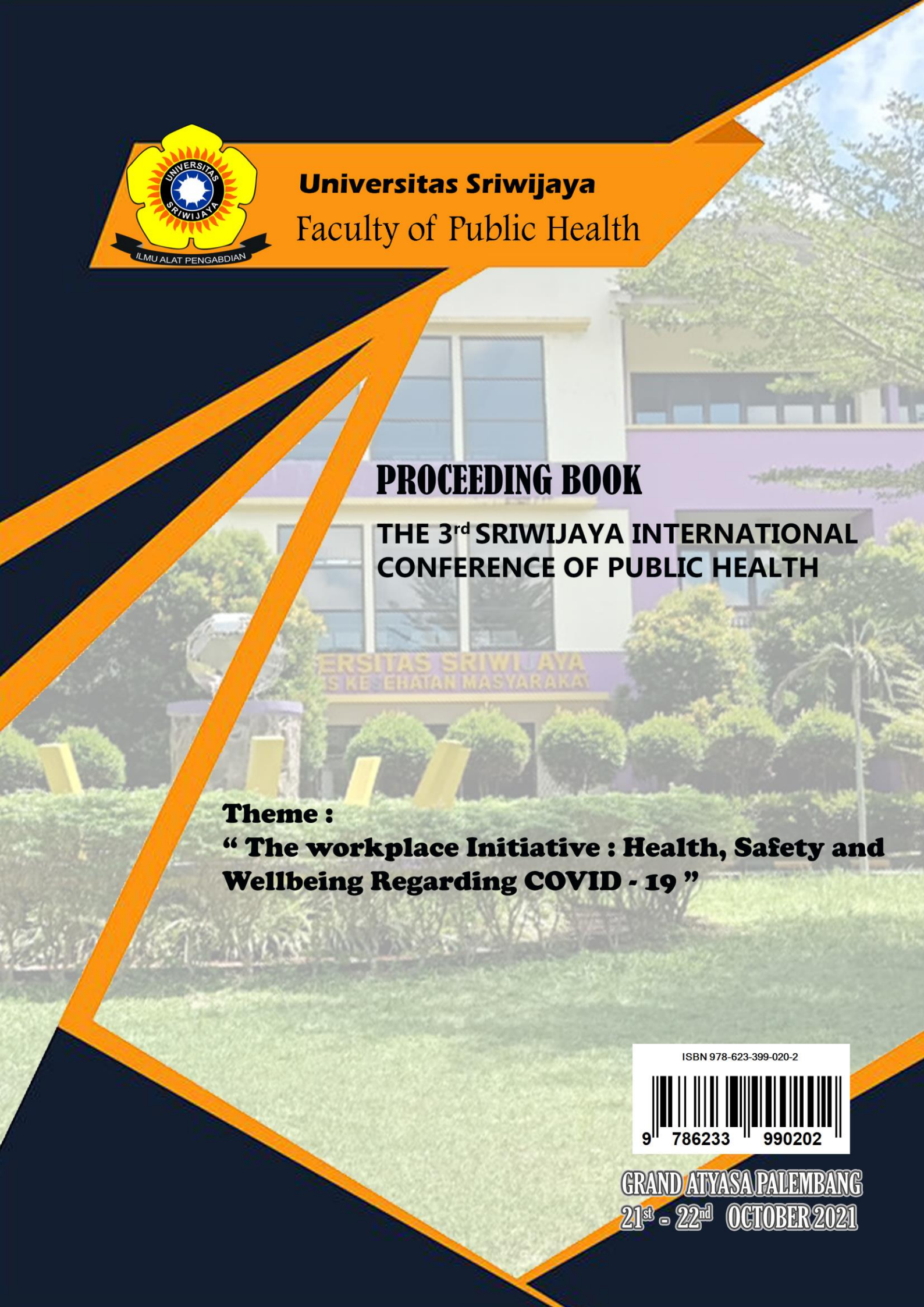

Universitas Sriwijaya

Faculty of Public Health

PROCEEDING BOOK

THE 3rd SRIWIJAYA INTERNATIONAL CONFERENCE OF PUBLIC HEALTH

Theme :

" The workplace Initiative : Health, Safety and Wellbeing Regarding COVID - 19 "

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21st - 22nd OCTOBER 2021

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The Work Place Initiative: Health, Safety and Wellbeing Regarding COVID-19

