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Original Research Article

Knowledge and Assessment of Parents on Diarrhoea and Its Management in Lagos, Nigeria

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ABSTRACT

Aim: The study was aimed at assessing the knowledge of parents of child bearing age on diarrhoea and its management in Lagos, Nigeria.
Methods: In 2011, 250 parents of child bearing age were included in a cross-sectional descriptive study using semi-structured questionnaires.
Results: 200 of 250 respondents completed the questionnaire from which majority 108 (54%) were in the 30-40 years age range. Of these 200, 172 (86%) were females while 28 (14%) were males. Majority of the respondents 112 (57.1%) had tertiary education with self employed respondents in the majority, 105 (52.5%) in terms of profession. When asked about their understanding of diarrhoea 89.5% of the respondents strongly had an understanding of what diarrhoea was as ailment with 75.5% of the respondents having an understanding of the first aid treatment for children suffering from diarrhoea.
A total of 70% of the respondents knew that giving of antibiotics was not the first treatment for diarrhoea with the belief that oral rehydration salt should be given first. Majority (91%) of the respondents did not accept the claim that behavioral patterns and attitudes predispose children to diarrhoeal infections.
Majority 170 (85%) of the respondents supported the claim that avoidance of micro organisms infected in food or water can prevent children from diarrhoea.
A total of 93.5% of the respondents felt eating improperly cooked food and not well preserved food can cause diarrhoea in children while nine (4.5%) did not support the claim with four (2%) being indifferent.

Key words: Diarrhoea, Management, Microorganisms, Treatment, Children, Electrolyte.

INTRODUCTION

Diarrhoeal diseases continue to be one of the foremost public health problems worldwide, with over 1.5 million deaths occurring each year, mostly in children under 5 years in developing countries. [(1)] A broad range of recognized micro-organisms such as viruses, parasites and bacteria are associated with diarrhea. [(2)] Among the bacteria, diarrhoeagenic *Escherichia coli* (DEC) are some of the most frequently detected pathogens worldwide. There are six pathotypes of DEC: enterotoxigenic *E. coli* (ETEC), enteroaggregative *E. coli* (EAEC), [(3,4)] enteropathogenic *E. coli* (EPEC), enterohaemorrhagic *E. coli* (EHEC) or verocytotoxic - producing *E. coli*, enteroinvasive *E. coli* (EIEC) and diffusely adherent *E. coli*. [(4-6)] Diarrhea is a leading cause of morbidity and mortality among

children in developing countries. [(7)] Among the adult populace, diarrheal diseases can lead to loss in man-power, thus depleting state and national income. The initial sign of diarrhea usually appears after a person ingests the pathogen and a very low infectious dose, enabling high rate of attack and person to person transmission which is sometimes bloody. [(8)]

The person may have a mild fever of about 100 to 101^F ($37.7\text{-}38.3^OC$). These symptoms can be seen in infected children and adults. The majority of people (especially normal adults) are infected resolve, without antibiotics in about five to seven days. However, some people (about 10% of people infected, especially children under the age of 5 and elderly) develop more severe signs and symptoms, and these people usually require hospitalization and aggressive treatment. They develop symptoms that usually last longer (at least a week) and if not promptly treated, the infection may lead to disability or death. [(9)] Diarrhea occurs worldwide and seems to be at its peak during summer and autumn months, with severity occurring in children and the elderly and can spread from person to person in days care centers and institutions (e. g. hospitals and nursing homes) as well as among families depending on the pathogen implicated. Food-borne transmission of pathogens is the most important source of infection. Most of the reported outbreaks in the United States have been associated with consumption of contaminated, undercooked ground beef but pathogens have been isolated in samples of pork, lamb, poultry and other products. [(10)] Recent explosive outbreaks in Canada, United States and Japan have augmented the public health importance of these food-borne pathogens. [(11,12)] Several researches have been conducted in Nigeria and it was concluded that diarrhea can be life threatening and has remained common particularly among child population of Lagos during the past 10 years. They suggested that there must therefore be adequate meat and food inspection to improve the general hygiene of local fast food restaurants, so called 'bukkas', which are regarded as likely sources of infection with pathogens causing diarrhea. [(13-15)]

