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ORIGINAL ARTICLE

ANALYSIS OF DIARRHEA MANAGEMENT IN CHILDREN UNDER TWO YEARS OLD IN INDONESIA

Analisis Penatalaksanaan Diare pada Anak Kurang Dari 2 Tahun di Indonesia

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ABSTRACT

Background: Diarrhea in children under two is still a severe problem in Indonesia, affecting achieving SDG target 3. Providing good care will reduce the risk of death in children caused by diarrhea. **Purpose:** This study aimed to analyze the relationship between socio-demographic characteristics, place of residence, and access to media in mothers with children under two years old and diarrhea management in children in Indonesia. **Methods:** This study used secondary data from the 2017 Indonesian Health Demographic Survey (DHS) with a cross-sectional study design. Analyzed were the responses of 1,061 mothers whose children under two had diarrhea in the two weeks before the survey. Samples were taken using two-stage sampling methods. The data were analyzed by chi-square and multiple logistic regression. Multiple logistic regression was adjusted for the complex sampling designs of DHS for data analysis. **Results:** 59.50% of children received inappropriate treatment. Older mothers (AOR 20–24 = 2.03, 95% CI = 1.03–3.98) who lived in rural areas (AOR = 1.41, 95% CI = 1.03–1.94), had access to several media (AOR = 2.03, 95% CI = 1.01–4.10), and all media (AOR = 2.23, 95% CI = 1.07–4.64), had higher odds of having a child whose diarrhea treatment was not appropriate after controlling for other variables. **Conclusion**: Mothers' age, residence, and access to media have a significant relationship with inappropriate diarrhea care for their children. Therefore, interventions need to focus on women who live in rural areas and have access to the media.

ABSTRAK

Latar Belakang*: Diare pada anak usia di bawah 2 tahun masih menjadi masalah yang serius di Indonesia dan mempengaruhi pencapaian target SDG's nomor3. Pemberian perawatan yang baik akan mengurangi risiko*

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kematian pada anak-anak yang disebabkan oleh diare. ***Tujuan:*** *Penelitian dimaksudkan untuk menganalisis hubungan antara karakteristik sosial demografi, tempat tinggal, dan akses ke media pada ibu yang mempunyai anak kurang dari 2 tahun dengan perawatan diare pada anak di Indonesia.* ***Metode:*** *Penelitian menggunakan data sekunder dari Survei Demografi Kesehatan Indonesia (SDKI) tahun 2017 dengan desain cross sectional. Data dari 1,061 ibu yang mempunyai anak berusia di bawah 2 tahun dan mengalami diare pada 2 minggu sebelum survei telah dianalisis. Sampel diambil menggunakan metode two stage sampling. Data dianalisis dengan chi square dan multiple logistic regression. Analisis data multiple logistic regression. disesuaikan untuk complex sampling designs SDKI.* ***Hasil:*** *Sebanyak 59.5% anak mendapatkan perawatan yang kurang sesuai. Hasil analisis menunjukkan bahwa ibu yang mempunyai usia lebih tua (AOR_{20-24}=2.03, 95%CI=1.03-3.98), tinggal di wilayah pedesaan (AOR=1.41, 95%CI=1.03-1.94), dan mendapatkan akses ke beberapa media (AOR=2.03, 95%CI=1.01-4.10) dan semua media (AOR=2.23, 95%CI=1.07-4.64) mempunyai odds lebih tinggi untuk mempunyai anak yang perawatan diarenya kurang sesuai setelah dikontrol oleh variable yang lain.* ***Kesimpulan:*** *Umur ibu, lokasi tempat tinggal, dan akses ke media mempunyai hubungan yang signifikan dengan perawatan diare yang kurang sesuai pada anaknya. Oleh karena itu, intervensi perlu difokuskan kepada perempuan yang tinggal di pedesaan dan mempunyai akses ke media.*

INTRODUCTION

Diarrhea causes three or more loose or watery bowel movements per day (or more frequent bowel movements than usual). Diarrhea disease is still a public health problem, is the second leading cause of death in children under five years of age, and is responsible for the deaths of around 525,000 children yearly. Globally, there are nearly 1.70 billion cases of diarrheal disease in children yearly (1).

Diarrhea has a bad impact on children. Diarrhea is a major cause of malnutrition in children and includes growth retardation and cognitive development disorders (1–3). Diarrhea also causes dehydration. Dehydration is a major risk to a child's health and a major reason for medical visits, hospitalization, and cause of death (4).