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THE 3rd SRIWIJAYA INTERNATIONAL CONFERENCE ON PUBLIC HEALTH

The Work Place Initiative: Health, Safety and Wellbeing Regarding COVID-19

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PREFACE

On behalf of the organizing committee, I am delighted to welcome you to the 3nd Sriwijaya International Conference on public Health (SICPH 2021) during 21th october 2021 at Palembang South Sumatera, Indonesia. The SICPH 2021 is international conference organized by Faculty of Public Health, Sriwijaya University (UNSRI). I would like to extend my warmest welcome to all the participant of The SICPH 2021 under the theme ***"The Impact of Climate Change on Infectious Disease Transmission".***

The SICPH 2021 consists of keynote sessions from well known expert speakers in the field of public health, and academic paper sessions (oral presentations) who are coming from several region. This conference seeks to bring together academics, public health professionals, researchers, scientists, students and health stakeholders from a wide range of disciplines to present their latest research experience and further development in all areas of public health. We hoped that this conference will be usefull platform for researchers to present their finding in the areas on multidisciplinary realted to public health and health system issues.

This conference will provide opportunities to exchange ideas, knowledge, and development of the latest research among the participants. We will publish the paper as output from the SICPH 2021 in proceeding book with ISBN and selected paper will be published in Jurnal ilmu kesehatan masyarakat- SINTA 3 (a nationally-accredited journal). The SICPH 2021 is being attended by about 50 participants. I hope you enjoy the conference.

With regard to considerable conference agenda, we greatly appreciate any support and sponshorship derived from any govermental as well as private institutions for the success of the conference. Great appreciation is also handed to organizing committe of the conference for any voluntarily effort that bring to the succes of the conference.

The conference committee expresses its gratitude towards all the keynote speakers, authors, reviewers, and participanst for the great contribution to enssure the succes of this event. Finnally, I sincerely thank all the members of the organizing committee who have worked hard to prepare this conference.

Palembang, October 2021

Chair,

Anita Camelia, SKM., MKKK.

PREFACE

First of all, let us thank God, the Almighty, who has given His grace and guidance so that the 3rd Sriwijaya International Conference of Public Health (SICPH) with the theme of The Workplace Initiative: Health, Safety and Wellbeing Regarding Covid:19 can be held successfully. I welcome all of you to this seminar which has received great attention not only from university, but also other communities to submit papers to be presented in this seminar. I express my highest gratitude and appreciation the presenters.

The conference is divided in two session, the first session is speeches and the second session is round table discussion. In the first session, the invited keynote speakers were Prof. Dr. Tan Malaka, MOH, DrPH, SpOk, HIU (A Professor from Medical Faculty Universitas Sriwijaya), Prof. Dr. Retneswari Masilamani (University Tunku Abdul Rahman, Malaysia), Prof.Dr.Joselito L. Gapaz MD, M.PH(University of the Philippines) and Prof. Dr Tjandra Yoga Aditama, MHA,DTM&H, DTCE,SpP(C).FIRS (Professor from Griffith University, Australia)

Of course, this conference activity would not have succeeded without the support of all parties involved, as well as the presence of all participants in all regions in Indonesia and internationally. I especially thank to all the organizing committees for their hard work, perseverance, and patience in preparing and organizing this conference so that it can go well, smoothly and successfully.

Finally, through this conference let us extend the network and cooperation among all stakeholders of the public health sector, especially in Indonesia and in the world in general, to build a better public health world in Indonesia

Thank you for participating in this conference.

Dean of Public Health Faculty,

Universitas Sriwijaya

Dr. Misnaniarti, S.K.M, M.K.M

TABLE OF CONTENTS

DIARRHEA, WATER QUALITY AND WASTING AMONG CHILDREN IN RIVERSIDE SETTLEMENT OF OGAN ILIR DISTRICT, SOUTH SUMATERA INDONESIA

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ABSTRACT

Wasting among children is a form of malnutrition characterized by recent rapid weight loss or the failure to gain weight, affects one of ten children in Indonesia. Previous exposure to diarrheal disease and water quality may play an essential role in wasting among children. Therefore more researches are needed to confirm this association. This study aims to analyze the association of previous exposure to diarrheal disease and water quality with wasting among children under five. A cross-sectional study with a cluster sampling method was conducted among 140 children under five years of age located in Pemulutan, Ogan Ilir District, South Sumatera Province, Indonesia. Data was collected through interviews using paper-based questionnaires and analyzed by using Chi-square test. The study showed a significant association between previous exposure to diarrheal disease (PR=3,020 95% CI 1,257-7,255) and maternal education (PR= 0,389 95% CI 0,158-0,958) with wasting among children. However, there was no significant association between maternal occupation, family income, physical and chemical water quality, and wasting among children. A history of diarrhea disease in children under five is a risk factor for wasting children under five of riverside settlements in Ogan Ilir District, South Sumatera Province, Indonesia.

