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Factors Influencing the Use of Oral Rehydration Solution among Mothers of Under Five Children Attending Holy Rosary Specialist Hospital and Maternity Waterside In Onitsha North Lga, Anambra State.

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Abstract

Purpose: This study determined factors influencing the use of oral rehydration solution among mothers with children below five years of age attending Holy Rosary Specialist Hospital and Maternity Waterside in Onitsha North LGA, Anambra State.

Methodology: A cross-sectional descriptive design was adopted in conducting the study among mothers with children under five years attending Rosary Specialist Hospital and Maternity, Waterside in Onitsha North Local Government Area, Anambra State. A sample size of one hundred and fifty (150) women was selected by convenience sampling techniques. A self-structured questionnaire with a reliability coefficient of 0.98 was used in gathering the necessary data suitable for the study which were analysed with SPSS version 20.0.

Findings: It was discovered that majority of the women 141(94.6%) have heard of ORS and they have adequate understanding of the solution, the two different types of oral rehydration solutions (that is solution from oral rehydration salt and salt sugar solution) but do not use SSS hence lack adequate knowledge of its preparation. Also, the mothers 116(95.9%) used ORS when their children had diarrhoea while the remaining 5(4.1%) did not use ORS because their children never had diarrhoea. 65(43.6%) of the women have all the materials needed for the preparation of SSS while 70(47.0%) which were the majority did not know the materials required for the preparation of ORS hence they could not indicate if they had the materials or not. From the hypothesis tested, there is a significant relationship between mothers' level of education (p=0.030), mother's occupation (p=0.024), number of under five children (p=0.045) and the use of ORS. From the study, it was ascertained that socio-demographic factors like mother's level of education, occupation and number of under five children affected the use of ORS in the population used. Mother's level of knowledge of the solution, availability and accessibility of the ORS sachet (environmental factor) and the occurrence of diarrhoea in a child (Child factor) also affect use of ORS.

Recommendations: Health workers in the health care facilities should intensify their effort in the provision of adequate health education to the mothers (may be to be incorporated into antenatal care health talks) on the preparation of Salt Sugar Solution (SSS) type which is cost effective and readily available. Also the hospital management should ensure that Oral Rehydration salt sachets are available in the hospitals and at an affordable price so as to ensure authenticity of the product used by the women.

Keywords: *Diarrhoea, factors, under five children, mother, oral rehydration solution.*

Introduction

Oral Rehydration Solution (ORS) is a mixture of dry salts, sugar (glucose) and safe water. It helps to replace lost fluid due to diarrhoea. ORS can either be packaged or homemade. According to USAID (2017), Oral Rehydration Solution (ORS) (packaged) is an oral powder containing mixture of glucose, sodium chloride, potassium chloride and sodium citrate which after being dissolved in the requisite volume of water, is intended for the prevention and treatment of dehydration due to diarrhoea. ORS made at home is made from salt (sodium chloride), sugar and clean drinking or cooled boiled water. Oral rehydration therapy is on the World Health Organization's list of Essential Medicines and has played an important role in reducing the number of deaths as a result of diarrhoea in children under the age of five (WHO, 2019). WHO (2017) defined diarrhoea as the passage of three or more loose or liquid stools per day (or more frequent passage than is normal for the individual). It is usually a symptom of an infection in the intestinal tract, which can be caused by a variety of bacterial, viral and parasitic organisms. Infection is spread through contaminated food or drinking water or from person to person as a result of poor hygiene. Several measures have been put up by health organizations for the management of this pathological condition of which ORS is one of such.

Diarrhoea is the second leading cause of child morbidity and mortality and it is responsible for over half a million deaths annually in less than five years (Jiwok et al, 2021). Globally there are nearly 1.7 billion cases of diarrheal disease every year (WHO, 2017). Diarrhoea is a leading killer of children accounting for a huge percent of all deaths among children under age 5 worldwide in 2015.This translates into over 1400 young children dying each day or about 530,000 children a year, despite the availability of simple effective treatment. Most deaths from diarrhoea occur among children less than 2 years of age living in south Asia and Sub-Saharan Africa (UNICEF, 2016). The prevalence rate of diarrhea in Nigeria is 18.8% and is a menace in sub-Saharan Africa and it accounts for an estimated 150,000 deaths yearly amongst children under five due to poor hygienic and sanitary services (Peter & Umar, 2018). Diarrhoea can cause dehydration, which can be life threatening if untreated. Dehydration is tackled by oral rehydration solution.

Agbolade, Dipeolu and Ajuwon (2015) in their study found out that 98.3% of the respondents were aware that Oral Rehydration Therapy (ORT) is used for home management of diarrhoea. Also, Osonwa, Eko, and Ema (2016), opined in their study that people have good knowledge and are aware of ORS but lack knowledge of ORS composition and method of preparation. The statements above show that there is high level of awareness on the use of oral rehydration solution(ORS) in the treatment of diarrhoea but there is still high mortality of children under the age of five resulting from diarrhoea related dehydration indicating that there are hindrances to the effective utilization of ORS among mothers. This engineered this study to determine factors that influence the use of oral rehydration solution (ORS) amongst mothers that have children below the age of five years attending Holy Rosary Specialist Hospital and Maternity Waterside in Onitsha North Local Government Area, Anambra State.

