



The Influence of Community Empowerment Strategies in Environmental Engineering Diarrhea Prevention in the Area of Medan Johor Health Center

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Abstract

This research aims to establish the impact that community participation techniques in environmental engineering have on the protection of diarrheal illnesses in the region that is serviced by the Medan Johor Health Center in 2021. An analytical survey with a cross-sectional design was the method of research that was carried out. The total number of individuals included in this research was 2235. This population was sampled using either non-probability sampling or selective sampling, neither of which is based on probability. One hundred different individuals were going to be used as subjects for the research. Univariate, bivariate, and multivariate analyses, in addition to the Chi square test, were utilized in order to analyze the data. According to the findings of the study, the p-value for the advocacy variable was found to be 0.000, while the values for the collaboration and communication variables were 0.001 and 0.002, respectively. This indicates that there is a connection between advocacy, teamwork, communication, and mentorship and the protection of gastroenteritis. The findings of the multivariate analysis revealed that the mentorship variable, which had an OR value of 35,174, was the most important factor in determining the outcomes of this research. Although there is a correlation between advocating, teamwork, communication, and mentorship and the protection of gastroenteritis, the findings of a multivariate analysis indicate that mentoring is the most important component.

Introduction

Diarrhea is a pathological condition characterized by the frequent passage of loose, watery stools and an increase in the frequency of defecation. Occasionally, sputum may contain blood or mucous. Koplewich (2009) reported that diarrhea is the source of 9% of hospitalizations in children aged five or younger. In the United States, this disease is responsible for the deaths of between 300 and 500 infants and children under the age of one annually; meanwhile, on a global scale, an estimated 4 million children succumb to this condition annually (Koplewich, 2009).

Abnormal water and electrolyte transport in the gut can be a contributing factor to the development of diarrhea. It has been estimated that approximately 500 million children around the globe suffer from diarrhea annually, with 20% of all fatalities among children living in developing countries attributed to the condition and its associated dehydration. Gastroenteritis, Enteritis, Colitis, and Colonic Enteritis can encompass diarrheal disorders which impair the digestive system, including the stomach, intestines, small intestine, and colon. (Enterocolitis) (Sumolang et al., 2019).

A major contributory factor to the high prevalence of illness and death among these patients is the inadequate anticipation of the management needs of those with diarrheal illness before they become severely dehydrated. The paucity of cognizance, demeanor, and an absence of cognizance of guardian's of pediatric patients with regards to the nursing and regulation of diarrheal disease in minors (Afriani, 2017; Anzani & Saftarina, 2019).

The World Health Organization (WHO) has reported that diarrheal diseases are still the leading cause of mortality worldwide, with an estimated 5-10 million fatalities occurring every year. The severity of the dilemma is evidenced by the high incidence and fatality rates associated with diarrhea. The World Health Organization estimates that approximately four billion cases of illnesses and diseases transpire annually across the world, out of which 2.2 million result in mortality; the greatest percentage of which involves children below the age of five. Data from America reveals that the average age of 5 year olds experiences 715 episodes of diarrhea. Analysis of data from developing countries has demonstrated that children under the age of 5 typically experience 3-4 episodes of diarrhea per annum (Nurnaningsi et al., 2017).

Diarrhea remains a significant issue in terms of public health in Indonesia. This is attributable to the elevated incidence and fatality rates, particularly in young children. It has been estimated that annually, more than 1.3 billion cases and 3.2 million fatalities in children aged under five are attributed to diarrhea. On average, kids experience 3.3 cases of diarrhea annually, with over 80% of mortalities being among those aged below two (Riyanto, 2019).

