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Diarrhoea Prevalence in Under Five Children in Two Urban Populations Setting of Ndola, Zambia: An Assessment of Knowledge and Attitude at the Household Level

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Abstract

Background: Diarrhea diseases are a leading cause of mortality in under five children of developing countries. In African countries preventable measures have been shown to reduce early child mortality, but poor Knowledge and attitude towards diarrhea cases has contributed to the high prevalence.

Objective: To determine the prevalence of diarrhea among under 5 children only in two urban settings and assessment of knowledge and attitude on the prevalence.

Design: A cross-sectional study was conducted. Data was gathered using a standardized questionnaire. Proportions from two different areas were compared using the Chi-square test, and a result yielding a p value of less than 5% was considered statistically significant.

Result: A total of 718 households from the two locations were selected, 361 from Chipulukusu and 357 from Kansenshi. Diarrhea prevalence was (44.6%) in under 5 children (42.5%) from Chipulukusu and (2.1%) in Kansenshi.

Respondents in Kansenshi were more knowledgeable than those coming from Chipulukusu: knowledge on risks, Kansenshi had (68.6%) while Chipulukusu had (52.4%). Kansenshi had (96.9%) and Chipulukusu had (91.7%) knowledge on symptoms. Knowledge on prevention Kansenshi had (91.9%) while Chipulukusu had (91.7%). Treatment of diarrhea Kansenshi had (994.1%) while Chipulukusu had (51.2%).In Kansenshi (99.4%) strongly agreed or just agreed that the use of untreated water contributes to the onset of diarrhea while in Chipulukusu was (96.1%).A total of (81.5%) in Kansenshi and (88.1%) in Chipulukusu strongly agreed that diarrhea can be prevented at home. Kansenshi had (8.4%) and Chipulukusu had (3.3%) of respondents who strongly agreed that persistent diarrhea can be treated at home. Lastly in Kansenshi (96.9%) and Chipulukusu (96.1%) strongly agreed that shallow well and pit latrine contributes to the onset of diarrhea.

Conclusion: The prevalence, knowledge and attitude of diarrhea varied between the residential areas. Interventions are required which are residential specific and targeting at educating the residents on factors that contribute to the onset of diarrhea in under 5 children.

Keywords: Prevalence; Diarrhea; Knowledge; Attitude; Zambia

Introduction

Diarrhea is defined as the passage of loose stools three or more times in a 24-hour period in adults, and with twelve or more loose or watery stools for a breast-fed baby [1]. It is generally classified as “acute watery”, “persistent” or “dysentery”. Acute watery diarrhea has an abrupt beginning and lasts less than 14 days. Persistent diarrhea lasts more than 14 days, which generally results in significant weight loss and nutritional problems [2]. Diarrhea disease is one of the five leading causes of morbidity and mortality among children aged 0 and 5 years in the world, but the most hit areas are the low-income countries mostly in Asia and Africa. Global estimates show that deaths due to diarrhea have declined from 4.6 million in the 1980s and 3.3 million in the 1990s to 2.5 million by the year 2000 [3]. In most instances diarrhea is preventable with some hygiene interventions that reduce contamination at household level [4].

The decline reported might be due to the improvements in the treatment and management of diarrhea disease and increased use of oral rehydration therapy [ORT] In the developing countries [2,3]. However, morbidity has not shown a parallel decline despite improvements in the infrastructural facilities in developing countries. This is probably because of limited changes in behavioral factors when it comes to knowledge, altitude and personal hygiene such as hand washing and low levels of awareness on disease prevention at household level [5]. In most African regions few research has done, those which has been published have highlighted some worst cases of diarrhea in the urban slums and rural areas. Water quality at the point

of use is often worse in these areas and water is prone to contamination due to storage and behavioral activities [5,6]. In fact in these areas, 27 percent of all deaths attributes to diarrhea [1]. Zambia is a landlocked nation, consists of 10 provinces. In every town of the country Diarrhea is the third leading cause of clinic visit and death for under 5 children after pneumonia and malaria [7]. Every year, at least 15,000 of Zambia's 2.4 million children under three-year-old experience an average of three episodes of diarrhea every year[7]. Like any other towns in the country, Ndola the provincial capital of the Copperbelt province has some residential areas which are classified as low and high cost areas. In most instances factors influencing the high prevalence of diarrhea in the two different areas have highlighted, hence the delay in setting up interventions. Therefore, The current study was designed to estimate the prevalence of diarrhea cases among under 5 children in Chipulukusu and Kansenshi residential areas and also to assess the level of knowledge and attitude of the on the prevalence of diarrhea cases among children.