Purpose and Objectives: The general purpose of this study was to determine factors influencing the use of oral rehydration solution among mothers with children below five years of age attending Holy Rosary Specialist Hospital and Maternity Waterside in Onitsha North LGA, Anambra State, Nigeria.

Specific objectives of the study were:

1. To find out if socio-demographic factors (mother's level of education, occupation and number of under five children) affect the use of oral rehydration solution(ORS) among mothers of under five children attending Holy Rosary Specialist Hospital and Maternity, Waterside in Onitsha.
2. To determine maternal factors that influence the use of ORS in mothers of under five children attending Holy Rosary Specialist Hospital and Maternity, Waterside in Onitsha.
3. To ascertain the environmental factors that affect the use of oral rehydration solution (ORS) among mothers of under five children attending Holy Rosary Specialist Hospital and Maternity, Waterside in Onitsha.

Health Belief Model was utilised in the study. This model was created by social psychologists; Irwin M. Rosenstock, Godfrey M. Hochbaum, S. Stephen Kegeles and Howard Leventhal during the 1950s. It is a socio-psychological health behaviour change model developed to explain and predict health related behaviour (Siddiqui, Ghazal, Bibi, Ahmed and Sajjad, 2016). The main constructs of the model are: perceived susceptibility (individual's perception of the gravity of the disease), perceived barriers and perceived benefits. The perception of seriousness is a function of medical information or knowledge an individual has about a disease. An adequate education on the use of ORS will enable women to understand and appreciate the seriousness of health challenges associated with ineffective use of ORS.

Perceived benefit is a person's view of usefulness of new behavior in reducing the risk of developing a disease; people tend to adopt healthier behavior when they believe that a new behavior will decrease their chances of developing a disease. If women are aware of the benefits of adequate use of ORS for their children, they may likely practice it. Most women do not use ORS accurately probably because they are ignorant of its benefit. Perceived barrier is an individual's own evaluation of the obstacles in the way of him or her adopting a new behavior. There are so many things that can pose as barrier to the Utilization of ORS like unavailability of packaged oral rehydration salt, inadequate knowledge on the preparation of ORS, unavailability of clean water etc.

Materials and Methods

Descriptive survey design was adopted for the study to assess factors that influence the use of oral rehydration solution (ORS) amongst mothers that have children below the age of five years attending Holy Rosary Specialist Hospital and Maternity Waterside in Onitsha North Local Government Area, Anambra State. Study population consists of 240 women who attend Holy Rosary Specialist Hospital and Maternity Waterside, Onitsha. The sample size for the study is 150 which was calculated with Yaro Yamane formula. Convenient sampling technique was used in the selection of the participants. The instrument for data collection was a self-structured questionnaire consisting of three sections with 17 items which was validated by experts in the field of study. To ensure reliability of the instrument, test-retest reliability method was used in 14 copies of the questionnaire were administered to women with under five children attending St Charles Borromeo Hospital Onitsha (a mission hospital within the same locality). A coefficient of 0.98 was obtained using Pearson's product reliability coefficient formula which shows that the instrument is reliable. A total of 150 copies of the questionnaire were distributed, 149 however,

were retrieved, making the response rate 99.3%. Approval was obtained from the department (department of nursing), consent of the respondents was sought, confidentiality of information supplied by the respondents during and after the procedure was ensured and anonymity was also ensured by their names not appearing on the questionnaire. Data were analyzed using SPSS version 20. Simple frequencies and proportions, charts were used to present data while Pearson Chi square test was used to assess the relationship between mothers' level of education and use of ORS, mothers' occupation and use of ORS, number of children less than five and use of ORS.

Results

Table 1: Showing Socio-demographic Data of Respondents (n=149)

		Frequency	Percentage (%)
Age	15-25	41	27.5
	26-35	101	67.8
	36-45	6	4.0
	45-above	1	0.7
	Total	**149**	**100**
Religion	Christianity	145	97.3
	Islam	1	0.7
	Traditional	1	0.7
	Others	2	1.3
	Total	**149**	**100**
Marital status	Married	148	99.3
	Divorced	1	0.7
	Widow	0	0.0
	Total	**149**	**100**
Occupation	Professional	44	29.5
	Business/trader	73	49.0
	Farmer	0	0.0
	Unemployed	32	21.5
	Total	**149**	**100**
Ethnicity	Hausa	1	0.7
	Ibo	144	96.6
	Yoruba	2	1.3
	Others	2	1.3
	Total	**149**	**100**
Level of education	No formal education	5	3.4
	Secondary	45	30.2
	Tertiary	99	66.4
	Total	**149**	**100**
Number of children	One	72	48.3
	Two	43	28.9
	Three	21	14.1
	Four	13	8.7
	Total	**149**	**100**

Table 1 showed that majority of the women 101(67.8%) were in the age range of 26-35 years, followed by 41(27.5%) within the age range of 15-25 years then 6(4.0%) in the age range of 36-45 years and finally 1(0.7%) in the age range of 46-55 years. Also, majority of the women 145(97.3%) were Christians, 1(0.7%) was a traditionalist, 1(0.7%) of the respondents was a muslim and 2(1.3%) fell under 'others' (atheists). Majority of the respondents were married (148(99.3%) and 1(0.7%) was divorced. 73(49.0%) of the women were into business, 44(29.5%) were professionals while 32(21.5%) are unemployed. 144(96.6%) of the women were Ibos, 2(1.3%) followed by those from other ethnic groups (2(1.3%) while 1(0.7%) of the respondents were Hausas. 99(66.4%) of the women had tertiary education, 45(30.2%) stopped at secondary school while 5(3.4%) of the respondents had no formal education. 72(48.3%) of the respondents had a child less than five years, 43(28.9%) had two children less than five years, 21(14.1%) had three children below five years while 13(8.7%) had four children less than five years of age.