Diarrheal Diseases are endemic in the North Sumatra Province, and they often cause extraordinary events. (KLB). In 2007, health facilities reported 1,146 cases of diarrheal disease in children under five, resulting in an associated morbidity rate of 28.43 per 1,000 population across districts/cities. There was a significant outbreak of diarrhoea reported across ten cities/districts, with a total of 2,819 cases and 23 fatalities (CFR 0.81%). Data from the Disease Prevention and Eradication Program's report indicate that the mortality rate related to diarrheal illnesses escalated in 2008 when compared to the previous year. In 2008, the mortality rate due to diarrheal diseases was 4.78%, with 10 fatalities among the 209 reported cases. The figure had a year-over-year increase, evidenced by a Case Fatality Rate of 1.31%, with 4 fatalities among 304 cases. According to the profile data obtained from districts/cities in 2008, it was found that there were 208,024 cases of diarrheal illness in North Sumatra in 2008, with 98,768 (47.48%) of those cases being recorded in toddlers (Rasyidah, 2019).

Based on the Riskesdas findings, Medan City experienced a significant decrease in the incidence of diarrheal cases between 2011 and 2012, with 229,375 and 29,769 cases, respectively. Within Deli Serdang Regency, diarrheal illnesses were found to have afflicted 20,373 people in 2010, with the number decreasing to 17,529 in the following year.

In Medan, Diarrhea remains the prevalent condition amongst a range of maladies. According to the 2017 Central Bureau of Statistics for North Sumatra Province, there were 10,225 cases of diarrhea, which constitutes a higher count than for any other disease. 5 It has been estimated that out of the total approximate population of 2,229,408 inhabitants in Medan City, a reported 26,025 persons have been affected by diarrhea, this estimation is acquired by taking into account the national diarrhea morbidity rate of 270/1000 population reported in 2016. The estimated quantity of cases can be employed as a benchmark for achieving coverage of occurrences of diarrhea.

Based on data from the 2019 UPT Medan Johor Health Center report in Medan Johor District, Medan Johor Health Center received the second number of diarrhea cases out of the three health centers in Medan Johor District and cases of diarrhea occurred in toddlers namely 147 cases and at all ages 611 cases occurred in 2019. 2019. In the Medan Johor sub-district, there are 1,750 cases of diarrheal illness in the total population, and in particular, 346 cases in the population of toddlers.

Pursuant to Permenkes No. 75 of 2014, the Medan Johor Health Center contains an operational unit for the promotion of health and a section dedicated to disease control and eradication. (P2P). posyandu and to school on a regular basis, as well as administering deworming medication at posyandu, kindergarten, early childhood, and elementary school and placing advertising posters around the Medan Johor health center as well as efforts made with the community such as teaching how to wash hands properly and maintain the cleanliness of the environment so that they can be independent in carrying out prevention of diarrheal diseases. One of the significant challenges faced by officers include certain children having problems consuming medication, especially tablet medication, the lack of community engagement in therapeutic sessions, and the sense of self-assurance leading to a disregard of the advice provided by officers. (Sholeha, 2018).

Methods

This study employed a Descriptive Analytic Survey with a Cross-Sectional Design in order to investigate the correlation (relationship) and the influence that the independent variables have on the dependent variable simultaneously. (Barlian, 2018). This study comprised a sample size of 2235 patients afflicted with diarrhea. The population sample was obtained through the utilization of non-probability sampling, or purposive sampling.

All research participants constitute the population. Based on the initial survey, it was determined that the amount of individuals afflicted with diarrhea in 2021 was 2235. In this study, a sample of 96 patients who were experiencing diarrhea were taken from the Johor Medan Health Center.

Results and Discussion

Characteristics of Respondents

The characteristics of the samples taken in this study include age, gender, ethnicity and education.

Table 1. Characteristics of Respondents Based on Age at the Medan Johor Health Center in 2021

No.	Age	f	Percentage
1	20-25 years	21	21.8
2	26-30 years	34	35.4
3	>30 years	41	42.7
Total		96	100.0

Based on the table above, it can be seen that the majority of respondents aged >34 years as many as 45 respondents (42.7%) and the minority aged 21 years as many as 21 respondents (21.8%).