Methods

Study area

The study areas were Chipulukusu a low income residential area and Kansenshi a high income residential. Chipulukusu has a total population of 5930while Kansenshi has a total population of 5132 under 5 children [8].

Design

The study design was a cross-sectional study looking at the prevalence of diarrhea and knowledge of the mothers and caregivers towards diarrhea cases in children.

Sample size/sampling

A Statcalc program in EPI INFO version 6.04 was used to estimate the sample size with the following parameters in place [total population size of Kansenshi and Chipulukusu, 5132 and 5930 respectively. level of confidence [z] 1.96 at 95% confidence level, marginal error of 5% and baseline levels of indicators 50% as no estimates existed] of the 5132 participants 357 were selected from Kansenshi and out of 5930, 361 were selected from Chipulukusu. From the sample sizes all the households were systematically randomly selected using the formula 1/k were k is the sample size. Data was collected through the use of a standardized questionnaire at each household, the questions aimed at gathering information regarding respondent's knowledge on factors leading to the prevalence of diarrhea case and their attitude and practices towards its prevention.

Definitions of Variables

A standardized questionnaire was developed from some questionnaires that had been previously used in similar studies.

Prevalence was determined by finding out if the child less than five years had suffered from diarrhea in the past one year.

Knowledge was determined by asking four questions which enquired about the knowledge of respondents on diarrhea cases in children including symptoms, risk factors, and prevention and treatment modalities.

Attitude There were seven questions on likert's scale. The questions tried to assess respondent's awareness on the magnitude of diarrhea in Chipulukusu and Kansenshi, if they felt that their children are at risk, also their feeling on the mode of transmission throughout the year. All this was expressed as a percentage.

Data Management and Analysis

Data was entered through the use of epi data software .The data entry was screened in terms of consistency and was double entered. Proportions of the outcome variables were calculated in percentages and were compared using the Chi-square test, and a result yielding a p value of less than 5% was considered statistically significant.

Results

There were a total of 718 participants from the two locations, 361 were selected from Chipulukusu and a total of 357 were selected from Kansenshi. A total of 320 [44.6%] under 5 children suffered from diarrhea of which 305 [84.5%] from Chipulukusu and 15 [4.2%] in Kansenshi (Table1). The remaining 398[55.4%] households had either no children at home, above 5 years or under 5 who have never suffered from diarrhea for the past one year 56 [15.5%] from Chipulukusu and 342 [96.8%] from Kansenshi.

Diarrhea	Chipulukusu	Kansenshi	Total	P-Value
	Total=361	Total=357	718 [100]	<0.001
Yes	305 [84.5]	15 [4.2]	320 [44.6]	
No	56 [15.5]	342 [96.8]	398 [55.4]	

Table 1: Prevalence of diarrhea cases in Chipulukusu and Kansenshi residential areas for the last 1 year.

Majority of participants in Chipulukusu had poor knowledge on risk of diarrhea, as compared to those in Kansenshi. A total of 172 [47.6%] had no knowledge, the remaining 189 [52.4] from the total 361 [100%] had knowledge on the risk of diarrhea from Chipulukusu. A total of 112 [31.4%] from Kansenshi were reported to have had no knowledge, however 245 [68.6%] had knowledge from the population sample of 357 [100%] as in Table 2.

There was a total of 677 [94.3%] participants who were able to give right answers on the symptoms of diarrhea of which 331 [91.7%] were from Chipulukusu and 346 [96.9%] were from Kansenshi, 41[5.7%] participants had no knowledge of which 30 [8.3%] were from Chipulukusu and 11 [3.1%] from Kansenshi (Table 2).