The methodology of this research was predominantly based on Chi square test. A chi-square test which is also known as X^2 test is any statistical hypothesis test in which the sampling distribution of the test statistic is a chi-square distribution when the null hypothesis is true. Chi-squared tests are often constructed from a sum of squared errors, or through the sample variance. Test statistics that follow a chi-squared distribution arise from an assumption of independent normally distributed data, which is valid in many cases due to the central limit theorem. A chi-square test can then be used to reject the hypothesis that the data are independent. [(16,17)]

This study aims to assess the knowledge of parents on diarrhea and its management. The study population included parents of children down with diarrhea in primary healthcare centers and a teaching hospital (Lagos State University Teaching Hospital, LASUTH) in Lagos.

METHODOLOGY

Two hundred and fifty questionnaires were administered on 250 people who gave their children's stool samples for the purpose of this research work. Out of these two hundred and fifty questionnaires, fifty were not valid while two hundred questionnaires were valid. Therefore the valid two hundred questionnaires were used for this analysis. This is considered to be responses from the study sample. The first section of the questionnaire had Biodata such as Age, Sex, level of education and occupation. The second section was the research questions which comprise what is defined as diarrhoea, which first aid can be given in diarrhea cases, knowledge testing about the importance of laboratory diagnosis before administration of antibiotics, factors that can predispose to diarrhea, complication of

untreated diarrhea and preventive measures against diarrhea.

Tabular analyses (Table 1) of the questionnaires were made as follows and further analysis done using chi square Test X^2:

The Chi Square test was employed to arrive at a conclusion of either accepting the null hypothesis or rejecting the null hypothesis.

The conclusion was arrived using both the Observed and Expected data from the sample collated. The Observed frequencies (O) were collated from the responses gotten from the questionnaires administered. On the other hand, expected frequencies (E) were computed using total number of responses categories such as (Strongly Agreed - SA, Agreed - A, No Idea - NI, Strongly Disagreed - SD, and Disagreed - D) multiply it by total number of questionnaires administered and divided by cumulative total number of administered questionnaires on the questionnaire statements used to test the hypothesis.

The null hypothesis will be rejected if the calculated value is greater than the critical value, while it the null hypothesis will be accepted if the critical value is greater than the calculated value, the null hypothesis will be accepted.

The critical value was arrived at by taking level of significance to be 5% (0.05) and degree of freedom was calculated to be 8 using this formula- (Column-1) * (Row-1) using a Chi square distribution table.

Test of Hypotheses (Tables 2 and 3)

- Peoples' knowledge and understanding of what diarrhoea infection is does not have effect on their treatment of diarrhoea (Ho Null Hypothesis)
- Peoples' knowledge and understanding of what diarrhoea infection is does have effect on their treatment of diarrhoea (H1 alternative hypothesis)
- That eating food or water contaminated with micro-organisms and half-cooked food cannot cause diarrhoea infection in children (Ho- Null hypothesis)

The acceptance and rejection of the hypotheses is thus based on the following:

If the calculated Chi-square value is greater than the critical value or table value, hence the null hypothesis is rejected, while the null hypothesis will be accepted if the calculated chi-square value is less than the critical value or the table value.

Conclusion:

The null hypothesis which states- People's knowledge and understanding of what diarrhea infection is does not have effect on their treatment of diarrhea is rejected because the calculated chi square of 92.57 is greater than the critical value of 15.507.

This outcome simply means that People's knowledge and understanding of what diarrhea infection was has effect on treatment of diarrhea.

Hypothesis Three (Tables 4 and 5)

Eating food or water contaminated with micro-organisms and half-cooked food cannot cause diarrhea infection in children (Ho- null hypothesis)

Conclusion:

The null hypothesis which states- Eating food or water contaminated with micro-organisms and half-cooked food cannot cause diarrhea infection in children is rejected because the calculated chi square of 47.37 is greater than the critical value of 15.507.