The mortality rate due to diarrhea in children two years old can contribute to achieving the Sustainable Development Goals (SDGs) target number 3. The third SDG's goal in target number 3.2 is to reduce preventable newborn and under-five deaths by 2030 (5). Reducing mortality and disability in children due to diarrhea requires improvement, management, and ideal strategies (6). Mortality from diarrhea is caused by dehydration. A significant development in managing diarrhea is the discovery that dehydration can be treated safely and effectively with oral rehydration methods and that deaths from diarrhea can be prevented with oral rehydration (7,8). The results of other studies also highlight the importance of giving oral rehydration solutions for managing diarrhea (5). The results of other studies also state that exclusive breastfeeding will reduce the risk of severe diarrheal disease (9).

Public health education is essential for effective case management, as it can build good partnerships between health services and the community to enhance families' ability to recognize danger signs of diarrhea in children and to encourage appropriate and early treatment-seeking behavior. Effective health education can only be provided based on accurate understanding. Building good health education is essential to pay attention to maternal factors. Several studies have found that mothers are an essential indicator for reducing the incidence of diarrhea in their children (10,11). Based on the Indonesian Demographic Health Survey report, the prevalence of diarrhea in children aged two years is higher than in children aged five years (12). The purpose of this study was to analyze socio-demographic factors, differences in residence, and access to information for mothers who have children under the age of 2 in Indonesia to manage diarrhea.

METHODS

This study used a cross-sectional design using secondary data from the 2017 Indonesia Demographic Health Survey (IDHS). The sample for this study comprised women of reproductive age (15–49 years) who were interviewed, had children under two years old, had diarrhea in the last two weeks, was the last child still alive, and lived with their mother. The Demographic Health Survey is conducted in nearly 90 countries with a sample frame using the most recent census data. The sampling process for this survey used two-stage cluster sampling. IDHS already has ethical clearance approved by the ICF Institutional Review Board (IRB) and the IRB in the host country (13).

The outcome variable of this study was the treatment of diarrhea in children aged two years. Diarrhea care behavior in children under two years of age was measured by breastfeeding children aged less than six months and giving oral rehydration to children aged more than six months. Treatment of diarrhea is categorized into less suitable and appropriate. If a mother gives breast milk to her child who is less than six months old or gives oral rehydration to her child who is more than 6 months old, it is categorized as suitable, and if not, then it is categorized as not suitable.

The independent variables in this study were the mother's age, socioeconomic status, occupation, education, media access, and residence location. The mother's age was categorized into 15–19, 20–24, 25–29, 30-34, and 35–39. Socioeconomic status is categorized into poor, poor, middle, rich, and rich. Socioeconomic status is measured using the principal component analysis, which is based on the property owned by the respondent. Mother's occupation is categorized as unemployed, unskilled labor (clerical, sales, agricultural workers, industrial workers, servers, and others), skilled (skilled), and professional (professional/technical/managerial). Mothers' education is categorized into uneducated, primary, secondary, and higher education. Education is reported as the highest level followed (not required to be completed). Access to media is measured as never accessing media, accessing several media, or accessing all media, including internet access, radio, television, and newspapers or magazines. Location of residence includes living in rural or urban areas.

Data were analyzed by univariate, bivariate, and multivariate methods. Bivariate analysis was performed using the chi-square test. Multiple logistic regression was used to analyze the relationship between the independent variables and diarrhea treatment behavior in children under 2 years of age who had diarrhea in the last 2 weeks. The data were analyzed using multiple logistic regression adjusted for complex sampling designs from the Indonesian Demographic Health Survey (IDHS). Analyzes that require confidence intervals need to be informed to STATA that we are using survey data, whereas STATA needs to consider the sample design when calculating the standard error.

RESULTS

There were 1,061 pieces of data analyzed, and as many as 59.53% of mothers had inadequate management of diarrhea. Mothers who are under 20 years of age are 6.31% and have a very poor socioeconomic status of 22.50%. There were 55.01% of mothers who did not work, only about 11.68% of mothers who had higher education, and only about 21.91% of mothers who had access to all media. There are around 55.19% of mothers living in rural areas (Table 1).