Factor	Chipulukusu	Kansenshi	Total	P-Value
	Total=361 [100%]	Total=357 [100]	718 [100]	
Risk				<0.001
Knowledge	189[52.4]	245[68.6]	434[60.4]	
No Knowledge	172[47.6]	112[31.4]	284[39.6]	
Symptoms				0.001
Knowledge	331[91.7]	346[96.9]	677[94.3]	
No Knowledge	30[8.3]	11[3.1]	41[5.7]	
Prevention				0.927
Knowledge	331[91.7]	328[91.9]	659[91.8]	
No Knowledge	30[8.3]	29[8.1]	59[8.2]	
Treatment				<0.001
Knowledge	185[51.2]	336[94.1]	521[72.6]	
No Knowledge	176[48.8]	21[5.9]	197 [27.4]	

Table 2: Factors associated with the prevalence of diarrhea cases in Chipulukusu and Kansenshi residential areas.

The data collected regarding knowledge on preventive measure were as follows, there was a total of 659 [91.8%] who were able to give right answers of which 331 [91.7%] were from Chipulukusu and 328 [91.9%] were from Kansenshi. A total of 59 [8.2%] participants had no knowledge of which 30 [8.3%] were from Chipulukusu and 29 [8.1%] from Kansenshi (Table 2).

There was a total of 521 [72.6%] who had knowledge of how diarrhea is treated. Chipulukusu reported 185 [51.2%] and 336 [94.1%] was reported from Kansenshi. A total of 197 [27.4%] participants had no knowledge of which 176 [48.8%] were from Chipulukusu and 21 [5.9%] from Kansenshi (Table 2).

Kansenshi had 355 [99.4%] while 347 [96.1%] from Chipulukusu strongly agreed and just agreed that the use of untreated water may contribute to the increase in the number of diarrhea cases. The rest 2 [0.56%] in Kansenshi and 14 [3.9%] in Chipulukusu either responded by neither agreeing or disagreeing (Table 3).

Factor	Chipulukusu	Kansenshi	Total	P-Value
	Total=361	Total=357		
Attitude towards the use of untreated Water and its contribution to the Increase in the number of diarrhea Cases.				0.003
Strongly agree or agree	347[96.1]	355[99.4]		
Either "Neither agrees	14[3.9]	2[0.56]		
Attitude on use of shallow wells and Pit latrine towards the onset of diarrhea Cases				0.56
Strongly agree or agree	347[96.1]	346[96.9]	693[96.6]	
Either "Neither agrees	14[3.9]	11[3.1]	25[3.4]	
Attitude towards prevention of diarrhea At household level				0.014
Strongly agree or agree				
Either "Neither agrees				
Persistent diarrhea and its treatment At home				0.004
Strongly agree or agree	12[3.3]	30[8.4]	42[5.8]	
Either "Neither agrees	349[96.7]	327[91.6]	676[94.2]	

Table 3: Attitude towards the prevalence of diarrhea cases in Chipulukusu and Kansenshi residential areas for the last 1 year [n= 718].

Chipulukusu reported a total of 347 [96.1%] who either strongly agreed or agreed while Kansenshi had a total of 346 [96.9 %]. A total

of14 [3.9%] from Chipulukusu and 11 [3.1%] from Kansenshi had either neither agreed nor disagreed or disagreed that shallow wells and pit latrines may contribute to the onset of diarrhea cases (Table 3).

In terms of preventive measures at household level Chipulukusu reported 318 [88.1%] who either strongly agreed or agreed while Kansenshi had a total of 291 [81.5 %]. The rest 43 [11.9%] was reported from Chipulukusu and 66 [18.5%] from Kansenshi had either neither agreed nor disagreed or disagreed (Table 3).

Lastly Chipulukusu had12 [3.3%] either strongly agreed or agreed and Kansenshi 30 [8.4 %] the rest 349 [96.7%] from Chipulukusu and 327 [91.6%] from Kansenshi had either neither agreed nor disagreed or disagreed (Table 3).

