

Formative Research on Paediatric Diarrhoea Management Report

In Abia, Benue and
Nasarawa States, Nigeria.

For SHOPS/USAID
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By: Adaobi Nkeokelonye

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LIST OF ACRONYMS

CP	Community pharmacist
FGD	Focus group discussion
HIV	Human immunodeficiency virus
IEC	Information Education Communication
IDI	In-depth Interview
NAFDAC	National Agency for Food and Drug Administration and Control
NAPMED	National Association of Patent Medicine Dealers
PPMV	Proprietary patent medicine vendor
MDG	Millennium Development Goal
ORS	Oral rehydration solution
ORT	Oral rehydration therapy
PCN	Pharmaceutical Council of Nigeria
SHOPS	Strengthening Health Outcomes through the Private Sector
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

Strengthening Health Outcomes through the Private Sector (SHOPS), is an Abt.Associates Incorporated project funded by USAID focused on the improvement of maternal and child health by partnering with the private sector in Nigeria. SHOPS is currently implementing a project on diarrhoea management centred on building the capacity of clinicians and community pharmacists in **six** states and proprietary patent medicine vendors (PPMV) in three states in Nigeria. This project promotes the adoption of the new paediatric diarrhoea treatment methods, zinc + oral rehydration solution (Zinc+ORS).

In line with the project focus, a research project was designed to gather formative information from private health providers in Nasarawa, Benue and Abia. Field work was conducted between the 3rd and 20th of July, 2013 in the three project states. The research was executed by **Adaobi Nkeokelonye** (Lead Research Consultant) and **Halima Sarki** (Research Assistant).

Adopting qualitative research methods, tools such as Key Informant Interviews, Focus Group Discussions and Observation were used. An interview guide was tested and adapted and was accompanied by a consent form for the in-depth interviews.

This research brought together respondents drawn from the three project states; including practising community pharmacists (CPs), nurses and proprietary patent medicine vendors (PPMV). 41 (fourty one) in-depth interviews were conducted with selected community pharmacists and PPMVs in the project states. Two written focus group sessions were conducted for pharmacists in Benue and Abia states . In Nasarawa state, responding pharmacists and patent medicine store managers were selected from *Lafia, Karu, Loko* and *Nasarawa-toto local government* areas. Likewise, in Benue, pharmacists and PPMV's from *Otukpo, Aliade, Gboko* and *Makurdi* were selected. In *Abia* the *Umuahia, Ohafia* and *Aba* areas were focused on.

Appreciating scales, a minimum of six PPMV and six community pharmacists were selected in each state. This facilitated the exploration of a wider population, comparisons of narratives from different social backgrounds and also ensured that information obtained was less linear.

The research focused on eliciting the prevailing knowledge, attitudes and practice of health practitioners working in the project states on the management and treatment of paediatric diarrhoea. It explored the enablers of behaviour change and the adoption of best practices in treating children with diarrhoea.

Part of the SHOPS/USAID project strategy is the production of effective information, education and communication materials. To ensure that effective communication materials are developed and used to increase awareness and promote good practices in treatment of paediatric diarrhoea, samples of media materials such as posters and radio jingles were also tested.

Key findings:

It is evident that diarrhoea is a prevailing disease amongst children in the three project states.

- Knowledge of oral rehydration solution (ORS) as a treatment method is high across project states for all respondents
- Knowledge of the use of ZINC+ORS as a stand-alone treatment method recommended by United Nations Children's Fund (UNICEF) and the World Health Organization (WHO) is very low
- An insignificant percentage of respondents are aware of and have adopted ZINC/ORS as a treatment for paediatric diarrhoea
- There is no significant difference in treatment recommendations between PPMVs and community pharmacies in the management of paediatric diarrhoea
- There is widespread indiscriminate use of antibiotics as a treatment for diarrhoea and other childhood illnesses amongst private healthcare providers and care givers
- Zinc tablets of the appropriate dose for the treatment of paediatric diarrhoea are not accessible to private health care providers. There is neither knowledge of any pharmaceutical company that produces Zinc Tablet **10/20mg** (dispersible).
- Care givers and customers alike still adopt their own prescriptions, children are often the emissary procuring drugs from PPMVs and CP's especially in rural areas.
- The existence of an open-market pattern in drug sales conflicts seriously with professional pharmaceutical practices, especially in Aba, Abia state
- Traditional medicines are still highly patronised especially in the eastern Nigerian states presenting a huge challenge for absolute adoption of secular medicine recommendations by care givers
- While there is an acknowledged referral mechanism in some places, there is a total absence of a follow-up mechanisms in all research sites
- Also evident is the significant role of socio-cultural, traditional and economic factors in influencing the treatment of childhood diarrhoea

Recommendations:

Upholding the child survival strategies is important; hence resources should be directed towards addressing the leading causes of pediatric diarrhoea in Nigeria.

To address these issues three strategies are required:

- awareness raising and training focused on increasing knowledge on the use of ORS + Zinc amongst private health care providers ;
- the development and dissemination of IEC (Information Education and Communication) materials appreciating the role of different stakeholders and the central importance of maternal knowledge for child survival is essential across all project states;
- huge state government support will be necessary to advance the implementation of policies regarding procurement of drugs by care givers and prescription of drugs by private healthcare providers.

Adaobi Nkekelonye
Lead Research Consultant

FULL REPORT

Background

Diarrhoea contributes to the dismal health situation in Sub-Saharan Africa, particularly for children under five years of age. It is recognized as a major cause of childhood morbidity and mortality in many developing countries like Nigeria (Yilgwan & Okoro, 2012).

With many interventions focused on reducing the incidence of diarrhoea in this region, over three million children are still dying from this preventable disease. Insufficient knowledge and skills amongst healthcare providers to offer appropriate diagnosis and care has contributed highly to the under-five morbidity and mortality (Abdu *et al*, 2013).

In 2004, the United Nation Children's Fund (UNICEF) with the World Health Organization (WHO) introduced the use of the low-osmolarity oral rehydration solution (ORS) and zinc sulphate as the recommended treatment for uncomplicated paediatric diarrhoea. This recommendation was adopted into the national treatment protocol by the federal government of Nigeria.

Subsequently, Strengthening Health Outcomes through the Private Sector (SHOPS), a USAID funded project, has implemented initiatives to contribute towards reducing the national incidence of diarrhoea by partnering with stakeholders to introduce zinc (dispersible) tablets through the private sector. SHOPS aims to raise awareness of zinc with oral rehydration solution (Zinc+ORS) as a stand-alone, effective and affordable treatment for paediatric diarrhoea. This is realizable through training proprietary patent medicine vendors (PPMVs), clinicians and community pharmacists in diarrhoea management across the project states of Abia, Benue and Nasarawa in Nigeria on the use of Zinc+ORS.

To accomplish this, it is paramount to gather information on prevailing treatment patterns and gain an understanding of the aetiology of paediatric diarrhoea management amongst private health care providers. Hence this research exercise was commissioned. Central to this research is the need to understand the underlying behaviours and motivators of PPMVs and community pharmacists in the treatment of paediatric diarrhoea.

It is expected that the findings will support project strategies which aim to increase awareness and promote good practice in the treatment of paediatric diarrhoea, while also supporting the development of effective communication campaign messages. Also, it will inform targeted marketing and increase sales of Zinc+ORS amongst community pharmacists and PPMVs in Abia, Benue and Nasarawa states.

Methodology

The research focused on understanding stakeholder behaviors and investigating the ‘why’ and ‘how’ of decision making in paediatric diarrhoea management. Adopting a qualitative research method was most appropriate as it enabled us to collect pertinent information, and to explore and portray precisely all the characteristic situations in the field.

The field setting created a normative environment for interviewing and observing respondents while participating in their daily business. We adopted tools such as key informant interviews (KFIs), focus group discussions and non-participant observation. The key informant interview enabled interactions to facilitate direct questions to PPMVs and community pharmacists with the purpose of addressing the study goal. A consent form and interview guide was tested, adapted and implemented.

A written focus group discussion (FGD) was used in interacting with pharmacists in Benue and Abia states. In view of the unanticipated absence of practicing community pharmacists in our study sites, this was vital to make up for their direct responses. It also helped in addressing some inconsistencies in the responses given by pharmacists who were initially available.

As non-participant observers, we had primarily observed and recorded findings in line with our interview guide to help us determine consumer purchasing behaviours in most of the interview sites. However, this method was limited by the lack of relevant purchases.

Responding Pharmacists and Patent medicine store managers were selected from the following local government areas:

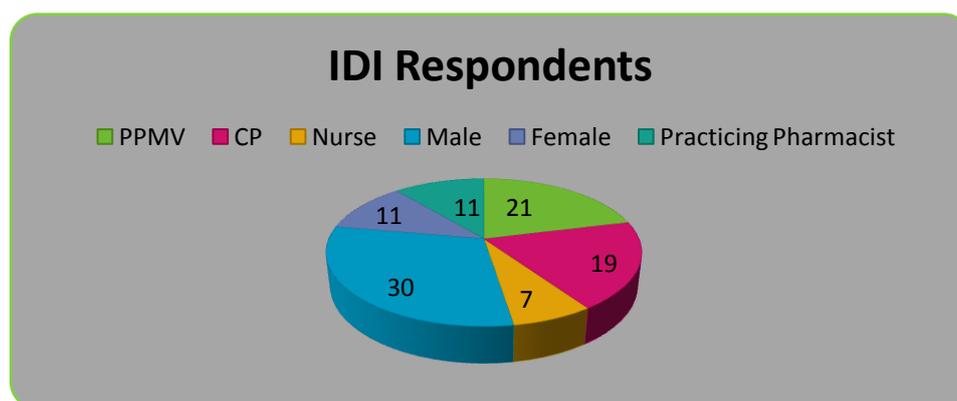
In *Abia, Umuahia, Ohafia* and *Aba* areas were selected.