The distribution of independent variables based on the behavior of treating diarrhea in the last 2 weeks is shown in Table 2. In Table 2, using the Chi-square test analysis, it is known that the factors significantly related to managing diarrhea in children under 2 years old are access to media and residence location.

Table 3 shows that the mother's age, location of residence, and access to media have a significant relationship with the inappropriate management of diarrhea in her child. Older mothers have a 2.03 times higher risk of inappropriate diarrhea management if their child has diarrhea (AOR 20–24 = 2.03, 95% CI = 1.03–3.98). Mothers in rural areas have a 1.41-times higher risk of carrying out improper diarrhea management on their children than mothers in urban areas (AOR = 1.41, 95% CI = 1.03–1.94). Mothers with access to several media (AOR = 2.03, 95% CI = 1.01–4.10) and all media (AOR = 2.23, 95% CI = 1.07–4.64) had a higher risk of managing diarrhea (1.41 and 2.23, respectively). Less appropriate for their children than mothers who do not get access to media.

Table 1
Social demographic characteristics, location of residence, access to media, and management of diarrhea in children

Variables	N	%
Treatment of diarrhea		
Good treatment	429	40.47
Bad treatment	631	59.53
Age of mother (years old)		
15-19	67	6.31
20-24	259	24.39
25-29	265	24.99
30-34	239	22.56
35-39	163	15.38
≥40	68	6.37
Wealth quintile		
Poorest	239	22.50
Poorer	226	21.31
Middle	214	20.15
Richer	232	21.88
Richest	150	14.17
Mothers occupation		
Not working	583	55.01
Unskilled labor	417	39.27
Professional	61	5.72
Women education		
No education	12	1.13
Primary	276	26.02
Secondary	649	61.17
Higher	124	11.68
Access to Media		
Not at All	36	3.41
Some of Media	792	74.68
All of Media	232	21.91
Residence		
Urban	475	44.81
Rural	585	55.19
Total	1,061	100.00

DISCUSSION

The results showed that around 59.53% of mothers who treated diarrhea were unsuitable for their children. In addition, older mothers, mothers who live in rural areas, and mothers who have access to several media and all media have a higher risk of having children whose diarrhea treatment is inappropriate.

Studies show that around 59.53% of mothers treat diarrhea unsuitable for their children. These results indicate that mothers' appropriate treatment of diarrhea for their children is still low. This aligns with research conducted in two regions (Klaten and Yogyakarta) in Indonesia, where around 14% of mothers gave oral rehydration solutions (14). Research in India found that 28% of children did not receive treatment for bloody diarrhea (15). Research in Ethiopia also found that managing diseases in children, including diarrhea, is still inappropriate (16) This result may be because mothers needed more information about diarrhea management in the study area.

Older mothers are more likely to have children whose diarrhea management is inappropriate. These results are inconsistent with research in Ethiopia which states that older mothers will better manage diarrhea for their children (17). This result in Indonesia may occur because older mothers have more children, so mothers' focus is divided between looking after their other children.

Mothers with access to several media and all media have a higher risk of having children whose diarrhea treatment is not appropriate compared to mothers who do not have access to media. This study's results are different from those found in Ethiopia, which stated that mothers who do not have access to information are significantly associated with treating diarrhea at home in their children (17). The results of other studies also state that mothers with good access to the media have good knowledge about managing diarrhea in their children (18). Access to more media did not impact mothers' ability to manage diarrhea well. This might happen if the media accessed by the mother is not educational media related to health, so even though access to the media is very open, it is not used to access information related to health. This research is a study that uses secondary data, so there are limitations in uncovering why this happens. It is recommended that there be research to analyze media access by mothers.

The results found by researchers are different from the results of other studies. This difference in results may be because most mothers are workers and can only supervise and look after their children sometimes. This may also be due to differences in sociodemographic characteristics, including the health care delivery system. Mothers who live in rural areas have a higher risk of having children whose diarrhea management is inappropriate compared to mothers who live in urban areas. These results are appropriate because regional differences relate to the treatment of diarrhea given by the mother (17,19,20).