Keywords: *wasting, children, water quality, diarrhoea, riverside*

Wasting pada anak-anak adalah suatu bentuk kekurangan gizi yang ditandai dengan penurunan berat badan yang cepat atau kegagalan untuk menambah berat badan, hal ini mempengaruhi satu dari sepuluh anak di Indonesia. Paparan sebelumnya terhadap penyakit diare dan kualitas air berperan penting sebagai penyebab wasting pada anak-anak. Oleh karena itu penelitian lebih lanjut diperlukan untuk mengkonfirmasi mengenai hubungan tersebut. Penelitian ini bertujuan untuk menganalisis hubungan gejala penyakit diare sebelumnya dan kualitas air dengan wasting pada balita. Penelitian ini menggunakan cross-sectional dengan metode cluster sampling yang telah dilakukan pada 140 balita yang berlokasi di Pemulutan, Kabupaten Ogan Ilir, Provinsi Sumatera Selatan, Indonesia. Pengumpulan data dilakukan melalui wawancara dengan menggunakan kuesioner berbasis kertas dan dianalisis dengan menggunakan uji Chi-square. Hasil penelitian menunjukkan adanya hubungan yang berpengaruh antara paparan penyakit diare sebelumnya (PR=3,020 95% CI 1,257-7,255) dan pendidikan ibu (PR= 0,389 95% CI 0,158-0,958) dengan wasting pada anak. Namun, tidak ada hubungan yang signifikan antara pekerjaan ibu, pendapatan keluarga, kualitas fisik dan kimia air, dan wasting pada anak. Riwayat penyakit diare pada balita merupakan faktor risiko balita kurus di permukiman tepi sungai di Kabupaten Ogan Ilir Provinsi Sumatera Selatan, Indonesia.

Kata kunci: wasting, anak, kualitas air, diare, tepi sungai

Introduction

Malnutrition remains public health issue globally. About 45% of deaths among children under five years of age are linked to undernutrition. These mainly occur in low- and middle-income countries. Even though Indonesia has made some progress towards achieving the malnutrition target, millions of Indonesian children remain threatened. Approximately 10.2% of children under five years old are still affected by undernutrition, which is higher than the average for the Asia region (9.1%). Close to 3 in 10 children under five years old were stunted, while 1 in 10 was wasted. (1).

Wasting in children is the result of recent rapid weight loss or the failure to gain weight. Wasting children have weakened immunity, are susceptible to long term developmental delays, and face an increased risk to vulnerable disease and death, mainly when wasting is severe (2). Moreover, another impact of undernutrition on children under five is the delay in child development, intellectual decline, and being more susceptible to non-communicable diseases, resulting in a decrease in productivity, leading to poverty (3,4).

Amounts of evidence have emerged that malnutrition among children is directly caused by inadequate food consumption since it comes with a lack of food at the right quantity and quality, which usually results from the inability of individuals to purchase enough food (5). Therefore, poor economic status can amplify the risk of malnutrition. Poor people are more likely to be affected by different forms of malnutrition (2).

In addition, environmental factors such as water supply, sanitation, and hygiene practices and previous exposure to diarrheal disease are also contributory factors to children undernutrition (6). A lack of waste disposal, Water supply that do not meet the requirements, poor sanitation access are likely to increase the risk of exposure to the infectious agent in the environment. Frequently occurring or chronic infection can cause malnutrition through increased caloric needs, catabolism of tissues for energy, sequestering certain micronutrients, and reducing food intake(7). Moreover, open defecation habits could contribute to the high burden of childhood diarrhoea (8); hence diarrhoea in children with severe acute malnutrition was found to increase their probability of death substantially irrespective of other factors (9).

In 2016 the incidence of wasting in the Ogan Ilir district was the third highest (10.7%) in South Sumatera. Furthermore, the number of wasting among children in 2017 did not significantly decrease (10.6%) (10,11). The Pemulutan sub-district where this research was conducted is located in Ogan Ilir, where most residential areas are located on the riverside. The water source for daily needs such as

drinking water, cooking, washing dishes, bathing is taken from a river or well water. Hence, further evidence is required to identify the relationship between previous exposure to diarrheal disease and water quality with wasting in children under five years of age.