In *Nasarawa* state, *Lafia, Karu* and *Nasarawa Local Gov. Area* were selected.

In *Benue*, Pharmacists and PPMV's from *Otukpo, Aliade, Gboko* and *Makurdi* were selected likewise.

Participants

As anticipated in the adopted research method, the research had a small sample size. 41 in-depth interview (IDI) respondents were selected with a rural and urban balance, and the expectation of a gender balance.



Of the **41** respondents, men were **30** and women were **11**. While there was lack of gender balance, there was a good mix of respondents. In Abia state, **12** respondents (six PPMVs and six CP) were interviewed. In Benue, **15** respondents (nine PPMVs and six CP) were interviewed. In Nasarawa, **14** respondents (seven PPMVs and seven CP) were interviewed. [see tables in pg. 30](#). Of the **41** respondents that were interviewed in the community pharmacies, **11** of them were practicing pharmacist and **1** was a nurse. Of the **21** PPMV's interviewed, **6** of them are professional nurses.

The written focus group discussion comprised of eight pharmacists in Benue State and two pharmacists in Abia state. Of the **8** pharmacists in Benue, three (**3**) were female while the respondents in Abia state were all men. As stated above, a focus group discussion became necessary to make up for initial absence of pharmacists amongst our respondents and to address the inconsistencies observed in their responses.

Challenges

The research exercise was successful but not without some challenges. Notably:

- Each interview lasted for close to **one hour**, which was not viable considering the schedule of the respondents
- Most requests for interviews were turned down by prospective respondents as they lacked confidence in the initiating organisation
- Requests for audio recordings of interviews were mostly turned down as respondents felt insecure
- Where recordings were agreed, the background was too noisy and there were interruptions
- Language was a challenge due to the different dialects of about **10%** of respondents
- Weather conditions resulted in some delays
- Getting participants to consent to interviews especially in the urban areas posed a challenge as they often had less time considering customer's traffic.
- Consenting to the inventory of requested drug types was difficult for some respondents

Recommendations:

In view of the above challenges, we recommend that:

- The interview guide should be strictly tailored to include only the most relevant questions
- Prior notice should be sent to state chapters of governing bodies of Pharmaceutical Council of Nigeria and the National Association of Patent Medicine Dealers about surveys of this kind, to enable respondents participate with confidence.
- Researchers' letters of introduction should include their names for easy identification.

Technical Issues

The adapted question guide used for the in-depth interviews, was designed to elicit direct responses on some very important areas in the management of paediatric diarrhoea. Amongst the relevant questions were those focusing on *general health and product information*. This was meant to reveal their sources of health information, alongside factors and considerations in procuring or stocking drugs. Questions on *prevalent pediatric health problems* increased our understanding of patterns of illnesses that affect young children in the different states.

Questions on *pneumonia and diarrhoea case management* explored knowledge of causes and symptoms of the illnesses. In particular components of treatment were focused on to determine regular patterns of prescriptions especially in cases of diarrhoea. More attention was given to treatment of diarrhoea, exploring the frequency and motivations of using ORS as a treatment for paediatric diarrhoea. Hypothetical case studies were used to distinguish difference in treatment of severe and non severe diarrhoea from respondents.

Some questions were focused on awareness of Zinc and its use as a combination treatment for non-severe paediatric diarrhoea. Pre-emptively, participants were probed under *Enablers of Behaviour Change* on what they would require to adopt the recommendation of Zinc+ORS as a stand-alone treatment for non-severe paediatric diarrhoea. Likewise, the *Enablers of Behaviour Change* questions also focused on how the use of antibiotics can be discouraged by participants in the treatment of non-severe paediatric diarrhoea.

Enquiries were made with a few questions regarding reference mechanisms structured into the daily practices of health care providers. Also, inventories were taken to provide background information on existing drugs, popular brands, quantities and market prices in the three states. For a breakdown, [see tables in page 33-41](#).

Some samples of posters on Zinc+ORS as a treatment for paediatric diarrhoea were tested amongst respondents across the three project states. Also a sample of a radio jingle was tested with participants. Feedback on the poster samples and radio jingle are captured in [pages 24&25](#). Detailed analyses of the above issues are therefore discussed in the following pages.

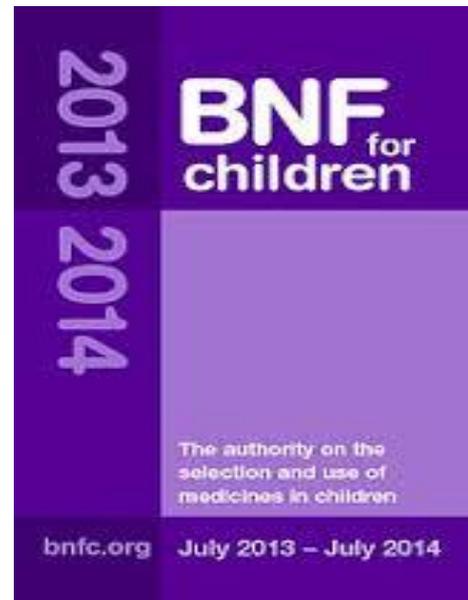
General Health and Product Information

The questions on general health and product information were designed to elicit information on sources of health and product information. From the participants' responses we learnt that information on health is received from the media, internet research, conferences and seminars organized by their governing bodies and partnering organisations. Most respondents confirmed participating in training activities on different health issues organised by partners of Pharmaceutical Council of Nigeria (PCN) and National Association of Patent Medicine Dealers (NAPMED) unions such as USAID/SHOPS, Society for Family Health, IPAS, Green

Life Pharmaceutical, NAFDAC, NAPMED. . Through such channels, updates on health issues are disseminated.

A major source of information for new drugs for both community pharmacists and PPMVs are the pharmaceutical companies themselves. Through sales representatives of these organisations, new products are circulated. While the community pharmacists's often receive personal visits and direct marketing of new drugs, not all PPMVs enjoy this privilege. Medical representatives are more likely to pay PPMV's a collective visit during their monthly meetings.

Across the states, responding pharmacists confirm that they rely more on their internet research, pharmaceutical journals, Index (British National Formulary) and research journals for updates. Few PPMVs' responses concurred to this but most PPMVs relied on prescriptions given by doctors to the patients as a source for updating knowledge. As PPMVs mainly deal in over the counter drugs, posters and media adverts accounted for another source of information.



Journal used as source of knowledge by community pharmacies.

The drug stocking decisions of PPMVs and community pharmacists are influenced by doctors' prescriptions. According to the respondents, drugs are rarely stocked prospectively; the most frequently demanded drugs are more likely to be re-stocked. Also knowledge of seasonal illnesses can influence their stocking trends. On further enquiry, respondents confirmed that beyond customers' demands and the contents of prescription slips, various other factors can influence their choice of which brand to stock. Such factors include the reputation of the pharmaceutical companies, regionally popular brands and product potency. The chances that their knowledge of a new drug or improved treatment method could influence their procurement appeared to be very slim. While this could be the case with prescription-only drugs, most respondents showed an unwillingness to stock Zinc tablet until they have been convinced of it's efficacy, observed in doctor's prescription and clearly approved by NAFDAC(National Agency for Food and Drug Administration and Control).

Prevalent Paediatric Health Problems

Across the three states, malaria, diarrhoea, pneumonia, fever and cough were highlighted as the prevalent illnesses affecting children. Few mentions were made of child diabetes, measles, chicken pox and HIV. In Otukpo, Benue state, PPMVs cited HIV amongst children under six years old as a significant health problem. In Aba, Abia state, mention was made of a seasonal pattern to childhood illnesses. A rise in children's illnesses happens mostly in the dry season (October to March). There are also regional illnesses so that seasonal and regional illnesses influence procurement.

Pneumonia Case Management

While pneumonia was confirmed as a prevalent paediatric ailment by pharmacists and PPMVs, some respondents in Benue and Nasarawa states were of the view that the occurrence of pneumonia in children is quite rare in their regions.

Respondents identified exposure to cold and bacteria or fungi infection as major causes of pneumonia. Knowledge of the symptoms of pneumonia was very high and generally the same pattern of responses was gotten across the states between CPs and PPMVS:

Most respondents understood symptoms of pneumonia to be wheezing, hard or fast breathing, pains in the ribs and a cough with fever.

Enquiries as to the treatments recommended by private health providers in cases of paediatric pneumonia often hit a wall. Most respondents claimed that they do not treat cases of pneumonia, but refer them to secondary health care providers like the state or community health centers. With further indirect probing, some respondents confirmed the use of broad spectrum antibiotics, analgesics and cough syrups for treatment. Between community pharmacists and PPMV's there are no significant differences in the types of drugs recommended for treatment of pediatric pneumonia.



Drugs for treatment of pneumonia

The above drugs were mostly available in the interview sites as we observed in the inventories taken. Regionally, *Erythromycin* was favoured in Benue and Nasarawa state, while *Zeenat* was also highly recommended in Umuahia, Abia state. For more details on the products above, [see tables on page 33](#).

Diarrhoea Case Management

There is widespread acceptance of diarrhoea as a prevalent illness that affects children under five years of age. Across the project states, paediatric diarrhoea was notably high when scaled with other illnesses mentioned above.

Responses given on the causes of diarrhoea confirm that knowledge is high. Participants noted that amongst others food poisoning, unhygienic habits, bad water and poor sanitation can cause diarrhoea. However, there were a few myths and misconceptions on this topic (see page 23).

One respondent noted that: 'Diarrhoea can be caused by teething in babies, sometimes we give them teething mixture to stop it.'

This misunderstanding may have been inspired by the indirect connection of unhygienic behaviours of infants during the teething period.

Another respondent in Benue state noted that the incidence of diarrhoea was higher amongst residents in the riverside area of the river Benue. Notably, environment was a key factor in their analysis of the causes of diarrhoea.



Some teething mixtures used for the treatment of diarrhoea

In Umuahia, a respondent noted that the incidence of diarrhoea increases after festive seasons when people return from their different countryside holiday locations.