This outcome simply means that Eating food or water contaminated with micro-organisms and half-cooked food can cause diarrhea infection in children.

Tabular Presentation

Table 1:- Number of Responses To Statements In The Questionnaire

Statement no	Sa	A	Ni	D	Sd	Total
1	33	146`	5	9	7	200
2	67	84	11	27	11	200
3	8	132	22	28	10	200
4	68	92	5	12	23	200
5	79	104	11	6	0	200
6	73	97	4	6	20	200
7	28	114	8	37	13	200
8	70	130	0	0	0	200
9	86	101	4	9	0	200

KEY: **SA** - Strongly Agree, **A** -Agree, **NI** -No Idea, **D**-Disagree, **SD** -Strongly Disagree

Source- Questionnaire

Hypotheses One and Two Combined:

Table 2:-Relationship between Peoples' Knowledge of Diarrhoea and Treatment of Diarrhoea
Expected value statements 1, 2 and 3

SA	A	NI	D	SD	TOTAL
33	146	5	9	7	200
67	84	11	27	11	200
8	132	22	28	10	200
108	362	38	64	28	600

$\frac{108\times200}{600} = 36$ $\frac{362\times200}{600} = 120.7$ $\frac{38\times200}{600} = 12.6$

$\frac{64\times200}{600} = 21.3$ $\frac{28\times200}{600} = 28$

Table 3:- Chi-Square Analysis

Responses categories	O	E	O-E	$O-E^2$	$\frac{O-E^2}{E}$
SA	33	36	-3	9	0.25
SA	67	36	31	961	26.69
SA	8	36	-28	784	21.77
A	146	120.7	25.3	640.09	5.30
A	84	120.7	-36.7	1346.89	11.15
A	132	120.7	12.7	161.29	1.33
NI	5	12.6	-7.6	57.76	4.58
NI	11	12.6	-1.6	2.56	0.20
NI	22	12.6	10.6	112.36	8.91
D	9	21.3	-12.3	151.29	7.10
D	27	21.3	6.3	39.69	1.86
D	28	21.3	7.3	53.29	2.50
SD	7	9.3	-2.3	5.29	0.57
SD	11	9.3	1.7	2.89	0.31
SD	10	9.3	0.7	0.49	0.05
					92.57

Degree of freedom= No of (column-1) x No of (Row-1)
(5-1) x (3-1) = 4x2=8
Level of significance = 5% or 0.05
Calculated Chi-square= 92.57
Critical Value = 15.507 (Table of Chi-square- X^2)

Table 4:- Expected Value Statements 5, 6 And 9

SA	A	NI	D	SD	TOTAL
79	104	11	6	0	200
73	97	4	6	20	200
86	101	4	9	0	200
238	302	19	21	20	600

$\frac{238\times200}{600} = 79.33$ $\frac{302\times200}{600} = 100.66$ $\frac{19\times200}{600} = 6.33$

$\frac{21\times200}{600} = 7$ $\frac{20\times200}{600} = 6.66$

TABLE 5:- Chi square Analysis

Responses categories	O	E	O-E	$O-E^2$	$\frac{O-E^2}{E}$
SA	79	79.33	-0.33	0.11	0.001
SA	73	79.33	-6.33	40.1	0.51
SA	86	79.33	6.67	44.5	0.56
A	104	100.6	3.4	11.56	0.11
A	97	100.6	-3.6	12.96	0.13
A	101	100.6	0.4	0.16	0.002
NI	11	6.33	4.67	21.81	3.45
NI	4	6.33	-2.33	5.43	0.86
NI	4	6.33	-2.33	5.43	0.86
D	6	7	-1	1	0.14
D	6	7	-1	1	0.14
D	9	7	2	4	0.57
SD	0	6.66	-6.66	44.36	6.66
SD	20	6.66	13.34	177.96	26.72
SD	0	6.66	-6.66	44.36	6.66
					47.37

Degree of freedom= No of (column-1) x No of (Row-1)
(5-1) x (3-1) = 4x2=8, Level of significance = 5% or 0.05
Calculated Chi-square= 47.37, Critical Value = 15.507 (Table of Chi-square- X^2)

DISCUSSION

From this study, more than half (54%) of the respondents were within the age group 30 - 40 years an indication of the fact that the respondents were people of matured minds and were independent in their decision taking.