Method

This study was a cross-sectional study with a cluster sampling method. This study aim was to analyze previous exposure to diarrheal disease, maternal characteristics, and water quality, including physical parameters (temperature, TDS, and TSS) and chemical parameters (Plumbum, Cadmium, Manganese, Zincum, dan Ferrum) with wasting in children.

A total of 140 children 12-59 months old who reside in the riverside village in Pemulutan Sub-district named Desa Pemulutan Ulu, Desa Pemulutan Ilir, Desa Teluk Kecapi, Desa Pelabuhan Dalam, dan Muara Dua, proportionally taken as sample. The study was conducted from August to October 2020. Data was collected through interviews with the children mother using questionnaires and analyzed using chi-square test. Wasting among children was measured by weight/height index, which was determined by measuring height using an infantometer for children aged 12-24 months and a stadiometer for children aged >24-59 months, and the children's weight was measured using a children's weight.

Water samples were taken from two main types of water sources used by the community: five samples of river water and one sample of regional water company (PDAM). The water quality was assessed based on physical parameters (including temperature, TSS, and TDS) and the chemical parameters (including several heavy metals, which were Plumbum, Cadmium, Zincum, Manganese, and Ferrum). Water quality checks was carried out by Balai Teknis Kesehatan Lingkungan Pengendalian Penyakit (BTKL-PP) Palembang.

Results

Table 1
Social-economic and demographic characteristic of children and their mother In Pemulutan Subdistrict, Ogan Ilir Sumatera Selatan Indonesia (n=140)

Variables	Frequency	(%)
Children Sex		
Male	69	49,3
Female	71	50,7
Children Nutritional Status(Weight/Height Index)		
Severe wasting	3	2,1
Wasting	14	10,0
Normal	116	82,9
Overweight	7	5,0
Mother Education		
Elementary	50	35,7
Primary	40	28,6
Secondary	42	30
Collage	8	5,7
Mother Occupation		
Not working	114	81,4
Civil Servant	2	1,4
Entrepreneur	22	15,7
Farmer/Labourer/Fisherman	2	1,4
Previous diarrhoea disease		
Yes	38	27.1
No	102	72.9

A total of 140 children 12-59 months of age were included in this study. Table 1 revealed that more than half of the children were female (50,7%). Most of their nutritional status based on weight/height index were normal (82,9%), even though few of them were wasting (10%) and severy wasted (2,1%). Most mothers completed their elementary education level (35,7%) and were not working (81,4%). Most of the children had previous exposure to diarrheal disease (72,9%)

Table 2
Social-economic, demographic characteristic, and water quality in Pemulutan Subdistrict, Ogan Ilir Sumatera Selatan Indonesia (n=140)

Variables	Nutritional status (weight to height index)		*P Value*	PR (95 % CI)
	Wasting n (%)	Normal n (%)		
Age of Mother				
≤ 35	12 (13,2%)	79 (86,8%)	0,807	1,292
>35	5 (10,2%)	44 (89,8%)		0,483-3,456
Level of Education				
Elementary-Primary	7 (7,8%)	83 (92,2%)	0,056*	0,389
Secondary-collage	10 (20,0%)	40 (80,0%)		0,158-0,958
Mother Occupational Status				
Working	5 (19,2%)	21 (80,8%)	0,314	1,827
Not Working	12 (10,5%)	102 (89,5%)		0,705-4,735
Family Income				
< Rp 3000.000	12 (13,2%)	79 (86,8%)	0,807	1,292
≥ Rp 3000.000	5 (10,2%)	44 (89,8%)		0,843-3,456
Previous diarrhea disease				
Yes	9 (23,7%)	29 (76,3%)	0,018*	3.020
No	8 (7,8%)	94 (92,2%)		1,257-7,255
Main water source				
River	12 (12,1%)	87 (87,9%)	1,000	0,994
Regional water company (PDAM)	5 (12,2%)	36 (87,8%)		0,374-2,642
Temprature				
23,2	3 (11,5%)	23 (88,5%)	1,000	0,940
23,1	14 (12,3%)	100 (87,7%)		0,291-3,033
TDS				
56 – 57	9 (16,1%)	47 (83,9%)	0,369	1,688
48-52	8 (9,5%)	76 (90,5%)		0,693-4,111
TSS				
19,70 -21,40	6 (9,5%)	57 (90,5%)	0,550	0,667
18,50 - 19,10	11 (14,3%)	66 (85,7%)		0,261-1,702
Ferrum (Fe)				
0,87 - 0,97	7 (13,7%)	44 (86,3%)	0,869	1,222
0,15 - 0,81	10 (11,2%)	79 (88,8%)		0,495-3,012
Zincum (Zn)				
0,01	15 (12,6%)	104 (87,4%)	1,000	1,324
0,0042	2 (9,5%)	19 (90,5%)		0,326-5,370
Cadmium (Cd)				
0,0025	11 (11,1%)	88 (88,9%)	0,577	0,579
0,0015	6 (14,6%)	35 (85,4%)		0,301-1,916
Manganese (Mn)				
0,07	3 (20%)	12 (80%)	0,395	1,786
0,01-0,02	14 (11,2%)	111 (88,8%)		0,579-5,506
Plumbum (Pb)				
0,0042	11 (11,1%)	88 (88,9%)	0,577	0,759
0,0031	6 (14,6%)	35 (85,4%)		0,301-1,916