Research Question 1: Can socio-demographic factors affect the use of ORS among mothers attending Holy Rosary Specialist Hospital & Maternity Waterside?

The correlations done below were used in the discussion of Research question 1

Table 2: Correlation between Level of Education and Use of ORS

Level of education	No use of ORS	Poor use	Moderate	Good	X^2	p-value
No formal education	5(3.4%)	0(0%)	0(0%)	0(0%)		
Secondary education	0(0%)	22(14.8%)	23(15.4%)	0(0%)		
Tertiary education	0(0%)	0(0%)	53(35.6%)	46(30.9%)	220.751	0.030
Total	5(3.4%)	22(14.8%)	76(51.0%)	46(30.9%)		

Pearson chi square testing shows that there is a significant relationship between mothers' level of education and use of ORS ($p<0.05$)

Table 3: Correlation between Mothers' Occupation and Use of ORS

Occupation	No use	Poor use	Moderate use	Good use	X^2	p- value
Business/trader	5(3.4%)	42(28.2%)	26(17.5%)	0(0%)		
Professional	0(0%)	0(0%)	14(9.4%)	30(20.1%)		
Farmer	0(0%)	0(0%)	0(0%)	0(0%)	**161.145**	**0.024**
Total	**5(3.4%)**	**42(28.2%)**	**40(26.9%)**	**30(20.1%)**		

Pearson chi square testing shows that there is a significant relationship between mothers' occupation and use of ORS ($p<0.05$)

Table 4: Correlation between Number of Children less than five and Use of ORS

Number of children	No use	Poor use	Moderate use	Good use	X^2	P value
One	5(3.4%)	22(14.8%)	45(30.20%)	0(0%)		
Two	0(0%)	0(0%)	32(21.48%)	11(7.4%)		
Three	0(0%)	0(0%)	10(6.71%)	11(7.4%)		
Four	0(0%)	0(0%)	0(0.0%)	13(8.7%)		
Total	**5(3.4%)**	**22(14.8%)**	**87(58.38%)**	**35(23.49%)**	129.575	0.045

Pearson chi square testing shows that there is a significant relationship between number of children less than 5 years and use of ORS ($p<0.05$)

Research question 2: What factors from the mothers influence the use of ORS in mothers having children less than five years and attending Holy Rosary Specialist Hospital Waterside, Onitsha?

Items 8, 9, 10, 11, 12 and 13 on the questionnaire were used to answer the research question.

Item 8: Have you heard of ORS?

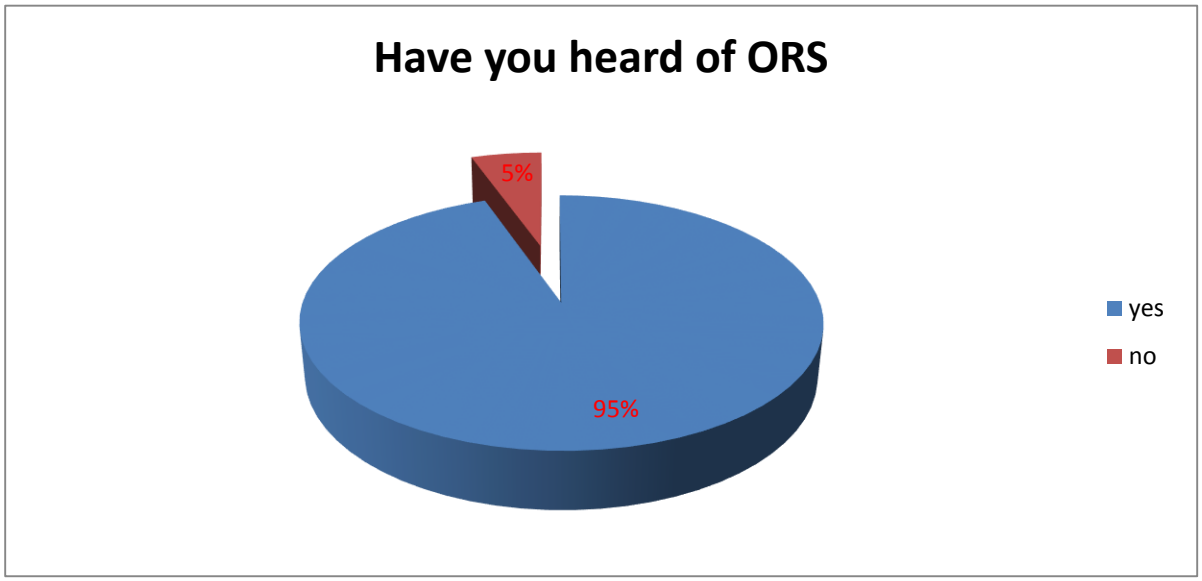

Figure 1: Percentage distribution on the awareness of ORS

Figure 1.1 above showed the respondent's percentage distribution the awareness of ORS. About 95% have heard of ORS while about 5% have not heard of it.