Discussion

In this study, 44.6% of under 5 children were reported to have had diarrhea in the past one year, the remaining 55.4% households had either children above 5 years or under 5 who have never suffered from diarrhea for the past one year. These results were similar to the study done in Ethiopia which showed that the prevalence of childhood diarrhea among under-five children was about 30.5 % [9]. The greater number 305 [84.5%] came from Chipulukusu. Only 15[4.2%] cases were reported to have episodes of diarrhea in Kansenshi. The high prevalence of diarrhea was expected in Chipulukusu because it's a high density, residents there are of low levels of education backgrounds and the place is a low -income residential area. The results of high prevalence in this compound agreed to the results obtained from another study done in Lusaka which showed that high prevalence of diarrhea cases in high density compound of misisi [10]. The lower prevalence as reported from Kansenshi can be attributed to it been a low density, higher levels of education and high income residential area.

In this study knowledge was significantly associated with the prevalence of diarrhea in the two areas. From the total of 434 [60.4%], respondents in Kansenshi had a higher percentage 245 [68.6%] on knowledge concerning the risks of diarrhea as compared to the respondents in Chipulukusu 189 [52.4%]. A similar study done in Tanzania reported a lower knowledge turn up on risks of diarrhea in which Less than half of the respondents 285 [48.3%] had comprehensive knowledge on causes of diarrhea in a low income area [11].

A total of 667 [94.3%] participants were reported to have knowledge on symptoms, Kansenshi had a higher percentage 346 [96.9%] as compared to Chipulukusu which had 331 [91.7%].This results agreed to some assumptions that people coming from areas with high income and low density capacities have high levels of education. From the results 659 [91.8%] concerning knowledge on preventive measure, Chipulukusu had a higher percentage of 331 [91.7%] and Kansenshi had328 [91.9%]. Such comparison has also been reported in study done in Kitwe's low income areas of ipusukilo and Luangwa in which a 92% of respondents had knowledge on the prevention of diarrhea [12]

And lastly knowledge on treatment measure indicated from the total of 521 [72.6%] Kansenshi reported a total of 336 [94.1%] while Chipulukusu reported 185 [51.2%].This showed that a higher percentage of respondents who had knowledge came from Kansenshi, this agreed with expected results from a high income low resident area.

The current study revealed that despite the respondents coming from two different areas there was a minimum difference of attitude towards the prevalence of diarrhea, Kansenshi had 355 [99.4%] while 347 [96.1%] Chipulukusu strongly agreed and just agreed that the use of untreated water may contribute to the increase in the number of diarrhea cases. The rest 2 [0.56%] in Kansenshi and 14 [%] in Chipulukusu either responded by not agreeing or disagreeing.

Chipulukusu 347 [96.1%] either strongly agreed or agreed. Comparing to Kansenshi a total of 346 [96.9 %], and the rest 14 [3.9%] from Chipulukusu while 11 [3.1%] from Kansenshi had either not agreed or disagreed that shallow wells and pit latrines may contribute to the onset of diarrhea cases. In terms of preventive measures at household level Chipulukusu reported 318 [88.1%] who either strongly agreed or agreed. Comparing to Kansenshi a total of 291 [81.5 %], and the rest 43 [11.9%] Chipulukusu and 66 [18.5%] Kansenshi had either neither agreed nor disagreed or disagreed, high response rate on preventive measure was also reported in Kitwe's ipusukilo and Luangwa areas [12] and lastly Chipulukusu 12 [3.3%] either strongly agreed or agreed Comparing to Kansenshi a total of 30 [8.4 %], and the rest 349 [96.7%] Chipulukusu and 327 [91.6%] Kansenshi had either neither agreed nor disagreed or disagreed.

Limitations

Despite a high turn up of respondents, the results cannot be generalized to other areas, as places may differ in terms of knowledge and living conditions.

Conclusion

The prevalence, knowledge and attitude of diarrhea cases varied between the two residential areas. Interventions are required which are residential specific and targeting at educating the residents on factors that contribute to the onset of diarrhea in under 5 children.

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