Table 2. Characteristics of Respondents Based on Gender at the Medan Johor Health Center in 2021

No.	Gender	f	Percentage
1	Man	44	45.8
2	Woman	52	54.2
Total		96	100.0

Based on the table above, it can be seen that the gender of the majority of respondents is 52 respondents (54.2%) and the male minority is 44 respondents (45.8%).

Table 3. Characteristics of Respondents Based on Education at the Medan Johor Health

Center in 2021

No.	Age	f	Percentage
1	Elementary/Junior High School	17	17.7
2	High School/Vocational School	44	45.8
3	College	35	36.5
Total		96	100.0

Based on the table above, it can be seen that the education of the majority of SMA / SMK respondents was 44 respondents or 45.8%

Bivariate Analysis

Bivariate analysis is performed to determine the relationship of independent variables and dependent variables through *Crosstabs* or cross-tabulation. The statistical test performed on this Bivariate analysis was using the *Chi-Square* test with a 95% confidence degree ($\alpha = 0.05$). It says there is a relationship statistically if a *p-value* is obtained < 0.05 .

Table 4. Advocacy Relationship with Environmental Engineering for Diarrhea Prevention at Puskesmas Medan Johor in 2021

Advocacy	Environmental Engineering for Diarrhea Prevention				Sum		<i>p (value)</i>
	Exist		None		f	%	
	f	%	f	%			
Apply	54	90.0	2	10.0	56	100	0,000
Not applying	12	30.0	28	70.0	40	100	
Total	66		30		96		

Based on *pearson Chi-Square* analysis, a *p-value* of 0.000 < 0.05 was obtained, so it can be concluded that there is a relationship between the team advocacy carried out by the health promotion department of the medan johor health center with environmental engineering to prevent diarrheal diseases.

Table 5. Teamwork Relationship with Environmental Engineering for Diarrhea Prevention at Puskesmas Medan Johor in 2021

Teamwork	Environmental Engineering For Diarrhea Prevention				Sum		<i>p (value)</i>
	Exist		None		f	%	
	f	%	f	%			
Good	56	75.5	14	24.3	70	100	0,001
Bad	10	38.5	16	61.5	26	100	
Total	66		34		96		

Based on the table above, it can be seen that out of 70 respondents who

Based on *Pearson Chi-Square's analysis*, a *p-value* of 0.001 < 0.05 was obtained, so it can be concluded that there is a teamwork relationship carried out by the health promotion department of the Medan Johor Health Center with environmental engineering to prevent diarrheal diseases.

Table 6. Communication Relationship with Environmental Engineering for Diarrhea Prevention at Puskesmas Medan Johor in 2021

Communication	Environmental Engineering for Diarrhea Prevention				Sum		<i>p (value)</i>
	Exist		None		f	%	
	f	%	f	%			
Good	48	77.4	10	22.6	58	100	0,002
Bad	18	47.4	20	52.6	38	100	
Total	66		30		96		

Based on *Pearson Chi-Square's analysis*, a *p-value* of 0.002 < 0.05 was obtained, so it can be concluded that there is a relationship between the communication carried out by the health promotion department of the Medan Johor Health Center with environmental engineering to prevent diarrheal diseases.

Table 7. The Relationship between Assistance and Environmental Engineering for Diarrhea Prevention at the Medan Johor Health Center in 2021

Companions	Environmental Engineering for Diarrhea Prevention				Sum		<i>p (value)</i>
	Exist		None		f	%	
	f	%	f	%			
Good	52	100.0	0	0.0	52	100	0,000
Bad	14	22.7	30	77.3	44	100	
Total	66		30		96		

Based on *Pearson Chi-Square's analysis*, a *p-value* of 0.000 < 0.05 was obtained, so it can be concluded that there is a relationship between the assistance carried out by the health promotion department of the Medan Johor Health Center with environmental engineering to prevent diarrheal diseases.

Multivariate Analysis

This analysis is to see the influence (relationship) between independent variables on dependent variables and the type of logistic regression analysis so that the independent variables that most dominantly affect dependent variables are obtained (Saryono, 2013).