Item 9: What do you understand by Oral rehydration therapy?

Table 5: Showing Understanding of ORT (n=149)

Responses	Frequency	Percentage
A therapy aimed at combating diarrhea related dehydration	100	67.1
Drinking of Andrews liver salt	4	2.7
Preparation of concoction	1	0.7
What children drink to get energy	33	22.2
I don't know	11	7.4
Total	**149**	**100**

Table 5 showed the respondents' understanding of ORT. 100(67.1%) of the respondents defined ORT as a therapy aimed at combating diarrhea related dehydration, 4(2.7%) defined it as drinking of Andrew liver salt, 33(22.2%) defined it as what children drink to have energy, 11(7.4%) opined that they do not understand the meaning of ORT while 1(0.7%) indicated that it is the preparation of concoction.

Item 10: Have your child had an episode of diarrhea?

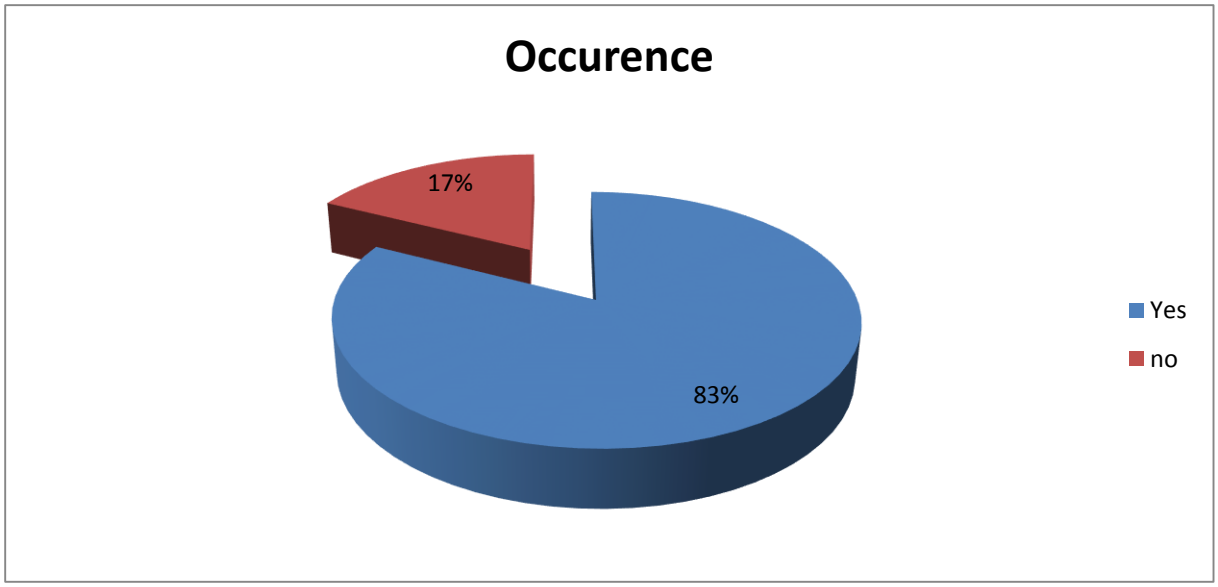

Figure 2: Percentage Distribution on Occurrence of Diarrhea

Figure 2 showed the percentage distribution on occurrence of ORS among respondents' children. About 83% indicated that their children have had episodes of diarrhea while about 17% indicated that their children have never had episode of diarrhea

Item 11: If yes, do you always use ORS at home each time your child has diarrhea?