A pharmacist in Abia also noted that:

'Aba is a very dirty city, hygiene is poor here, so it is expected that diarrhoea will be this region's major illness for children.'

From all responses received, no connection was made to diarrhoea as a symptom of typhoid or caused by poor or imbalanced nutrition.

Overall, the knowledge of the symptoms was very high, especially amongst the pharmacists. Not many PPMVs could distinguish a clear difference between different types of diarrhoea, but most responding pharmacists especially in Benue state had advanced knowledge of this.

However, there were inconsistencies on the treatment prescriptions or recommendations of paediatric Diarrhoea especially amongst practicing Pharmacists. From the responses of the focus group discussion and in-depth interview, it is established that treatment recommendations of CPs and PPMVs had no significant difference.

In all cases of diarrhoea, ORS (often referred to as oral rehydration therapy (ORT) by many respondents) was a major component of their treatment. Antibiotics and anti-diarrhoea agents are regularly combined with ORS for diarrhoea treatment across the state.



Samples of drugs used for treatment of diarrhoea

This treatment method is also prevalent amongst care givers themselves who, according to our respondents, make frequent demands for Flagyl, Tetracycline, mixed kaolin and Talazole amongst others, most of which are types of antibiotics.

Enquiring in depth as to why they use antibiotics for diarrhoea treatment, most respondents claimed that it was meant to fight the bacteria and fungi that are the triggers of diarrhoea illnesses.

According to a PPMV:

'I use Flagyl syrup and other age appropriate antibiotics to fight the causative infection. If you do not fight the infection, then treatment is not complete.'

From the focus group held with pharmacists in Benue and Abia states, their commonly held reasons for continually prescribing antibiotics such as Metronidazole in the treatment of all types of diarrhoea are captured below.

'To care for the causative organism'
'To avoid progression to a terminal stage'
'Diarrhoea is as a result of infection, especially the bloody ones, so antibiotics suffice'
'They work respectively for the total health of the child'
'To take care of causative agents like *pritozoa*'

Hypothetical Cases

Hypothetical cases were used to distinguish the difference in treatment of severe and non-severe diarrhoea. The following scenarios and questions were presented to respondents to help understand treatment practices; we tried to ascertain if there is a significant change in their recommendations, given a different scenario.

“Let’s say a mother comes to you seeking treatment for her **two year** old child with diarrhoea. For the past three days, the child has been having **three to five** stools per day without any blood in the stool or any fever.

- What advice or treatment would you recommend to mother and why?
- Would you recommend something different if the child had blood in the stool? Or if they had fever?
- What is your main therapy goal in treating uncomplicated diarrhoea?”

There was generally no significant difference in the recommendations given for cases of severe or non-severe diarrhoea.

Few respondents (only 3 of pharmacists) were able to recognize the difference between severe and non-severe diarrhoea.

Three(3) of respondents said that they would recommend ‘ORS only’ in the case of non-severe diarrhoea as they believe it should be able to control the frequent stool. Other respondents gave in on the use of anti-diarrhoea treatments and antibiotics of different brands and potency.

Three (3) of the respondents confirmed that in a severe case, they will give antibiotics of higher potency than the ones they will recommend for non-severe cases. According to our respondents:

‘In a severe case, I will recommend Ivax Suspension, instead of Flagyl syrup. Ivax suspension is stronger than Flagyl.’



Treatment Considerations:

Further probing on what considerations will be given for their choice of recommendations in paediatric diarrhoea treatments generated varying answers. Few participants confirmed that they will seriously consider the recommendations of *national treatment guidelines*. The greater percentage of participants was split between considerations of the severity of the diarrhoea and the efficacy of the drug. The percentage of respondents who confirmed that they will consider the severity of the diarrhoea were however marginally higher.

Price as a factor:

Probes were made as to whether the cost of a drug is a factor in recommending treatment for paediatric diarrhoea, or for customers procuring drugs. The majority of our respondents (especially in the rural areas like Otukpo and Ohafia) confirmed that price has a major influence to the choice of drugs. A PPMV responding to this in *Ohafia* noted that:

'Price is often a problem; some mothers would rather buy and administer adult medications to the children because they are cheaper'

It was also necessary to ascertain if there was a difference in cost of treating diarrhoea with proprietary patent medicine store vendors and community pharmacies. Our investigation on the cost of drugs given by PPMVs and CPs for treating Diarrhoea showed no significant variation. Rather PPMV's were more likely to stock the cheaper brands of treatment drugs than the Pharmacies.

From responses given on their present treatment choices, a summation of what it will cost to treat diarrhoea was plus or minus five hundred naira (=N= 500:00) or a little over three US. Dollars (\$3). Breaking it down, the average cost of one (1) sachets of ORS is Fifty naira (=N=50:00) and One hundred and fifty naira (=N=150:00) for a pack of three (3) sachets. The cost of Anti-biotic or Anti-motilities (depending on their choice in recommendation) came to an average of three hundred naira (=N=300:00).

While there are variations in prices of different brands of antibiotics which respondents claim to prescribe for treatments, the total sum of treatment stated above may be somewhat expensive for poor people in the rural area.

From the research findings, price is also an influential factor for respondent's choice of recommendation for homemade solutions or homemade remedies. This is highlighted in the section on *Recommendation of Home Remedies*.

Knowledge & Use of ORS

Over the past two decades, ORS has remained an integral part of the treatment of diarrhoea. Children lose a balance of electrolytes in incidences of diarrhoea. ORS contains electrolytes such as potassium which makes it an effective treatment. The newly improved Low Osmolarity formula for ORS has been scientifically proven to be more effective. This has been recommended by UNICEF and WHO as part of the effective treatment for paediatric diarrhoea.

What does the new ORS have that the previous one does not?

Respondent's question

From the research findings, knowledge of ORS is very high amongst PPMV, community pharmacists and care givers. It is frequently demanded, not just for children, but for adults who also use it. The various brands of ORS available in the market confirm this. [See tables in pages 33-41](#)

According to a nurse in Otukpo, ORS is known amongst care givers as 'Quick Drip'

Respondents' reasons for recommending ORS as a treatment for paediatric diarrhoea:

- To replace lost fluid
- To rehydrate the child and replenish lost minerals
- To help balance and restore electrolytes
- To help restore strength to a weak child
- To help prevent hypovolemic shock
- To replace lost salt and water



Types of ORS available in the market

In most cases, ORS is used in combination with various anti-biotics and anti-motilities (anti-diarrhoea medication) as stated above. Further probes on considerations made in prescribing ORS showed that price could sometimes be a factor. In some cases, respondents suggested homemade solutions to caregivers in situations where their finances could not withstand the price of ORS.

While most respondents accept that price is a factor in recommending drugs to caregivers, it does not rank high in all cases. Few respondents, especially in the urban area, are of the opinion that the price of ORS is usually affordable to their customers. To further explore this, respondents' opinions on recommending home remedies for treatment of child diarrhoea were sought.

Recommendation of Home Remedies

Opinions of respondents on their recommendation of home remedies differed. Almost a half of the respondents said they would not recommend any home solution. Their reasons were often due to the unhygienic nature of most caregivers; hence they cannot trust them to prepare a hygienic solution for an already sick child.

A respondent said: 'I don't recommend homemade solution because some electrolytes will be missing in it. Many customers don't follow prescriptions, so I don't ask them to do this.'

ORS is cheap,
why
recommend
salt sugar
therapy?

Respondent from Abia

Nonetheless others gave market supported reasons for their refusal to recommend home remedies:

According to a respondent in Umuahia, 'Customers request it but we don't recommend it as it's not a good market strategy. We will rather offer free drugs to them as a strategy to secure their future patronage'.

According to another respondent in Gboko 'Recommending homemade solutions is not a way of promoting sales, in fact it is anti-sales.'

On the other hand, a respondent who consents to recommending homemade solution said:

"Yes we do suggest it to show we can help them save cost, we evaluate the cost and aid their finances by recommending homemade remedies."

Further reasons for recommending home remedies given by consenting respondents were:

'We recommend because the mothers are already thought during Antenatal or Post natal'
'I recommend homemade solution when I am out of stock in ORS'.
'Yes, if the mother knows how to make it, I recommend it.'
'I recommend homemade solution only with antibiotics'
'I recommend home solution with directives and ask mothers not to use feeding bottles'

Some respondents gave conditional reasons for recommending home remedies:

'I suggest homemade remedies only on occasions when pharmacists and chemists are not accessible, like midnight or holidays.'
'Only for non-severe cases of diarrhoea do I recommend homemade remedies with increased fluid intake.'

Knowledge & Use of Zinc

Zinc is essentially a micro-nutrient that plays a central role in the functioning of the immune system. Zinc is also lost during the incidence of diarrhoea in young children. Hence the replacement of zinc is very critical to the recovery of children who are ill with diarrhoea.

In 2004, UNICEF and WHO issued recommendations that included zinc in addition to Lo-ORS (Oral rehydration solution) as treatment for paediatric diarrhoea. However findings from this research show that knowledge and use of zinc is very low. Knowledge of zinc is higher amongst pharmacists than it is amongst PPMVs. Only three (3) of PPMVs interviewed claimed to have heard of zinc or seen it (most positive respondents have been recently trained by SHOPS).

According to a respondent in Benue State: 'Zinc is a metal which can be used as an anti-diarrhoea agent'.

While knowledge and awareness of zinc seemed higher amongst pharmacists, most of them perceived zinc only as a multivitamin. Few respondents are aware of Zinc as a combination treatment for diarrhoea. One respondent who acknowledged recommending zinc + ORS also claims to have stopped.

According to him: 'I don't recommend it again, treating diarrhoea with zinc has not been effective'.

Further probing shows that while he is aware of zinc and recommends it, his knowledge of Zinc + ORS prescription is very low. With the exception of a female pharmacist in Benue state, knowledge of zinc prescription amongst all the respondents ranked low.