Table 2 presented the different chi-square test results on determinant factors related to wasting among children. The result revealed a significant relationship, with a p-value of 0.05, between mother's

level of education and previous diarrheal disease with wasting among children. In contrast, there was no significant relationship between the mother's age, mother occupational status, family income, the primary source of water, and physical and chemical water quality with wasting among children.

Discussion

This study allowed us to appraise the leading factors of wasting among children under five years of age in the Pemulutan sub-district Ogan Ilir South Sumatera, Indonesia. It was identified that wasting in children was influenced by previous exposure to diarrheal disease. Children with the previous diarrheal disease are more likely to be wasted than those without the previous diarrheal disease. This finding was consistent with previous studies, which indicated a positive association between the preceding two weeks of childhood diarrhoea and malnutrition (6). Previous exposure to diarrheal disease was significantly associated with an increased risk of developing stunting and wasting. This finding could be due to poor sanitation conditions such as water sources, drinking water, family latrines, improper garbage disposal, and household wastewater contributing to the transmission of diarrheal diseases(12,13). Meanwhile, Frequently occurrence of chronic infection can cause malnutrition by reducing food intake due to loss of appetite (7) so that children with diarrhoea lose weight and can easily become malnourished (14). Therefore, promoting environmental hygiene and sanitation to mothers as diarrheal disease prevention in children needs to be intensified.

Mother education usually uses as mediating factor for better health quality for their children, and an educated mother could make a difference by empowering mothers to make decisions about specific types of food for their children (14). Maternal education improves the mother's knowledge about child health, including causes, prevention, and treatment of disease(15). Amount of studies identified a positive association between maternal education and malnutrition among children. Children born from illiterate or lack of formal education mothers were more likely to develop undernutrition(6,14,16) in contrast with the finding of this study which indicated a significant negative association between mother educational level and wasting among children. It showed that mothers with elementary to primary education levels had a 61,1% lower probability of having wasted children than mothers with secondary to college education levels. Similar finding with another study that found no consistent association pattern between literacy levels and the indicators of malnutrition among children (15). therefore,

offering nutritional education programs for women regardless of their educational level would help them attain better nutritional outcomes for their children.

This study found no statistical relationship between water quality and wasting among children, and this could be due to physical and chemical parameters (temperature, TDS, TSS, Ferrum, Zincum, Cadmium, manganese, and plumbum) were still within safe limits based on the provisions of the health minister of Indonesia. Even though river water was within safe limits for specific physical and chemical parameters, more than half of the mothers used river water as the primary water source for daily needs (70,7%). Another study conducted in Palembang, South Sumatra province, found that people who lived in riverside disposed of their domestic wastewater directly into river bodies caused the parameters of COD, BOD, ammonia and phosphate along the river had exceeded the quality standards (17). Moreover, polluted water for washing, bathing, drinking, and food preparation increases infectious diseases and water-borne diseases like diarrhoea and cholera (16).

This study has some limitations; This study did not include biological parameters checks so that the incidence of diarrhoea due to biological contamination originated from water sources could not be assessed. Physical and chemical parameters of water quality checks tend to be homogeneous because it only uses six water sample points to estimate water quality in this study.

Conclusion

Previous exposure to diarrheal disease was a risk factor for wasting among children in riverside settlements. As physical and chemical parameters within this study (temperature, TDS, TSS, Ferrum, Zincum, Cadmium, manganese, and plumbum) were still within safe limits based on the provisions of the health minister of Indonesia and due to its homogenous parameter results so this study had not been able to give a conclusive explanation of water as an environmental factor in the occurrence of undernutrition among children. we suggest further research to examine physical and chemical, and also biological parameters and their relationship with undernutrition among children

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Conflict of Interest

This study's author(s) had confirmed no conflict of interest regarding this study and publication.

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