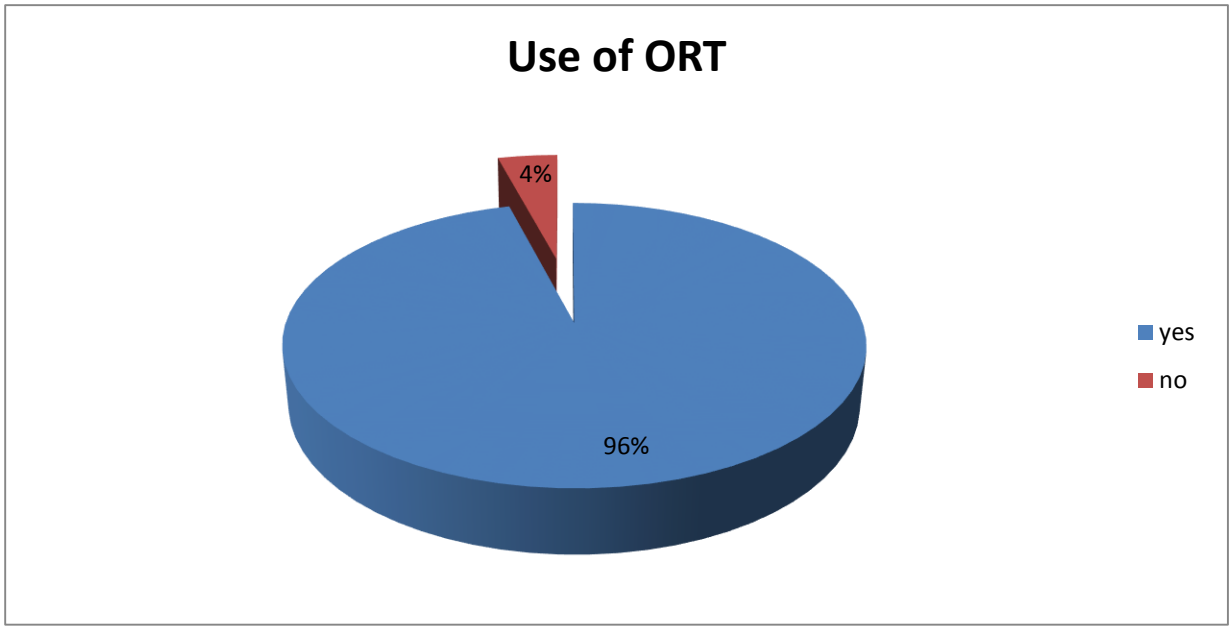

Figure 3: Percentage Distribution on the Use of ORS

Figure 1.3 above showed the respondents' percentage distribution on the use of ORS. About 96% indicated they use ORS each time their child had episode of diarrhea while about 4% indicated that they don't use ORS.

Item 12: What type of ORS do you usually give your child?

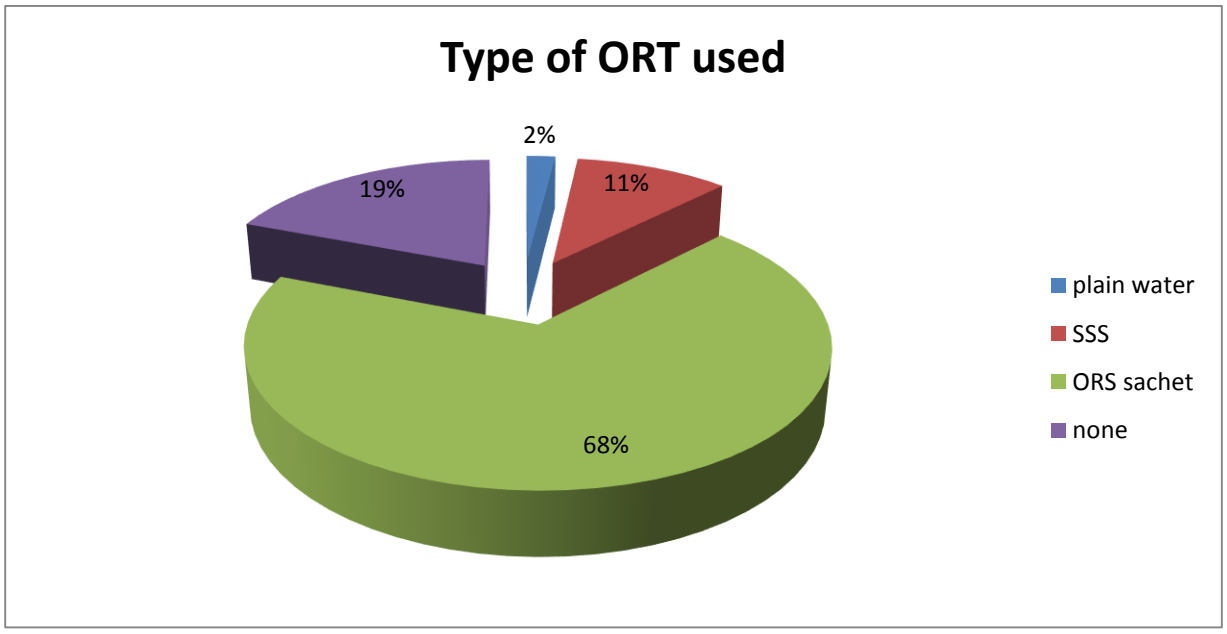

Figure 4: Percentage Distribution on the Types of ORS Used

Figure 4 showed the respondents' percentage distribution on type ORS used. 68% used ORS sachet, about 11% used salt sugar solution (SSS), 19% did not use any ORS, while 2% used plain water.

Item 13: For a child taking Salt Sugar Solution (SSS), what do you need to prepare it at home?

Table 6: Showing Items Used for SSS preparation (n=149)

Responses	Frequency	Percentage (%)
1 litre/1 beer bottle/2 bottles of clean water	66	42.3
5 sugar cubes/10 levelled teaspoon of cooking salts	8	5.4
1 levelled teaspoon of cooking salt	0	0.0
Don't know	75	50.3
Total	**149**	**100**

Table 6 showed the respondents' knowledge of the items used in the preparation of salt sugar solution. 66(42.3%) indicated they use 1 litre of clean water, 10 levelled teaspoons of sugar and 1 levelled teaspoon of salt; 8(5.4%) answered that they use 5 sugar cubes/10 levelled teaspoons of cooking salt; none indicated that they use 1 levelled teaspoon of salt while 75(50.3%) answered that they do not know the materials used for preparation of salt sugar solution.