Table 8. The Effect of Advocacy, Teamwork, Communication and Assistance on Environmental Engineering for Diarrhea Prevention at the Medan Johor Health Center in 2021

Logistic Regression Test

Variable	B	Sig.	Exp(B)
Advocacy	10.000	.000	11.000
Teamwork	16.909	.001	14.000
Communication	17.448	.002	15.000
Mentoring	32.247	.000	37.174

Furthermore, multivariate analysis to determine the magnitude of the influence of these four variables on Environmental Engineering for Diarrhea Prevention is indicated by the value Exp (B) or also called Odds Ratio (OR), which is the Assistance variable with an OR value of 35,174 meaning that respondents who give an opinion on the importance of Assistance have a chance of 35 times influencing Environmental Engineering for Prevention of Diarrhea at the Medan Johor Health Center in 2021.

Environmental engineering is a public awareness effort to engineer a reciprocal relationship between humans and the environment which has the goal of achieving human health and the environment itself. According to the researchers' findings, the formation of age has a relationship to knowledge of the environment, attitudes are influenced by personal experience, culture, other people who are considered important, the mass media, educational institutions or institutions themselves and religious institutions, as well as emotional factors in individuals. Most patients who are aged will pay more attention to the surrounding environment. While for gender, according to the researchers, these factors have an influence on the view of a problem, women tend to be more critical, especially the problem of diarrhea in the environment, female respondents use health services more than men. Family health condition when feeling sick, especially due to diarrhea. While the education factor plays a very important role in knowledge for preventing diarrheal diseases, a good level of education will facilitate the provision of advocacy, teamwork and assistance for the prevention of diarrheal diseases in the Medan Johor Health Center.

The Effect of Advocacy on Environmental Engineering for Prevention of Diarrhea at the Medan Johor Health Center in 2021.

Advocacy is an effort to approach, assist and influence policy makers wisely, so that they agree to provide support for health development. Advocacy is an approach or process that is strategic and planned to gain commitment to support from related parties (stakeholders). The role of health workers is needed so that the diarrhea program can run optimally, the low participation of the community in maintaining environmental cleanliness such as waste management and the use of latrines is still not comprehensive. The results showed that the implementation of the health promotion program at the Kuala Health Center had been carried out by integrating its activities into the program of each service work unit at the Kuala Health Center. Community understanding about diarrhea is still lacking, due to the ineffective counseling methods used by officers.

The Effect of Teamwork on Environmental Engineering for Diarrhea Prevention at the Medan Johor Health Center in 2021

Teamwork is an ability to work together towards a common vision and mission. In other words, teamwork is a strong ability to direct and encourage individuals to reach and achieve organizational goals together. Through strong teamwork, we can achieve great achievements that we may never have thought of before. That is why teamwork according to experts is something that must be built and maintained properly. Otherwise, company goals will be difficult to achieve together. Teamwork can be realized well when a group of people work cohesively towards a common goal by creating a positive atmosphere and work environment, and combining the strengths of each individual in improving team performance. strong.

This is in line with Zakiyah Yasin's research (2019) with the research title Environmental Factors related to the incidence of diarrhea in toddlers at the Batang - Bantang Health Center, Sumenep Regency (93). The results of the study showed that the majority of those who met the requirements did not experience diarrhea, namely 11 respondents (68.8%). And most of the environment did not meet the requirements and experienced diarrhea, namely as many as 10 respondents (71.4%). From the statistical test used, the sig. $0.028 < \alpha$ ($\alpha = 0.05$), meaning that environmental factors (source of drinking water, type of place for feces disposal, and garbage disposal are related to the incidence of diarrhea in toddlers at the Batang - Batang Health Center, Sumenep Regency. From the OR test results above, it can be interpreted that toddlers with Environments that do not meet the requirements have a 5.5 times chance of experiencing diarrhea compared to environments that meet the requirements.