According to her: 'I am aware of Zinc, I have been recommending it for over five years, I discuss the prescriptions and the efficacies. In most cases, I recommend a brand of ORS that contains zinc to my customers'.

While her claims may be true, the realities on ground are conflicting and therefore throws into question the consistency of this claimed practice. From our observation, caregivers often have a pattern of replicating prescriptions amongst themselves. Also there is a seemingly strong peer learning relationship amongst pharmacists in this region as they consult with each other. Considering the strategic position held by this community pharmacy, there is no significant evidence to show an uptake of zinc and ORS as a stand-alone treatment so far.

However, it is important to note their confirmed knowledge of a branded ORS with a zinc component. While this was not readily available at the time of this interview, it highlights the importance of producing a stand-alone product that dually contains zinc and ORS.

With further probing as to why respondents are not recommending zinc, most of them acknowledged its absence in prescriptions and from the market. This is also evident in the fact that Zinc was barely present in the list of inventories. [See tables in pages 33-41](#)

According to a participant: 'I just learnt of its availability in tablet form.'

Where Zinc tablets are available, they were mostly in higher doses. Less than 1% of our sample, one PPMV and one pharmacist, acknowledged awareness of a 10mg zinc tablet. Except for one respondent who had purchased a minimal quantity of zinc after SHOPS training for PPMVs in Nasarawa state, there was absolutely no record of 'dispersible zinc' in all the project states surveyed.

Suffice it to say that zinc tablets are not accessible to private health care providers in Abia, Benue and Nasarawa states. Interactions that took place during the process of this research served as a form of awareness raising for the adoption of zinc and ORS as a stand-alone treatment for non-severe paediatric diarrhoea.

Most questions asked subsequently (and responded to in most cases) were focused on the use, dosage prescription, access, role, efficacy, cost, reason for recommending zinc, amongst others.

Questions

- What is the side effect of zinc tablet?
- In cases of severe diarrhoea, what can zinc do?
- What is the difference in efficacy of dispersible and none dispersible zinc?
- Will the price you collect in inventory determine the price of zinc tablet?
- There is an existence of an ORS containing zinc in the market; do you recommend Zinc +ORS or ORS and zinc?
- Can zinc be used for adults too?
- I need the adoption of zinc to be justified.
- What if stooling persists after using Zinc?
- Will zinc tablet be subsidized or free?

Enablers of Behaviour Change

In line with the UNICEF and WHO recommendations, the national treatment guidelines in Nigeria now recommend the use of Zinc + ORS as primary treatment for childhood diarrhoea. A question on the in-depth-interview guide was tailored to capture the respondent's opinion of what they needed to start recommending Zinc + ORS as a stand-alone treatment for non-severe paediatric diarrhoea. The table below presents general responses from PPMVs and community pharmacists.

Zinc

Community Pharmacies	PPMV
<ul style="list-style-type: none"> ➤ I need more information, access to dispersible zinc ➤ I would like to know if it's reliable, affordable. ➤ Subsidizing the price of zinc can help behaviour change. ➤ I need to confirm the efficacy and be positive about it. ➤ I need to know the strength and function of zinc. ➤ I need to get feedback from customers. ➤ If it's available, I will use it. 	<ul style="list-style-type: none"> ➤ I will test for efficacy before introducing it. ➤ We need information. ➤ The Companies producing it must be the ones we like. ➤ I need to know about the complications and intricacies. ➤ I need access and more information. ➤ If its NAFDAC approved, yes I will recommend it. ➤ When I start seeing it in hospital prescriptions, I will also start recommending it.

Following to the same national treatment guidelines, antibiotics and antimicrobials are recommended only for severe cases of diarrhoea (when there is blood in the stool or a severe case of amoebas). A question was also asked regarding how the use of antibiotics and antimicrobials can be discouraged in the treatment of non-severe paediatric diarrhoea. Responses generated are presented in like manner as above.

Antibiotics

Community Pharmacies	PPMV
<ul style="list-style-type: none"> ➤ Its implementation is a problem. We need to create a system where antibiotics are accessible only by prescription. ➤ Education and incentives will help. ➤ Workshops and seminars will help prepare people for change. ➤ IEC materials are needed. 	<ul style="list-style-type: none"> ➤ If the national guideline says so, why argue with them? ➤ We need more information. ➤ My voice alone cannot stand, we need training or seminars . ➤ If the opportunity presents itself. ➤ I need more enlightenment I am not yet convinced. ➤ I will discourage my colleagues by informing them of the disadvantages.

In the table above, participants responded to the motivations needed to encourage their colleagues (fellow PPMV and CPs) to discontinue the prescription of antimicrobials such as Flagyl for the treatment of uncomplicated childhood diarrhoea. Generally, most of them cited the need for more information. But information does not necessarily imply they would share their new knowledge with their peers in most cases.

According to a respondent in Gboko, 'Market competition does not encourage information sharing as information is power here.'

While this looks like a market strategy, it does not complement the relationships most respondents described regarding their consultations and referral practices.

Consultation and Referral Practices

In trying to understand the different channels of information existing amongst private healthcare providers, respondents were asked if they consult with others or seek advice on things they are less knowledgeable about. From their responses, it was clear that most PPMVs looked to some mentoring pharmacists for advice and, in very few cases, medical doctors. While there exist a peer consultation relationship amongst few PPMVs, more peer consultation exists amongst practising community pharmacists.

From observation, peer consulting relationships were more prevalent amongst practicing community pharmacists in Benue and Abia states. Not much can be said of this relationship in Nasarawa as there was an absence of practicing community pharmacists in most sites where the in-depth interviews were conducted.

Referral

All respondent confirmed referring their customers in cases where they reached the limit of their abilities. In most cases, they referred customers to higher health institutions within their states such as the general hospitals, teaching hospital, community health centres etc. Some participants made use of referral forms which were made available for our perusal during the interview.

However there are no feedback mechanisms in place after referrals to ensure that customers followed their recommendations. From most of our respondents' observations, some customers would rather go to a more basic health provider for fear of high hospital charges. In many cases, they leave a community pharmacist's recommendations and seek treatment with a PPMV. From our investigation, the choice of PPMV over the community pharmacy may not entirely be influenced by price factor. It also has to do with the ease of communication and understanding care givers get with PPMVs unlike the community pharmacies who are often more professional and distanced.

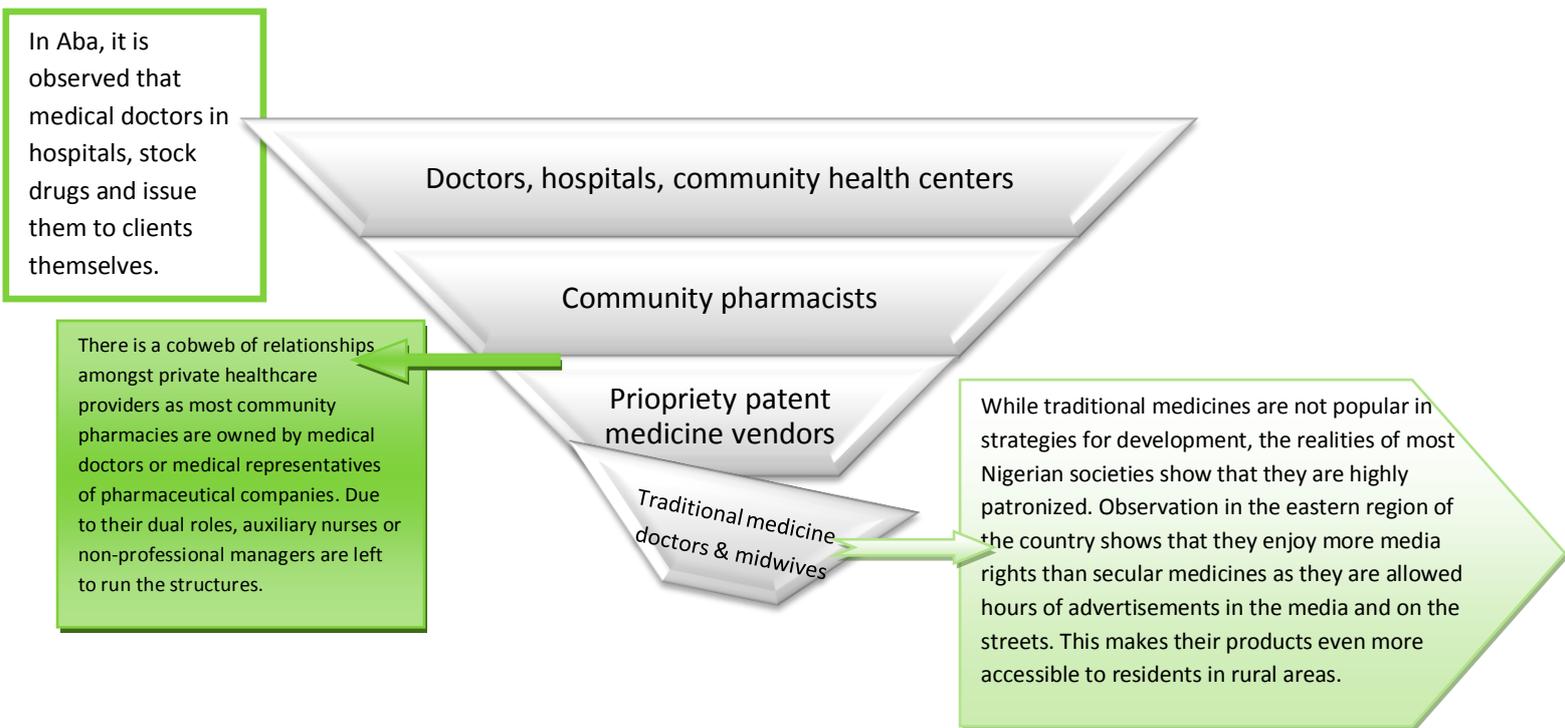
In some cases, when they leave a PPMV, they rely on traditional medicines or go to traditional birth attendants for advice.