Research Question 3: What are the environmental factors that affect the use of ORS in mothers having children less than five years and attending Holy Rosary Specialist Hospital Waterside, Onitsha?

Items 14, 15, 16 and 17 were used to answer the research question.

Item 14: For treating with ORS sachet, where can you get it from?

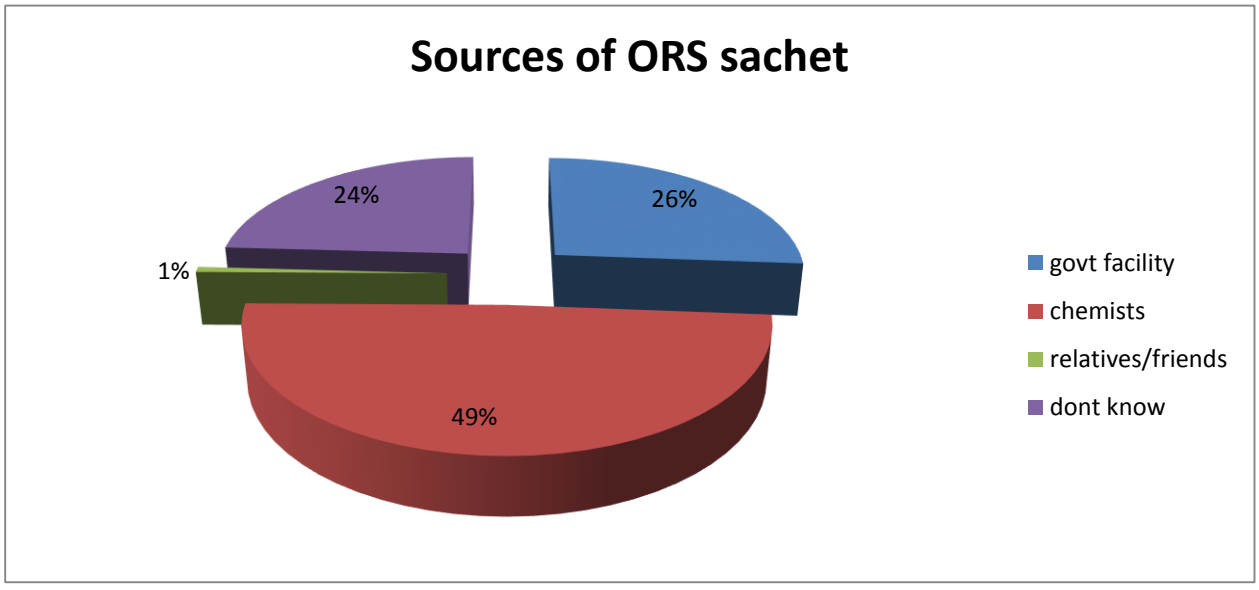

Figure 5: Percentage Distribution on the Sources of Oral Rehydration Salt Sachet

Figure 5 showed the respondents' percentage distribution on the sources of ORS Sachet. 26% indicated that they get Oral rehydration salt sachet from government health facility, 49% indicated that they get theirs from chemists, 1% get the sachet from relatives and friends while 24% do not even know where to get the sachet.

Item 15: Is the place far from you?

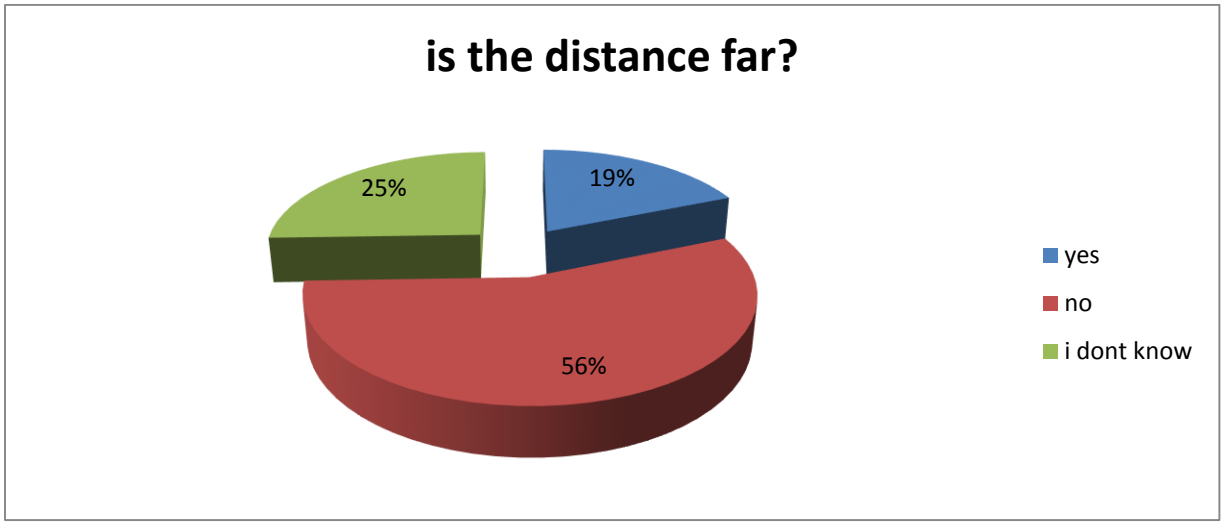

Figure 6: Percentage Distribution of Distance of Oral Rehydration Salt Sachet Source

Figure 6 showed the respondents' percentage distribution on the distance of Oral rehydration salt sachet source. 56% indicated that the source of the sachet is not far from them, 19% answered that ORS source is far from them while 25% indicated that they don't know the source and therefore could not rate the distance.

