiencing diarrhea

Based on Table 3, it was found that the majority of children who experienced diarrhea had mothers aged more than 40 years. The statistical test results obtained a value of p = 0.021 so it can be said that there is an influence between the age of the mother and the incidence of diarrhea in Posyandu Wonokromo village. Meanwhile, children whose mothers were more than 40 years old have a 2.66 times with diarrhea.

compared to mothers aged less than 30 years. Epidemiological studies state that age is a human characteristic. In this study, maternal age was divided into 3, namely Late Adolescents (< 30 years), Early Adults (30-40 years), and Late Adults (> 40 years). The results of the study are in line with research conducted by (Febrianti et al., 2022) where there is a relationship between age characteristics and maternal behavior in preventing diarrhea in children in Bengkulu City. Mother's age can affect actions in dealing with diarrhea in toddlers. Mothers over 40 years of age are associated with a deficiency in finding information on social media when compared to mothers aged less than 30 years who are still actively seeking information on any social media platform. This is related to prevention and treatment when children experience diarrhea, so that age can also affect the incidence of diarrhea in toddlers.

Based on education, the p-value = 0.000 means that education has an effect on diarrhea, and low education has an effect on diarrhea with a 6.67 times chance compared to higher education. This shows that education has an effect on the incidence of diarrhea in toddlers in integrated service post-Wonokromo village. Education views itself as the knowledge and guidance of children. This study's results indicate that the respondents' education level is divided into three groups: low, medium, and high. The low-educated group is when the respondent finishes the last elementary school (SD) or does not attend school, while the middle-educated group is when the respondent finishes high school (SMP). According to the theory (Notoadmodjo, 2012) the higher the school level, the wiser he is to monitor all available information and will think about the extent to which the advantages will be obtained from this idea. This is in line with research conducted by (Ullah et al., 2021) in Pakistan on children less than five years old who said educated mothers were more vulnerable to the importance of food hygiene, improving feeding and childcare practices, and knowing more about the causes of disease and preventive measures.

Rev. Gest. Soc. Ambient. | Miami | v.18.n.5 | p.1-17 | e05589 | 2024.

10

Based on the results of statistical tests, it was found that with p-value = 0.000, there was an influence between the mother's work on the incidence of diarrhea in toddlers at integrated service post-Wonokromo. Meanwhile, mothers who do not work have an effect on the incidence of diarrhea with a chance of 0.294 times experiencing diarrhea compared to working mothers. According to (Ibrahim et al., 2021) the mother's employment status has a relationship with diarrheal disease in children. The mother's busyness when carrying out daily activities in the form of work and socialization activities will make the child not handled properly. Children who do not experience good treatment during diarrhea will experience several conditions including dehydration, weakness, and apathy, and can even experience shock, and nutritional disorders which can cause weight loss. Research conducted by (Ibrahim et al., 2021) shows that children of working mothers tend to have twice the potential to experience diarrhea compared to children of non-working mothers.

Based on the results of statistical tests showing p-value = 0.000 there is an influence between family income on the incidence of diarrhea in toddlers in integrated service post Wonokromo village. As for toddlers who have families with an income of less than Rp. 5,000,000 depressed experiencing diarrhea 5.8 times compared to toddlers who have families with income of more than Rp. 5,000,000. Based on. The minimum wage for the City of Surabaya in 2023 is IDR 4,525,479. Determination of the minimum wage based on decent living needs (KHL) by taking into account productivity and economic growth. The eligibility living needs component is used as the basis for the minimum wage rate, which is calculated based on the living needs of workers in meeting the basic needs of 2100 kcal per day of food, housing, clothing, education, and so on, meaning that if income below the minimum wage is considered low income. This research is in line with research conducted by (Agustia, 2022) which shows that family income is related to the incidence of diarrhea in toddlers.

based on the statistical test results, it was found that p-value = 0.002 which means that there is an influence between the age of the child and the incidence of diarrhea so that toddlers aged 4 years have been injured 4.5 times with diarrhea compared to toddlers aged under 4 years. The results of this study are not in line with research conducted by (Getachew & Azanaw, 2022) which said that children between the ages of 13 to 24 months are 4 times more likely to experience diarrhea compared to the age group over 24 months. This is caused by various reasons such as toddlers starting to be lazy and walking which increases environmental exposure to infectious agents and the lack of development of the immune system so that they are easily affected by diarrheal diseases.