According to a respondent in Otukpo, some customers sometimes don't go to where they are recommended to go. They visit traditional birth attendants instead. Traditional birth attendants are popular here.

This was confirmed by other respondents who expressed the acceptance of birth attendants as local private health care providers. Beyond the assumptions of poor finances, the reason for the choice of this group was not explored on the side of the caregivers as its beyond the focus of this research.

Likewise, a pharmacist confirmed her recommendation of the use of local herbs even in paediatric diarrhoea management.

'I recommend water sieved from boiled rice as rehydration therapy for babies. I recommend local herbs too.'



Ideally, the relationships between practitioners in the private health care institutions should be between hospitals, pharmacies and patent medicine store vendors. However with reality on ground, this is distorted. As captured in the matrix and their offshoots above, traditional medicine still holds a strategic position especially amongst the rural people. According to a pharmacist:

'People here believe that there are spiritual implications to illnesses which secular medicines cannot cure. Hence, the patronage for traditional medicine is high.'

Myths and Misconception

Questions were asked regarding popular beliefs and traditions surrounding paediatric diarrhoea and pneumonia in the three project states. This was meant to reveal people's views and highlight any drivers of misconceptions in the treatment of child diarrhoea. The following responses were documented from respondents.

- Lack of breast feeding causes diarrhoea
- When you use metal like nail or any iron to cook, it transfer iron nutrient to the food and hence the body
- Crushed charcoal is used for treatment of diarrhoea
- Breast feeding babies get diarrhoea from their mother's poisonous food intake
- Local herbs like boiled plantain and also Pap and 7Up can act as ORS.
- Too much pepper in food can causes diarrhoea
- Exposure to cold by air conditioning causes pneumonia
- Unripe mango can cause diarrhoea as incidence of diarrhoea rises in the mango fruit season
- If mucus is not sucked out well from babies at birth, it causes pneumonia.
- Incisions made on a person's body can deter diarrhoea
- Diarrhoea comes from rural wells and rivers
- Bathing in cold water can cause pneumonia
- The texture of your intestine determines diarrhoea susceptibility

Inventories

As a part of this research, inventories of drugs used in the treatment of paediatric diarrhoea was taken in the three project states. This aimed at gathering information on available brands and producers in the market.

Different brands of ORS, anti-motility, antibiotics and zinc were available in the market, produced by local and foreign pharmaceutical companies. From the records of the inventory, the most popular drugs were the locally produced ones. Some brands seemed to have a wider acceptance across the three project states. For example, in the ORS category, **Oralab**, produced by *Embassy Pharmaceutical Ltd.* and **UNICEF ORS**, produced by *Unicef/KBI Germany*, were the most popular brands across the three states.



Two most popular brands of ORS

As mentioned above, zinc tablets were scarcely available. Where they were in stock, it was mostly the adult zinc tablet with a higher dose than has been recommended or they were non-dispersible. **Farzincol**, a **10mg** non-dispersible Zinc, by Neros pharmacy ltd/ Pharmedic JSC Vietnam, was observed in three states, stocked by a single respondent per state. A single observation was made of the **Chi Dispersible Zinc**, by *Chi Pharmaceuticals*, with one respondent in Nasarawa state. Further enquiries revealed that he had recently stocked it after a SHOPS/USAID training.



Farzincol is the only Brand of 10mg zinc available.

For antibiotics, there were numerous brands which were recorded in the inventory. From our analysis, none of these brands significantly stood out as the most acceptable brand



Different brands of antibiotics

across the three states. An observed trend might be that most people stock this type of drugs according to the integrity of the company.

Unlike the antibiotics, amongst anti-motility treatments there seems to be a generally acceptable brand. **Diastop Suspension** produced by *Afrab Chemicals Ltd.* was found to be present in virtually all respondent's outlets in every state. From enquiry, this brand happens to be on popular demand on prescription and by care givers. Next to Diastop, is the brand **ADM** by *Galway Pharmaceutical* which seems to also be on demand.



Popular brand of anti-motility (anti-diarrhoea) drug.

The prices and quantity of all drugs in the inventories were also captured in the inventory table. Further details on the inventory list can be found in [the appendix tables pages 33-41](#).

Media Samples

Part of the SHOPS/USAID project strategy is the production of effective information, education and communications materials. To ensure that effective communications materials are developed and used to raise awareness and promote good practice in the treatment of paediatric diarrhoea, samples of media materials such as posters and radio jingles were also tested.



RADIO JINGLE

Man: Introducing a better and more effective way of treating child diarrhoea. It's now ORS+Zinc Tablet

Woman: Ehhhh

Man: Yes, that is the faster and more effective way of treating child diarrhea, ORS+ZINC tablet.

Woman: I seeee

Man: On the first day when the child gets running tummy, immediately give the child ORS plus one zinc tablet. This will help stop the diarrhoea faster. Continue giving ORS until the diarrhoea stops and give one zinc tablet daily for 10 days. The full ten days course will provide protection from diarrhoea for up to three months.

2nd Woman: If the diarrhea does not stop after threedays or there is blood in the stool, or the child gets sicker, consult your doctor. ORS+Zinc stops diarrhoea faster and protects. This message is brought to you by the Ghana health service with support from USAID. Available and affordable at all licensed chemical shops and pharmacies. Good life, live it well!

General feedback from the sampled radio jingle was as follows:

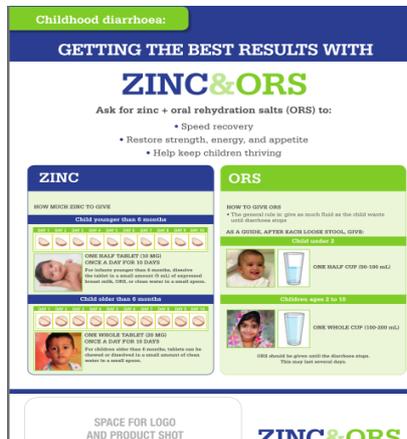
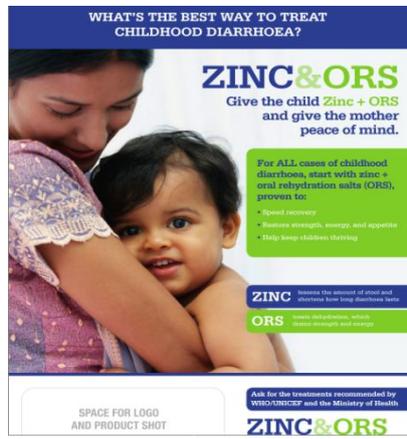
- 'Message is clear, should be adapted in other local languages'
- 'Remove the word 'Ghana Health Service''
- 'Remove the words 'Chemical stores' and translate to other languages'
- 'There is an exaggeration in the statement that zinc will provide protection from diarrhoea for up to three months'
- 'The dosage direction is absent in the message'
- 'Domesticate the language for each region in Nigeria'
- 'Beyond the jingles, you need foot soldiers to promote aggressively'.

Posters

Three sample posters were displayed to elicit respondents' opinions regarding their preference and suggestions for improvement of media materials. Below is respondents' feedback on each of the posters.

Poster A

This poster was preferred by the majority of the respondents. According to most of them, the

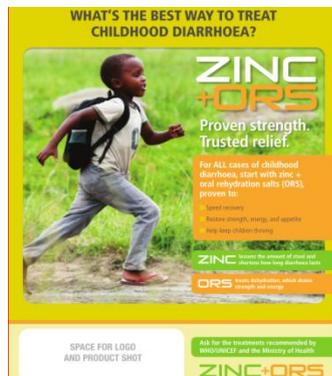


concept of the baby and mother relationship during the incidence of diarrhoea is more highly reflected in this. Some participants also stressed that the infant in the picture looks very healthy. On the negative side, the observation was made that the baby in the picture does not reflect an

African child. They suggested that the models be replaced with an African mother and child. Overall, they said that the colour looks nice; the message is clear, bold and readable. According to respondents, the illustration is more understandable, hence its adaptation will be most favoured.

Poster B

This poster ranked second in preference by most respondents. They commended the use of



the picture of an African child. However, they criticised the fact that most kids within the age range of the model on the poster don't have diarrhoea. It doesn't tell the story of a child sick with or recently recovering from diarrhoea, hence most mothers cannot identify with it. The colour and writing can be improved on. They commended the design as being

brighter.

Poster C



This Poster was commended for maintaining a bright colour. The child model on it was commended for looking strong and healthy. However, he does not look like a true African child or reflect the identity of the street child or one that suffers from diarrhoea. Hence the picture is assumed to be an exaggeration of a mother's expectation.

Conclusion

The research focused on eliciting relevant information on the knowledge, attitudes and practice of private health care practitioners in Abia, Benue and Nasarawa states on paediatric diarrhoea management. Adopting a qualitative research method, 39 in-depth interviews and 10 focus group discussions were conducted with carefully selected participants across the project states.

With the use of an adapted in-depth interview guide, an understanding of stakeholders' decision making behaviors and, in particular, their knowledge of the newly recommended treatment for paediatric diarrhoea was assessed while also exploring wider issues that arose.

The use of mixed research tools ensured that pertinent information portraying precisely all characteristics of the issues was explored.

The research identified knowledge gaps amongst the private health care practitioners interviewed across the three project states. From the findings, the knowledge of the recommended effective treatment, zinc plus oral rehydration solution + zinc (Zinc + ORS) for paediatric diarrhoea was low amongst responding community pharmacists and propriety patent medicine vendors (PPMVs).

Knowledge of ORS as a treatment method ranked high across project states for all respondents but the knowledge of the use of Zinc +ORS+ as a stand-alone treatment method as recommended by UNICEF and the World Health Organization (WHO) is very low.

Though an insignificant percentage of respondents had adopted Zinc + ORS as a treatment method, there was a widespread lack of information on the use of and access to zinc tablets with the appropriate dosage for treating children under **five** years of age.