The work of a team of health workers who play a role in implementing the diarrhea program at the Puskesmas by conducting counseling about diarrhea. Puskesmas staff conduct health

promotion about diarrhea only once a month. Counseling about diarrhea to schools is also still lacking. The media for providing information is still limited and still conventional. Besides that, the community in the working area of the Puskesmas is not active in participating in counseling so that the teamwork at the Lubuk Attitudeing Health Center for preventing diarrhea is not optimal.

The Effect of Communication on Environmental Engineering for Prevention of Diarrhea at the Medan Johor Health Center in 2021

Communication is the delivery of messages or information by two or more people to get feedback. The communication process occurs because it is supported by several elements or elements, namely the source is the party that conveys the message, then the message is a statement conveyed by the sender to the recipient, then the channel or media is the tool used to convey the message from the source to the recipient, then the recipient is the party which is the target of receiving the message sent from the sender to the recipient, then the next effect or influence which is a difference between what the recipient thinks, feels, and does before and after receiving the message. Next is feedback where good feedback is a response given by the recipient as a result of receiving from the source, and the last is the environment, which is a situation that influences the course of communication.

According to the findings of the researchers, communication is very important in Environmental Engineering for the prevention of diarrhea at the Medan Johor Health Center. Continuous and gradual communication, information, education (IEC), both individually and in groups, can increase the knowledge and attitudes of parents and caregivers in caring for sick toddlers and young babies. In addition, KIE can also change behavior in a better direction. Implementation of IEC activities, both individually and in groups, can be done at the Puskesmas. That proper information for related officials regarding the prevention of diseases such as diarrhea and malnutrition must be provided in every health service. In practice, IEC generally uses videos, teaching aids, flipcharts, leaflets and mother's advice cards. The purpose of using educational information communication media can facilitate community understanding in acting to deal with diarrhea in the Medan Johor Health Center environment.

The Effect of Assistance on Environmental Engineering for Prevention of Diarrhea at the Medan Johor Health Center in 2021.

Assistance can be conceptualized as a process of guidance, mentorship, and instruction; fundamentally, it is a process of providing support offered by companions to the community in recognizing requirements and addressing issues, while furthering stimulative action in the determination procedure, in order to accomplish autonomy. The efficacy of the Environmental Engineering program in combating diarrhea can be heavily impacted by the adoption of an assistive strategy in line with the notion of benefitting the community.

Assistance Health education is expected to provide changes in knowledge and attitudes of mothers in the management of toddlers with diarrhea. So that it can reduce infant mortality due to diarrhea. Activities in the form of counseling regarding information on signs of diarrhea, causes of diarrhea, prevention and treatment of diarrhea. In addition, brochures were given regarding the danger signs of diarrhea and its prevention. Furthermore, discussions were held to evaluate the results of counseling. Forty-two residents and three health cadres took part in this event. Most of the cadres have good knowledge about diarrhea and its management. After the extension assistance was carried out, all residents increasingly understood how to prevent and treat diarrhea in the household. Residents also have the ability to recognize the signs and complications of diarrhea, how to prevent diarrhea by washing hands according to WHO and how to make a salt-sugar solution and how to give it.

The findings of the research elucidate that mentoring is a practice of community empowerment that deploys assistants to perform the roles of facilitators, communicators, and mediators. The provision of aid generally seeks to foster the capacities of communities to enable them to lead more dignified and prosperous lives. Mentoring additionally entails provision of support from external sources that voluntarily furnish aid to a person or group to fulfill the requirements and solve difficulties encountered by each individual or collective

Conclusion

This study explains that the variables Advocacy, Teamwork, Communication and Assistance affect the Prevention of Diarrhea in the Medan Johor Health Center Area.

Suggestion

In this case, effective and efficient cooperation is needed between puskesmas health workers in providing counseling so that outbreaks of diarrhea that have so far existed in puskesmas can be minimized, including during health checks.

Stakeholders should work together so that they are more active in paying attention to the environment as an effort to prevent diarrhea in the puskesmas so that it is detected from the start so that the treatment is more optimal.

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