Rev. Gest. Soc. Ambient. | Miami | v.18.n.5 | p.1-17 | e05589 | 2024.

11

Based on gender, p-value = 0.019 Based on statistical test results obtained p value = 0.019, it can be interpreted that there is an influence between gender and the incidence of diarrhea in toddlers at integrated service post in Wonokromo village. As for female children, it affects the incidence of diarrhea with a probability of 0.577 times compared to the male gender. This is in line with research conducted on students at SDN Kutami, Depok, West Java, which shows that there is a relationship between male and female children. man. women with acute diarrhea. This is because the playing activities of boys have more contact with the ground and outside the classroom compared to girls so it can pose a risk of diarrhea. In theory (Jarman et al., 2018) it is also explained that boys move around the house more freely than girls. On the other hand, men are 0.41 times more likely to experience diarrhea than women.

3.2.2 Hygiene Behavior

Based on Personal Hygiene from statistical tests, it was obtained p value = 0.000 p-value = 0.000 indicating that there was an influence of maternal personal hygiene on the incidence of diarrhea in toddlers in integrated service post Wonokromo village. Meanwhile, mothers who have good personal hygiene behavior influence the incidence of diarrhea with an opportunity of 1,098 times compared to mothers who have less personal hygiene behavior.

Personal hygiene in question is how to wash children's bottles and how to dispose of children's diapers. The results of this study are in line with research conducted by (Fathir et al., 2017) stating that there is a relationship between milk bottle hygiene and the incidence of diarrhea, where the incidence of diarrhea in toddlers at the Kelayan Timur Health Center is that toddlers with milk bottle hygiene are at risk of 3.5 times worse to suffer from diarrhea compared to good hygiene. According to (Trisiyani et al., 2021) cleaning milk bottles, especially the inside, is indeed quite difficult to do properly, so it has the potential to become a place for bacteria to develop. Another study stated that sterilizing milk bottles by boiling had 1.36 times better effect on preventing diarrhea that occurs in toddlers when compared to bottles that were not sterilized. E. Coli bacteria enter the baby's body through unclean bottles. Babies who do not consume breast milk are very dependent on formula milk which uses a little bottle so it is very possible to suffer from diarrhea. Milk bottles that are not kept clean allow bacteria to grow.

The results of this study are by the theory put forward by the Indonesian Ministry of Health (2002) that habits related to personal hygiene which are important in the transmission of diarrheal germs are washing hands. Washing hands with soap, especially after defecating,

Rev. Gest. Soc. Ambient. | Miami | v.18.n.5 | p.1-17 | e05589 | 2024.

12

Analysis of Social Demography, Behavioral Hygiene, Breast Milk, And Nutritional Status in Children with Diarrhea in Surabaya City

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after disposing of child feces, before preparing food, has an impact on diarrheal diseases. Preventive measures so that germ attacks can be avoided should be carried out, including washing hands with soap before feeding infants and children, avoiding food stalls for children and toddlers, heating water to drink, and avoiding food that is stale or moldy and contaminated with parasites. In addition, it is the personal hygiene behavior of the mother that must be considered, especially in terms of washing the child's drinking bottles and the way the mother disposes of the child's diapers. when mothers wash bottles carelessly without paying attention to cleanliness so that the risk can be a factor in the occurrence of diarrhea in children.

A person's personal hygiene behavior is a factor that is closely related to the incidence of diarrhea. Improper personal hygiene behaviors such as washing children's drinking bottles without soap and disposing of children's diapers carelessly can cause diarrhea. This is in line with research conducted (Tangka et al., 2014) which states that poor personal hygiene causes more diarrhea and increases the incidence of diarrhea in toddlers.