Item 16: What is the source of water you use for the preparation of ORS?

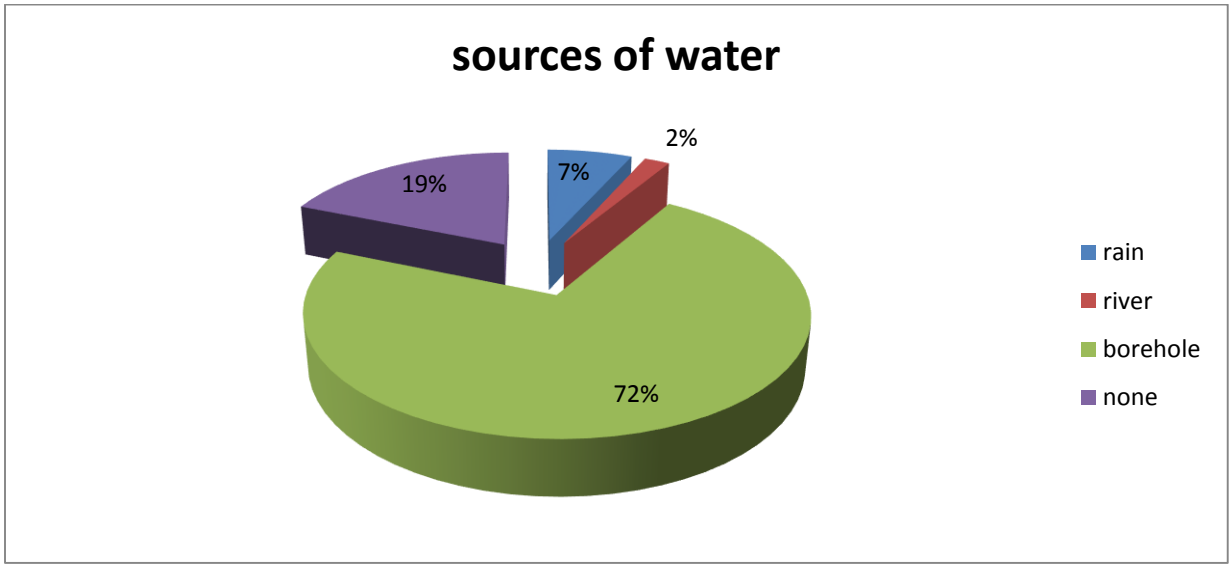

Figure 7: Percentage Distribution on Sources of Water Used on ORS Preparation

Figure 7 showed respondents' percentage distribution on the sources of water they use in the preparation of ORS. 72% indicated they use water from borehole, 7% indicated they use rain water, about 2% affirmed they use water from rivers, while 19% do not use water from any source.

Item 17: For treating with Salt Sugar Solution (SSS), do you have all the materials needed for the preparation?

Table 7: Showing availability of materials (n=149)

Availability of materials		
Responses	**Frequency**	**Percentage (%)**
Yes	65	43.6
No	14	9.4
I don't know	70	47.0
Total	**149**	**100**

Table 7 showed the respondents' answers on the availability of the materials they use in the preparation of Salt Sugar Solution (SSS). 65(43.6%) answered that they have all the materials needed for the preparation of the solution, 14(9.4%) answered that they do not have all the materials needed for the preparation while 70(47.0%) do not even know the materials needed for salt sugar solution preparation.

Discussions

Research Question 1: Can socio-demographic factors affect the use of ORS among mothers attending Holy Rosary Specialist Hospital & Maternity Waterside?

From the correlation done, 5(3.4%) mothers had no formal education and all of them do not use ORS at all. Of the 45(30.2%) mothers that acquired secondary education, 22(14.8%) made poor use of ORS, 23(15.4%) made moderate use of it while none made good use of ORS. Also of the 99(66.4%) of mothers that have tertiary education, none made poor use of ORS, 5(35.6%) made moderate use of it while 46(30.9%) made good use of ORS. In the area of occupation, out of 44(29.5%) professionals, none made poor use of ORS, 14(9.4%) made moderate use of it while 30(20.1%) made good use of the solution. Out of 73(49%) traders, 5(3.4%) do not use ORS, 42(28.2%) made poor use of ORS, 26(17.5%) made use of the solution moderately, while none made good use of the solution.

Out of the 72(48.3%) women having one under 5 child, 5(3.4%) do not use ORS; 22(14.8%) used it poorly, 45(30.2%) used it moderately while none made good use of it. Of the 43(28.9%) women with two under five children, none used or made poor use of ORS, 32(21.5%) made moderate use of ORS while 11(7.4%) made good use of it. Of the 21(14.1%) mothers with three under 5 children, 10(6.7%) made moderate use of ORS while 11(7.4%) made good use of the solution. All the 13(8.7%) women that had four children less than five years made good use of ORS. From the information above; level of education, occupation and number of under five children affect the use of ORS. This is in line with the study done by Essomba, Kedy Koum, Adiogo and Coppieters (2015) who conducted a cross sectional survey to analyse the rate of the use of ORS and to

determine factors associated with it. From the study, it was discovered that parent's level of education, age of the children and number of children in the household influenced the use of ORS.