Out of 200 respondents, majority was females (86%) and majority had tertiary education (56%) an indication that there was a good understanding of the subject matter.

When the respondents were asked their occupation, majority (52.5%) were self-employed. This also indicated that all the respondents were gainfully employed with their chosen field of work. Therefore, they can afford to take their children for treatment on diarrhea infections at any given time.

Knowledge of diarrhea

A total of 179 (89.5%) of the respondents strongly had an understanding of what diarrhea was as ailment. The other 21 (10.5%) did not have a convincing understanding of diarrheal ailment. Nevertheless, this 10.5% were substantial representation of the sample population that cannot be overlooked.

In view of this, there is still the need for adequate public education on diarrhea so that behaviors and attitude that pre dispose children to diarrheal ailment will be totally avoided.

The government of the day and other health outfits in the country should make public awareness on diarrhoea and its causes a priority to better enlighten the populace on how to identify a diarrhea ailment and what to do to prevent it which was also suggested by Smith *et al* ., (2009). [13,19]

Management of diarrhea

A total of 151 (75.5%) respondents had understanding of the first aid treatment for children suffering from diarrhea. The implication of the other 24.5% that did not know the first aid treatment for diarrhea, was that such parents should be enlightened via public awareness what first aid treatment they need to apply the moment they realize that their children were suffering from

diarrhea ailment to avoid casualty before such children were taken to the hospital if need be after the first aid treatment. A total of 140 (70%) of the respondents knew that giving of antibiotics was not the right treatment the moment a child is seen to be suffering from diarrhea. They believed that oral dehydration salt should be given first to replace the electrolyte loss by the affected child, this is in line with Radlovic *et al.*, (2015) who discussed that replacement of body fluid that was lost and adequate diet is the basis of the treatment of a child, [18-20] but it was observed that 60 (30%) of the respondents did not know that giving of antibiotics was not the first step of treatment to a child suffering from diarrhea. This is also a pointer to the fact that the public still needs to be enlightened about the treatment of diarrhea. [19]

Acceptance of behavioral pattern as predisposing cause of diarrhea

The fifth, sixth and ninth research questions were to confirm if some behavioral attitude or pattern could cause diarrhea infection in children or not.

A total of 183 (91.5%) of the respondents did not accept the claim, 11 (5.5%) could not take a stand on the claim while 6 (3%) of the respondents accepted the claim that those behavioral patterns and attitudes do not pre dispose children to diarrhea infection.

A total of 170 (85%) of the respondents supported the claim that avoidance of micro organism infected food or water can prevent children from diarrhea, 4 people representing 2% of the respondent could not make a stand on the assertion while 26 people representing 13% of the respondents did not accept the assertion that some behavioral patterns could prevent diarrheal infection, Dekate *et al*., (2013) in support of the 85% respondents discussed that diarrhea is caused by either viral, bacterial and parasitic agents. [19]

A total of 187 (93.5%) of the respondents supported the claim that eating improperly cooked food and not well preserved food can cause diarrhea in children, while 4 people representing 2% of the respondents could not make any stand on the claim, and 9 people representing 4.5% of the respondents did not support the claim that eating improperly cooked food and not well preserved food can cause diarrhea in children. [19]

CONCLUSION

In view of these findings, organized public enlightenment is needed to educate parents especially mothers who are illiterates on diarrhea, prevention and treatment. The government of the day and other health outfits in the country should make diarrhea public awareness a priority to better enlighten the populace on how to identify a diarrhea ailment and what to do to prevent it.

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