3.2.3 Breast milk

Based on the ASI test, it was found that p-value = 0.000, meaning that breastfeeding has an effect on diarrhea in children at integrated service post-Kelurahan, while toddlers who are not exclusively breastfed experience 180 times experiencing diarrhea compared to toddlers who are exclusively breastfed. The results of this study were supported by other studies conducted (Rofiqoh & Widyastuti, 2022) which stated that there was a relationship between a history of exclusive breastfeeding and the average incidence of diarrhea in infants. So the longer the baby is given exclusive breastfeeding, the smaller the risk of the baby experiencing diarrhea.

In a previous study conducted by (Mathur et al., 2019) in India, breast milk can protect babies from various infectious diseases, especially diarrheal diseases because breast milk contains important components of lysozyme, immunoglobulin, lactoferrin and casein. The function of lysozyme is also bactericidal and anti-inflammatory and immunoglobulin acts as an anti-bacterial and virus (Lönnerdal, 2013). In addition, the function of lactoferrin to treat diarrhea also proves that administration of lactoferrin can shorten the duration of diarrheal infection and reduce the severity of diarrhea. In addition, lactoferrin can also inhibit the growth of bacteria.

Rev. Gest. Soc. Ambient. | Miami | v.18.n.5 | p.1-17 | e05589 | 2024.

13

Another study from an African country by (Apanga et al., 2021) stated that children who were exclusively breastfed had a 33% lower chance of getting diarrhea than children who were not exclusively breastfed.

According to (Dunne-Castagna et al., 2020) Breast milk is the perfect food for babies as ideal food and protection against many infections, including diarrheal diseases. Breastfeeding can also stimulate the baby's immune system, improve response to vaccinations and provide many of the molecules, enzymes, proteins, and hormones that make babies healthy.

3.2.4 Nutritional status

Based on the results of statistical tests, it was found that p-value = 0.000, which means that there is an influence between nutritional status and the incidence of diarrhea in toddlers at the integrated service post, Wonokromo village. Meanwhile, toddlers with poor nutritional status have one chance of having diarrhea compared to toddlers with normal nutritional status. s with diarrhea compared to toddlers with poor nutritional status. This research is supported by other research conducted (Ganguly et al., 2016) the results of an analysis of research conducted in India stated that children with malnutrition have a 1.73 times higher risk of experiencing diarrhea than children with normal nutritional status. Another study with toddler subjects at the Rangkasbitung Health Center (Juhariyah & Mulyana, 2018) stated that there was a statistical relationship between nutrition and the incidence of diarrhea in toddlers in January-April 2018. Toddlers who experience malnutrition and less incidence are almost 6 times more at risk for diarrhea compared to children with good nutrition. The results of another study conducted by (Chissaque et al., 2021) showed that the infection rate of children under the age of 5 years had a significantly higher incidence of diarrhea. Most children with low body weight have a 66.2% risk of diarrhea.

The theory put forward by (Almatsier, 2005) is that undernutrition occurs when the body experiences a deficiency of one or more essential substances which can hinder physical growth, mental development, and intelligence. In addition, children under five who experience malnutrition have decreased body power so they are very susceptible to infectious diseases including acute diarrhea. Nutritional status is a risk factor for diarrhea in toddlers in Indonesia. Malnutrition in children can affect immune development in children which affects the decrease in the number of peripheral lymphocytes. This immune deficiency condition causes children to be susceptible to infection (Schaible & Kaufmann, 2007).

Rev. Gest. Soc. Ambient. | Miami | v.18.n.5 | p.1-17 | e05589 | 2024.

14

4 CONCLUSIONS

The conclusion from this study is that some social demographics and personal hygiene, breastfeeding, and nutritional status will have a major influence on the incidence of diarrhea. So it is necessary to motivate parents, especially mothers to adopt a healthy lifestyle

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15

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16

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17