The findings are also in contrast with the work done by Bezatu, Yemane and Alemayehu (2012) which conducted a study on predictors of ORT use on under five children with diarrhoea in Eastern Ethiopia where they found out that educational status showed no significant association with ORT use. This might be suggested to be disparity in settings where the researches were carried out.

Research Question 2: Which factors from the mother influence the use of ORS?

From the study, 141(94.6%) (That is majority) of the women having under five children that attend Holy Rosary Specialist Hospital & Maternity, have heard of ORS. 100(67.1%) understood ORS as a therapy aimed at combating diarrhoea related dehydration, 33(22.2%) understood it as what children drink to have energy while 11(7.4%) do not even know what it means. 116(95.9%) use ORS each time their children have an episode of diarrhoea which is far higher than half of the population and they mainly use oral rehydration salt sachet which may not readily be available as against salt sugar solution (SSS). Also 66(42.3%) know that SSS is prepared with 1 litre/ 1 beer bottle of clean water/10 levelled teaspoons of sugar/1 levelled teaspoon of salt; 8(5.4%) opined that SSS is prepared with 5 sugar cubes/10 leveled teaspoons of salt and 75(50.3%) which are the majority do not even know what is used to prepare salt sugar solution probably because they mainly use the sachet type. From the information above, many of the women having under five children that attend Holy Rosary Specialist Hospital & Maternity Waterside are aware of ORS (that is they have heard about the solution) and they also have adequate understanding of the solution, they mainly use oral rehydration salt sachet and rarely use salt sugar solution (SSS), therefore adequate knowledge which is a maternal factor positively influence effective utilization of ORS.

The finding above is in contrast with the study carried out by Asakitipi (2012) on mother's knowledge of ORT and its usage in Ibadan, Nigeria where he discovered that there was no correlation between mother's knowledge of ORT and its use. This might be due to disparity in settings where the researchers conducted the research but it is in line with the findings of Ezezika, Ragunathan, El-Bakri and Barret (2021).

Research Question 3: What are environmental factors that affect use of ORS?

From the study, 73(49.0%) of the women get oral rehydration salt sachet from chemists while 39(26.2%) get theirs from government health facilities (hospitals). This might be suggested to be due to unavailability of the sachets in the government health facility. 83(55.7%) indicated that the source of oral rehydration salt sachet is not far (that is, it is easily accessible). Also, 108(72.5%) of the women get the water they use for ORS preparation from bore holes which is a good source of water. Finally, 65(43.6%) of the women have all the materials needed for the preparation of SSS while 70(47.0%) which are the majority do not know the materials required for the preparation of ORS hence cannot indicate if they have the materials or not. This might be suggested by the fact that most of the women (101, 69.8%) use salt sugar solution (SSS) which does not require much material for preparation. From the information above, the environmental factors like accessibility and availability of Oral Rehydration Salt sachet and the type of water used, influence effective use of ORS among women having under five children who attend Holy Rosary Specialist Hospital Waterside, Onitsha. This is in concord with the work done by Bezatu, Yemane and Alemayehu (2012) which conducted a study on predictors of ORT use on under five children with

diarrhea in Eastern Ethiopia where they found out that access to oral rehydration salt sachet was positively associated with the utilisation of ORT. It is also in line with a study done by Osonwa, Eko and Ema (2016) on utilisation of ORT in the management of diarrhea in children in Odukpani LGA in Rivers state where they discovered that availability of oral rehydration salt sachet affect its use.

In addition, from the study the researcher found out that the occurrence of diarrhoea in a child (that is a factor from the child) can affect the use of ORS. This is backed up by the fact that the mothers 116(95.9%) used ORS when their children had diarrhoea while 5(4.1%) did not use ORS because their children never had diarrhoea.

H01: There is no significant relationship between the mother's level of education and use of ORS. P value is 0.030 (from the Pearson chi square testing shown in table 1.2). Hence $p < 0.05$, the null hypothesis is rejected.

H02: There is no significant relationship between the mothers' occupation and use of ORS. P value is 0.024 (from the Pearson chi square testing shown in table 1.3). Hence $p < 0.05$, the null hypothesis is rejected.

H03: There is no significant relationship between the numbers of children less than 5 years and use of ORS (from the Pearson chi square testing shown in table 1.4). Hence $p < 0.05$, the null hypothesis is rejected.

Conclusion

This study assessed factors that influence effective use of ORS among mothers having children less than five years of age and also attend Holy Rosary Specialist Hospital and Maternity Waterside, Onitsha. From the study, it was discovered that socio-demographic factors like mother's level of education, occupation and number of under five children affected the use of ORS in the population used. Mother's level of knowledge of the solution (maternal factor), availability and accessibility of the ORS sachet (environmental factor) and the occurrence of diarrhea in a child (Child factor) also affected the use of ORS.

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