Self prescription by caregivers remains common practice amongst. The existence of an open-market pattern (especially in Abia state) and a lack of implementation of drug purchasing laws by stakeholders creates an enabling environment for such misuse agency in the space of private health care.

Also evident is the role of socio-cultural, traditional and economic factors to significantly influence treatment of childhood diarrhoea. Price of drugs remains an important factor in purchasers' decision making processes. This, alongside traditional beliefs and misconceptions of many care givers seems to sometimes encourage their patronage of traditional medicines as opposed to secular medicines. Where this trend is not well managed, it poses a challenge and conflicts seriously with professional pharmaceutical practices.

Most evident is the indiscriminate use of antibiotics as treatment for diarrhoea and other childhood illnesses amongst private healthcare providers and care givers. This is observed across the three project states. If not controlled, this will lead to an outbreak of antibiotics resistance in Nigeria

Overall, while the finding of this study identifies knowledge gaps between healthcare providers in the treatment of paediatric diarrhoea, it also indirectly highlights a strong link between diarrhoea morbidity and caregivers' knowledge. Vulnerability to childhood diarrhoea is often associated with environmental factors and even more so the quality of parental care (Fayehun & Omololu, 2009.)

Reducing the incidence of diarrhoea amongst children under five years of age has huge implications for achieving the fourth Millennium Development Goal (reduce by two third, between 1990 and 2015 the under-five child mortality rate) in particular and also the sixth. This will reduce the child mortality rate in Nigeria and worldwide. There is therefore a need for immediate action to be channelled towards the improvement of knowledge and practice of all stakeholders.

In the light of these findings the following recommendations are made.

Recommendations

1. Training and continuous retraining must be implemented at all levels for community pharmacists P and PPMVs to improve knowledge and practice in the treatment of paediatric diarrhoea.
2. IEC materials that incorporate the above suggestions from respondents should be made available through established channels for each state.
3. Channels and platforms for accessing zinc tablet at affordable rates should be created for community pharmacists and PPMVs. This will encourage adoption of recommended paediatric diarrhoea treatment amongst private healthcare providers and care givers.
4. In the long term, private and government institutions should be encouraged to advance production and introduction of a stand-alone product containing zinc and ORS while also promoting health interventions.
5. Where the training of care givers is beyond the mandate of SHOPS, it is important to establish links with relevant organisations to deliver training for mothers and other care givers at pre- and post-natal or child inoculation platforms to revitalize, enhance and maintain skills in the treatment of paediatric diarrhoea.
6. Capacity of PPMVs and community pharmacists should be built on client relationship management as this can strengthen their relationships and create a better space for instituting referrals and follow ups.
7. National policies that decrease diarrhoea incidence through preventive interventions should be advanced.
8. Strategies that promote hygiene, increased access to safe drinking-water and sanitation, especially in rural areas should be advanced.
9. Conduct research to develop and test new diarrhoea prevention and control strategies in relevant areas.

APPENDIX

ABIA STATE'S LIST OF RESPONDENTS

COMMUNITY PHARMACIES

Business Name	Address	Respondent's Name	Local government	Nurse or Pharmacist	Sex
Ziga Pharmacy	MCC road Aba	Emeka Ogbonna	Aba	Pharmacist	Male
Ezoni Pharmacy	Eronwu street, off brass road. Aba	Christian .C. Iwueze	Aba	Pharmacist	Male
Ifenna Pharmacy Limited	No 113 aba-owerri road, opposite Umuatako junction. Aba	Sylvanus Okafor	Aba	Pharmacist	Male
Twiga Pharmacy	No 70 aba-owerri road Aba	Uhie Chijioke	Aba	Pharmacist	Male
James And James Pharmacy	Umuahia	Ndukwa James	Umuahia	Pharmacist	Male
Emerson Blessed Pharmacy	No 31 Lagos street Umuahia	I.N. Ogbujal	Umuahia	Pharmacist	Male
PPMV					
Sammy .U. Uko Patent Medicine Store	Ohafia	Sammy .U.Oko	Ohafia		Male
Juliana Patent Medicine Store	No 338 Eni njoko road ohafia	Juliana Obi	Ohafia	Nurse	Female
Good Era Patent Medicine Store	No 188, Arochukwu road, Elu ohafia, opposite NACS bank. Ohafia.	Grace Anya	Ohafia	Nurse	Female
Charity Mary Patent Medicine Store	53, Abriba street ohafia	Mrs Charity	Ohafia	Nurse	Female
Okoko Seeded Chemists	No 276, Eni njoku road, Ebem, ohafia	Anonymous	Ohafia		Male
UC Patent Store Amaekpu	Aruchukwu road, opposite fine onyeka filling station.	Uche John	Ohafia		Female

Benue State's List of Participants

COMMUNITY PHARMACIES					
Business Name	Address	Respondent's Name.	Local Government	Nurse or Pharmacist	Sex
Ezim Pharmacy	Otukpo, Benue state	Zim-ochi Nonyem	Otukpo	Pharmacist	Female
Care Pharmacy	G.R.A Gboko Benue state	Chindo .P.Umaru	Gboko	Pharmacist	Male
Quali-Care Pharmacy Limited	Gboko road, opposite state university Makurdi.	Ahire Daniel	Makurdi	Pharmacist	Male
Ad-Tophine Pharmacy	14,old otukpo road high level makurdi	Egboh Ngozi .I.	Makurdi	Pharmacist	Female
Keamax Pharmacy	33, Owukpa street Ojira, Otukpo	Mrs Obiorah	Otukpo		Female
Labet Pharmacy	Labet Pharmacy Gboko	Ternerge Labe	Gboko	Pharmacist	Male
PPMV					
Stanley Medical Complex	Federal road Otupko	Stanley Onyekachi	Otukpo		Male
Shaaco Dispensary	Old Otobi road G.R.A. Otukpo	Oche Blessing	Otukpo	Nurse	Female
St. Peter's Medicine Store	Aliade	Eze Peter	Aliade		Male
Mbamara & Sons Patent Medicine Store	12,captine downs road Gboko	Mbamara .O. Josphe	Gboko		Male
Sa'aondo Patent Medical Store	New road Gboko	Sa'aondo Philip	Gboko	Nurse	Male
Chuks Patent Medicine Store	Ator-bella road makurdi	Johnson Ozougwu	Makurdi		Male
Desmon Patent Medicine Nyiman	House of Assembly NYIMAN makurdi	Donald Fegher	Makurdi		Male
Clemmy Patent Medicine Store	Ankpa quators road Makurdi	Clement Ekweogio	Makurdi		Male
Jah's Care Medical Store	Aliade	Odoh Elijah	Aliade		Male

Nasarrawa State's List of Participants

COMMUNITY PHARMACIES

Business Name	Address	Respondent's Name.	Local government	Nurse /Pharmacist	Sex
Seb Pharmacy	No 16, Jos road, Lafia	Obasi Emanuel	Lafia		Male
Christ Ambassador	Makurdi road Lafia	Mr Ejike	Lafia		Male
Quali health pharmacy	Mararaba, opp tiffa garage.	Ms Dorathy	New Karu	Nurse	Female
Nedumax pharmacy	Km 18, Abuja –Keffi road, one man village masaika.	Tina Yohanna	New Karu	Nurse	Female
Lonachy pharmacy	Bukan-sidi, lafia	Mr Lawrence	Lafia	Pharmacist	Male
Honeydarl pharmacy	Danmaje shopping complex Jos road	Mrs Anienobi	Lafia	Pharmacist	Female
Samglad Pharmacy	Aisha Sandaji plaza Bukan-sidi lafia	Samuel Ewhrudjakpor	Lafia	Pharmacist	Male
PPMV					
Ekeson patent medical store	Makurdi road Lafia	Emmanuel Eyo	Lafia		Male
Ngbeze patent store	Ajigwara village	Ngbeze .H. Ozeh	Loko		Male
	Loko development area	Yakubu Haruna	Loko		Male
Yanga Medicine store	Opposite police station, Nasarawa	Zakari Isah	Nasarawa-toto		Male
Ugochukwu medical store	Anguwa bui Nasarawa	Ugochukwu Okolo	Nasarawa-toto		Male
Gomac patent medicine store	Ombi 1, lafia	Victor Uchenna	Lafia		Male
Horsepower chemist	Opposite college of Agriculture, Lafia.	Mr Joshua	Lafia		Male

PRODUCT INVENTORY TABLES BY STATE

ABIA STATE

ORS

Brand Name	Price in Naira	ML/Ltr	In stock	Not in Stock /Usually Available	Company Name	Number of stores with it
Ora-Lab	150 + or – 20	27.9g	Yes		Embassy Pharmaceutical	5
Ric - Oral	150	27.9g	Yes		Rico Pharmaceutical	1
Quick Drip	150	10.5g	Yes		Bettercare foundation ltd	1
Oral-Cel	150	27.9g		Yes		1
G-Oral	150	27.9g		Yes	Green life Pharmacy	1
Oral-Drip	150	27.9g	Yes		African child ltd	1
Oralty	150	27.9g		Yes	A.C. Drugs ltd	1
IDA-ORS	150	27.9g	Yes		A.C. Drugs ltd	1
Oral-Salt	150	27.9g	Yes		Medi-drugs LTD	1

ZINC

Brand Name	Price per Naira	ML/LTR	In stock	Not in stock/Usually Available	Company Name	Number of store with it
Farzincol	200 per card	10mg	Yes		Neros Pharmacy ltd/ Pharmedic JSC Vietnam	1

Anti-Motilities (Anti-Diarrhoea)

Brand Name	Price in Naira	ML/Ltr	In stock	Not in Stock/ Usually Available	Company Name	Number of store
Diastop Suspension	250 + or – 50	60ML	Yes		Afrab Chemicals LTD	10
Mixed Kaolin	250	200ML	Yes		New health way CO.LMT	1
ADM	250 + - 50	100ML	Yes		Galway Pharmaceutical LTD	4
Chloramphenicol syrup	200	60ML		Yes		1