Table 2
Distribution of Social Demographic Characteristics, Location of Residence, and Access to Media Based on Management of Diarrhea in Children

Variables	N	Diarrhea Management				X^2	p value
		Good		Bad			
		%	CI	%	CI		
Age of mother (years old)						9.12	0.31
15-19	67	53.40	37.80 – 68.37	46.60	31.63 – 62.20		
20-24	259	34.90	28.23 – 42.22	65.10	57.78 – 71.77		
25-29	265	42.38	35.38 – 49.71	57.62	50.29 – 64.62		
30-34	239	41.62	34.33 – 49.28	58.38	50.72 – 65.67		
35-39	163	40.66	32.04 – 49.90	59.34	50.10– 67.96		
40+	60	36.99	24.35 – 51.72	63.01	48.28 – 75.65		
Wealth quintile						4.22	0.62
Poorest	239	37.87	31.46 – 44.73	62.13	55.27 – 68.54		
Poorer	226	37.05	29.36 – 45.45	62.95	54.55 – 70.64		
Middle	214	44.95	36.83 – 53.35	55.05	46.65 – 63.17		
Richer	232	42.78	34.45 – 51.55	57.22	48.45 – 65.55		
Richest	150	39.81	30.34 – 50.12	60.19	49.88 – 69.66		
Mothers occupation						6.60	0.09
Not working	583	42.75	37.70 – 47.94	57.25	52.06 – 62.30		
Unskilled labor	417	36.06	30.84 – 41.63	63.94	58.37 – 69.16		
Professional	61	48.90	35.51 – 62.44	51.10	37.56 – 64.49		
Women education						0.72	0.90
No education	12	31.49	13.17 – 58.21	68.51	41.79 – 86.83		
Primary	276	41.39	34.0.7– 49.11	58.61	50.89 – 65.93		
Secondary	649	39.95	35.12 – 44.99	60.05	55.01 – 64.88		
Higher	124	42.02	32.94 – 51.69	58.98	48.31 – 67.06		
Access to Media						4.30	0.20
Not at All	36	56.26	38.63 – 72.44	43.74	27.56 – 61.37		
Some of Media	792	40.37	35.94– 44.96	59.63	55.04 – 64.06		
All of Media	232	38.37	31.56 – 45.67	61.63	54.33 – 68.44		
Residence						6.48	0.05
Urban	475	44.67	39.33 – 50.13	55.33	49.87 – 60.67		
Rural	585	37.07	32.06 – 42.37	62.93	57.63 – 67.94		

Geographic location can affect access to health services. Mothers who live in rural areas will find it more difficult to get access to health services than mothers who live in urban areas (17). In addition, mothers who live in urban areas have better access to water sources, health facilities, sanitation and better knowledge about diarrhea control. Another reason may be that mothers who live in urban areas have a better economic level than mothers who live in rural areas. This is one of the factors to support good health care for their children (21,22)

Table 3
Relationship between Mother Characteristics, Place of Residence, and Access to Media with Management of Diarrhea in Children Under 2 Years in Indonesia

Variables	AOR	95% CI		p value
		Lower	Upper	
Age of mother (years old)				
15-19	Ref			
20-24	2.02	1.03	3.98	0.04
25-29	1.53	0.77	3.06	0.22
30-34	1.58	0.80	3.13	0.19
35-39	1.60	0.77	3.31	0.21
40+	1.85	0.76	4.47	0.17
Mothers occupation				
Not working	Ref			
Unskilled labour	1.31	0.73	2.33	0.36
Professional	1.77	0.97	3.23	0.06
Residence				
Urban	Ref			
Rural	1.41	1.03	1.94	0.04
Access to Media				
Not at All	Ref			
Some of Media	2.03	1.01	4.10	0.05
All of Media	2.23	1.07	4.64	0.03

Limitation of the study

The data on managing diarrhea in children was obtained on a recall basis from the mother, so the mother had to remember the information for the last 2 weeks. This is likely to cause information bias. The advantage of this research is that it uses nationally representative secondary data collected using valid methods and standardized questionnaires.

CONCLUSION

The results showed that the mother's age, place of residence, and media access had a significant relationship with the inappropriate treatment of diarrhea in her child. Therefore, interventions need to focus on women who live in rural areas and have access to the media. Interventions for mothers with good media access are directed so that mothers can optimally access health-related educational media. This intervention can increase the mother's knowledge to provide good management when her child has diarrhea.

CONFLICT OF INTEREST

There is no conflict of interest for the researcher related to the research.

AUTHOR CONTRIBUTIONS

ACH: conceptualization, methodology, software, reviewing, and editing; EA: data curation, original draft preparation, reviewing, and editing.

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