Anti-biotics						
Brand Name	Price in Naira	MI/Ltr	In stock	Not in Stock /Usually Available	Company Name	Number of store
Emgyl		60ML	Yes		Emzor	2
Emtrim(sptrim)		50ML	Yes		Emzor	1
Ampicilin	150 + or – 50	250ML	Yes		Emzor	2 3
Ampiclox	1100		Yes		Beecham	2
Flagyl	250	60ML	Yes		Sanofi-aventis	6
Clofencol		100ML	Yes		Farmex meyer ltd	1
Emzogyl(ampicilin)	250		Yes		Emzor Pharmacy	1
Loxagyl	400 + or -100	60ML	Yes		May & Baker	2
Metronidazole	150	60ML	Yes		Evans	1
Zennat	1600	250ML	Yes		Beecham	2
Amoxclap	1500	1.56pml	Yes		Lake pharmacy ltd	1
Amoxil	600 + or – 100	100ML	Yes		Beecham	2
Mycobex	380	100MI	Yes		Pharmaded Nigeria ltd	1
Erythromycny		100ML	Yes			
Christapel Injection						

BENUE STATE

ORS						
Brand Name	Price in Naira	ML/LTRs	In Stock	Not in stock/Usually Available	Company Name	Number of stores with it
Ric-Oral	150	27.9g	Yes		Rico Pharmaceutical	2
Unicef	150	10.5g		Yes	Unicef/ KBI Germany	5
Ora-lab	210	27.9g	Yes		Embassy Pharmacy	6
Quick drip	150	10.5g	Yes		Better life foundation ltd	1
IDA- ORS	150	27.9g	Yes		A.C Drugs ltd	1
Ora-drip	150	27.9g	Yes		African child ltd	1
Embalyte	150	27.9g	yes		Embassy	1
Bubble salt	240	27.9g	Yes		Mac pharmacy	1
Oralcosy	150	27.9g	Yes		Shijlazhuang Pharmacy china.	2
Ors-oral	150	27.9g	Yes		Jiangus Ruinian Qianjin Pharmacy	2
Oral-cel	150	27.9g		Yes		1
African Child	150	27.9g		Yes	African child ltd	2
ORS	150	27.9g	Yes		Green life pharmaceutical	1
ORS	150	27.9g	Yes		Mayden Pharmaceutical	1

ZINC						
Brand Name	Price in Naira	ML/LTRs	In stock	Not in stock/Usually Available	Company Name	Numbers of store with it
Farzincol	20 per tabs	10mg	Yes		Pharmedic JSC Vietnam/ Neros pharmacy	1
Natures Field Chelated ZINC	20 per tabs	20mg	Yes		Bactolac Pharmacy	1

Anti-Motilities (Anti-Diarrhoea)						
Brand Name	Price in Naira	ML/LTR	In stock	Not in stock/Usually Available	Company Name	Numbers of store with it
Diastop Suspension	200 + or – 50	200Mg	Yes		Afrab Chemicals LTD	11
Loxagyl	280	60ML	Yes		May & Baker Ltd.	1

Metronidazole	150 + or -50	60ML	Yes		Evans Pharmaceuticals	2
ADM	150 + or - 30	100ML	Yes		Galways Pharmaceuticals Ltd	5
Ivax suspension	250 + or - 50	60MI	Yes		BCN Pharmaceuticals limited	2
Kaomix	80	100MI			Kingsize Pharmaceutical	1
Galen Piaediagyl	110	60ML	Yes		Care pharmaceutical.	1
Diafree	150	100ML	Yes		Peace standard Pharmacy	1
Kaomix (Kaolin light BP)	80	60ML			Kingsize Pharmaceutical	1
Flagyl	200	60ML	Yes		Sanofi-Aventis	1

Antibiotics						
Brand Name	Price in Naira	ML/LTR	In stock	Not in stock/Usually Available	Company Name	Number of Stores with it
Ampicilin	250 + or - 100		Yes			3
Emzoclox	200		Yes		Emzor Pharamceutical	1
Clofencol	150		Yes		Dr. Meyer Pharmaceuticals.	1
Erytromycin	150 + or - 100		Yes		Juhel pharmaceuticals.	3
Jawaclox (Ampicilin)	300 + or -50	250mg	Yes		Juhel pharmaceuticals.	2
Jawaclox (Amoxicilin)	300 + or -50	250mg	Yes		Juhel pharmaceuticals.	3
Augmentin	1500 + or - 300	250mg	Yes		Evans/Beecham Pharmaceutical Ltd.	2
Amoxil (Jawa)	250		Yes		Juhel Pharmaceutical	1
Zeenat	1700		Yes		Beecham	1
Ivax suspension	300	60ML	Yes		BCN Ltd	1
Neomox (Amoxil)	200	100MI	Yes		Mopson Pharmacuetical	1
Amoxil	600	100MI	Yes		Beecham Pharmaceutical	1

Loxagyl/ Loxaprim	220 + or – 70	60ML	Yes		May and Baker Pharmaceuticals.	4
Spetrim/Loxaprim	150 + or – 100	60ML	Yes		May & Baker Pharmaceuticals	4
Ampiclox	1000 + or – 100	250g	Yes		Beecham Pharmaceuticals	2
Emozeclox	150	100ML	Yes		Emzor Pharmaceuticals	1
Co-trimazole	100 + or – 50	50ML	Yes		Ceenek Pharmacy	2
Emmox (Amoxicilin)	200	100ML	Yes		Emzor Pharmaceuticals	1
Barbinox (Amoxicilin)	200 + or – 100	100ML	Yes		Juhel pharmaceuticals.	2
Metronidazole	100	60ML	Yes		Evans Pharmaceuticals.	1
Flagyl	100	100ML	Yes		Mopson Pharmacy	1
Primax	150	50ML	Yes		SKG Pharmaceutical Ltd.	1

Nasarawa State

ORS						
Brand Name	Price in Naira	ML/LTRs	In Stock	Not in stock/Usually Available	Company Name	Number of stores with it
Vama ORS	90	27.9g	Yes		Tuyil Pharmaceutical Ltd.	1
Hydrolight	150	27.9g	Yes		Archy Pharmaceuticals	1
Chi- ORS	150	27.9g	Yes		Chi-pharmacy Ltd.	1
Oral-drip	150	27.9g	Yes		African child Ltd	2
Ric-oral	150	27.9g	Yes		Rico Pharmaceuticals	4
Hydro-light	150	27.9g	Yes		Archy Pharmaceuticals	1
Ora-lab	150	27.9g	Yes		Embassy pharmaceuticals	4
G-oral	150	27.9g	Yes		Green life Pharmacy	1
Oral-Cossy	150	27.9g	Yes		Arch Pharmacy	1
ORS	100	27.9g	Yes		Orange drug Pharmacy	1
Quick drip	150	27.9g	Yes		Better care pharmacy	1
G-goal	150	27.9g		Yes		1
Oral-cel	120	27.9g		Yes		2
IDA- ORS	150	27.9g	Yes		A.C. drugs Ltd	1
Ugo-lab	150	27.9g	Yes		Tuyil Pharmaceutical	1
Oral-doza	100	20.5g		Yes		1
Unicef	150	10.5g		Yes	Unicef/KBI Germany	3

ZINC						
Brand Name	Price in Naira	MG/LTrs	In stock	Not in stock/Usually Available	Company Name	Numbers of store with it
Nature field Chelated Zinc.	20 per tabs	100MG	Yes		Bachtolac Pharmacy	2
Baby zinc	150 per card			Yes	Old firm Pharmaceuticals	1
Farzincol	100 per card	10 mg	Yes		Pharmedic JSC Vietnam/ Neros pharmacy	1
Mason Zinc	20 per tabs	100mg		Yes	Mason Vietnam Ltd	1
Chi zinc	150	10/20mg	Yes		Chi pharmaceutical Ltd.	1

Anti-Biotics						
Brand Name	Price in Naira	ML/LTR	In stock	Not in stock/Usually Available	Company Name	Number of Stores with it
Ceporex	1000	250ml	Yes		Glaxo-Wellcome	1
Ampiclox	700/1000	250ml	Yes		Beecham Pharmaceutical Ltd	4
Speprozine suspension	1200	100ML		Yes		1
Flagyl	200 + or – 50	100ML	Yes		Mopson /Emzor Pharmaceuticals.	4
Amoxil	600	125ML	Yes		Beecham	2
Fleming	100	128ml	Yes		Medreich Pharmaceutical Ltd	1
Cyprozine	150	500mg	Yes		Stride vitals	
Ampiclox (cikachox)	70 per card	500mg	Yes		Mac belle laboratory	1
Augumentin	1000	250g	Yes		Beecham Pharmaceutical	1
Jawagyl	250	100Mg	Yes		Juhel pharmaceutical pharmaceutical	1
Evans Metro syrup	200	100mg	Yes		Evans pharmaceutical	1
Emtrim	130	100mg	Yes		Emzor pharmaceutical	1
Cotrimazole	130	50mg	Yes		Evans/Emzor Pharmaceutical	1
Amoxiciln	1200	250mg	Yes		Beecham	1
Jutrim (Spetrim)	120	100mg	Yes		Juhel pharmaceutical Pharmaceutical	1

Jawaclox	300 + or – 100	250mg	Yes		Juhel pharmaceutical Pharmaceutical	3
Tuclox (ampicilin)	200	250mg	Yes		Tuyil Pharmaceutical	2
Miraclox	200	100mg	Yes		Miraflash Pharmaceutical Ltd.	1
Emzoclox	400	250mg	Yes		Emzor Pharmaceutical	1
Zeenat suspension	1000 + Or – 200	250mg	Yes		Glaxo- smith Pharmaceutical	1
Jawamox (Amoxilin)	300	200mg	Yes		Juhel Pharmaceutical	1

Anti-Motility (Anti- Diarrhoea)						
Brand Name	Price in Naira	MG/LTR	In stock	Not in stock/Usually Available	Company Name	Numbers of store with it
Diastop Suspension	200 + or - 100	200MG/100mg	Yes		Afrab Chemicals Ltd.	11
ADM	250	100mg	Yes		Galways Pharmaceuticals	3
Mixed Kaolin	200	200MG	Yes		New Health Way Co. Ltd	1
Dia-flush	40	2mg	Yes		Embassy Pharmaceuticals	1
Flagyl	100	100Mg	Yes		May and Baker/Evans.	3
Lomotil	5 per tabs			Yes		2

Respondent's Identification Number:

CONSENT FORM

Formative Research on Diarrhoea Management Knowledge, Attitude and Practice.

Name of Researcher: _____

Please confirm by initial box

1. I confirm that I understand what this research is about, why it is being conducted, and who it is conducted for.
2. I understand that our discussion will be recorded, that I may request that the recorder be turned off at any time.
3. I understand that at my request, my anonymity will be respected.
4. I confirm that am voluntarily participating and that I am free to withdraw at any time, with or without a reason.
5. I understand that any information given by me may be used in future reports, articles or presentations by the research team.
6. I agree to take part in the above study.

At the end of the interview, please confirm the following:

7. I have had the opportunity to consider the information, ask questions and have had these questions answered satisfactorily.
- 8.

Name of Respondent Date Signature

Researcher Date Signature

In-depth Interview Guide - PPMVs

Introduction to the Interview

We are interested in learning about the services PPMVs/Community pharmacists provide for children's health. We are interviewing PPMVs/Community pharmacists in your community and nearby communities about these issues.

This interview will take about one hour. I will ask you some questions about your experience working as a PPMV/Community Pharmacist and providing treatment for young children.

The information that you tell me today will be kept confidential. We will not share anything you tell us today with anyone outside of the study team and you do not have to answer any questions that you are not comfortable with, and you may stop the discussion at any time.

Do you have any questions? Are you willing to participate in this study?

Consent

Give or read consent form to the participant. Answer any questions the participant may have.

Provide the participant with a copy of the informed consent letter.

Before the Interview

Write down the following your notebook:

1. Coded identifier for the session
2. Interviewers present
3. Date and start time
4. Digital recording number on the device

TURN ON THE AUDIO RECORDER

A. General health information and products: (10 minutes)

1. From where (or from whom) do you usually receive health information?
➔ PROBE: What source or sources do you trust most for health information?
2. How do you generally find out about new products? (i.e. from which sources?)
➔ PROBE: Do you learn about new products from consumer media? From medical representatives? From colleagues?
➔ How do you decide which medicines to stock?
3. I would like to focus on your experiences recommending and/or selling treatments for illnesses that effect children under five. What are the most typical/common health problems that customers with young children bring to your shop/pharmacy?
➔ **Probe if not mentioned:** How about diarrhoea? Pneumonia?
➔ How do you determine the cause of the illness?
➔ Do you ever consult with others? If so, who do you call for advice?
➔ Are there any problems or sicknesses that you see in your shop that you are unable to provide treatment for? What do you do when this happens? (**most response will be that they refer the patient**) **Probe:** Where do you advise them to go and why? Do your customers sometimes deviate from your referral and go to other sources of treatment? In these situations, where do they go to and why do you think they go there?

B. Pneumonia case management: (10 minutes)

4. You mentioned that customers come to you for treatment of a child with pneumonia.
- ➔ In general, what causes pneumonia in young children?
 - ➔ **PROBE:** Are there any symptoms or warning signs that you look for?
 - ➔ What do you do when a customer comes to your shop/pharmacy seeking treatment for pneumonia? Probe: What medications do you typically sell for pneumonia?
 - ➔ What medications do customers request for pneumonia?

C. Diarrhoea case management: (20 minutes)

5. You mentioned that customers come to you for treatment of childhood diarrhoea.
- ➔ In general, what causes diarrhoea in young children?
 - ➔ **PROBE:** Are there any symptoms or warning signs that you look for?
 - ➔ What do you do when a customer comes to you for treatment of a child with diarrhoea? Probe: What medications do you typically recommend for diarrhoea?
 - ➔ What medications do customers request for diarrhoea? *If yes, what do they typically request?*
6. In general, how do PPMVs/community pharmacists decide what diarrhoea treatment to recommend to a customer?
- ➔ **PROBE:** Do they consider efficacy of the product? Severity of diarrhoea? National treatment protocols? Which of these factors is most important?
 - ➔ **PROBE:** Is the price of the product ever a factor in the decision making? How so?
7. **Hypothetical:** Let's say that a mother comes to you seeking treatment for her 2 year old child with diarrhoea. For the past three days the child has been having 3 to 5 loose stools per day without any blood in the stool or fever.
- ➔ What advice and/or treatment would you recommend to the mother? Why?
 - ➔ Would you recommend something different if the child had blood in the stool? If they had a fever?
 - ➔ What is your main therapy goal in treating uncomplicated diarrhoea? (*Give examples if needed: restore fluids, increase energy, stop diarrhoea?*)
8. Is ORS most vital in treatment of a child with diarrhoea? (note: most respondents have mentioned ORS as treatment before now, so probe further)
- ➔ *If yes:* What are your main reasons for recommending/prescribing ORS?
 - ➔ Do you recommend any other medications in addition to ORS?
 - ➔ Do customers ever request ORS? How often?

Note: Rephrase the next question where it's confirmed by now that respondent uses anti-biotics and anti-motilities

9. Do you recommend antibiotics, anti-motilities, anti-amoebics for treatment of a child with diarrhoea?
 - ➔ *If yes:* which of the products have you prescribed/recommended?
 - ➔ What are your main reasons for recommending this drug/treatment?
 - ➔ Do customers ever request these treatments?
 - ➔ How often? (i.e. most of the time? some of the time?)

10. Do you ever suggest homemade solutions or home remedies for treatment of a child with diarrhoea?
 - ➔ *If Yes,* What do you suggest? (PROBE: Increased fluids? Sugar salt solution? Local herbs?)
 - ➔ *If No,* Why?
 - ➔ PROBE: *If Yes,* Are there cases when you give something in addition to a home remedy? Are there cases where you would not recommend a home remedy?

D. Knowledge and perceptions of zinc: (10 minutes)

11. Have you ever heard about zinc as a treatment for childhood diarrhoea?
 - ➔ *If yes:* have you ever recommended zinc as a treatment for pediatric diarrhoea?
 - ➔ *If Yes, why? If No, why?*
 - ➔ *If Yes,* what do you tell customers about using zinc as a diarrhoea treatment? (focus on efficacy, benefits and dosage)
 - ➔ Do you recommend anything in addition to the zinc? If yes, What?

E. Enablers for behavior change: (15 minutes)

12. National guidelines in Nigeria recommend ORS plus zinc as the primary treatment for childhood diarrhoea.
 - ➔ What would you need to know (in addition) to convince you to always recommend ORS plus zinc as a stand-alone treatment for diarrhoea?

13. According to national treatment guidelines, antimicrobials and antibiotics should only be given when there is blood in the stool or a confirmed case of amoebas. What would you tell other PPMVs/community pharmacists to convince them to stop recommending antimicrobials such as Flagyl or metronidazole for treatment of uncomplicated childhood diarrhoea?

E. Inventory of Diarrhoea Management Products

I would like to know what types of medicines/products or combinations of medicines/products are sold for the treatment of childhood diarrhoea in your pharmacy/shop. Let's start with ORS products. What brand or brands of ORS do you sell? (List up to 3 most popular). What is the price for each of these brands? Do you have these brands in stock? [*Interviewer, record whether the product was reported in stock and whether it was observed in stock, or whether it was not currently available or not stocked*].

(1) Oral rehydration solution/salts (ORS)

**Note: Include information on dosage for ORS (i.e. liters or MLs)*

Brands (list up to 3 most popular)	Price per package (list for each brand)	In stock (observed)	In stock (reported)	Not available but usually available	Not stocked
1.					
2.					
3.					

Now I'd like to know about zinc products. Do you carry any zinc products for diarrhoea treatment? If so, what brand or brands do you sell? What is the price for each of these brands? Do you have these brands in stock? *[Interviewer, record whether the product was reported in stock and whether it was observed in stock, or whether it was not currently available or not stocked].*

(2) Zinc

Brands (list up to 3 most popular)	Price per package (list for each brand)	In stock (observed)	In stock (reported)	Not available but usually available	Not stocked
1.					
2.					
3.					

Now I'd like to know about antibiotics. What brand or brands do you sell? (List up to 3 most popular). What is the price for each of these brands? Do you have these brands in stock? *[Interviewer, record whether the product was reported in stock and whether it was observed in stock, or whether it was not currently available or not stocked].*

(3) Antibiotic

Brands (list up to 3 most popular)	Price per package (list for each brand)	In stock (observed)	In stock (reported)	Not available but usually available	Not stocked
1.					
2.					
3.					

Finally I'd like to know about antidiarrhoeals/anti-motility drugs. What brand or brands do you sell? (List up to 3 most popular). What is the price for each of these brands? Do you have these brands in stock? *[Interviewer, record whether the product was reported in stock and whether it was observed in stock, or whether it was not currently available or not stocked].*

(4) Anti motility (also called Anti-diarrhoeal)

Brands (<i>list up to 3 most popular</i>)	Price per package (<i>list for each brand</i>)	In stock (<i>observed</i>)	In stock (<i>reported</i>)	Not available but usually available	Not stocked
1.					
2.					
3.					

15. Of all these products that we've just talked about, which is your most popular? Which one do caregivers ask for most?

Wrap-up (5 minutes)

We have talked about a lot of issues in the treatment of diarrhoea in young children today and we want to thank you for your participation in this interview. This information will help us to improve our diarrhoea treatment programs for young children in Nigeria. Before I close, do you have anything additional you would like to add? Do you have any question?

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