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PHARMACEUTICAL USE FOR COMMON COUGH AND COLD INUNDER-FIVE CHILDREN

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ABSTRACT

Introduction: There is a burgeoning epidemic of antibiotic resistance in low-income countries, and pharmaceutical use is on the rise even in rural areas. It is important to understand how caregivers and drug sellers use pharmaceutical medicines in treating the common cold and cough in under-five children.

Methods: The researchers interviewed caregivers and drug sellers, observed drug sellers' practices, and conducted social mapping with caregivers in Bagnibari, a village transitioning to a peri-urban area in Savar, Bangladesh.

Results: Researchers found that caregivers use pharmaceutical medicines extensively in treating the common cold and cough and that drug sellers recommend the use of pharmaceutical medicines. However extensive antibiotic use was not found. Drug sellers gave instructions on the use of the pharmaceutical medicines that caregivers followed, and caregivers considered drug sellers their main source of information. Drug sellers said they had completed a governmental training course.

Conclusion: Because some caregivers perceived drug sellers as uneducated and there is no follow-up training, visible knowledge dissemination should be started with drug sellers. Medicalization and urbanization are impacting the treatment of the common cough and cold of under-five children.

Key Words: under-five children, drug use, pharmacy, Bangladesh, common cough and cold

I. INTRODUCTION

Acute respiratory infections are one of the two most common causes of under-five mortality among children [1]. Pneumonia alone accounts for 20 to 40% of childhood deaths worldwide [2]. In Bangladesh, respiratory infections at all ages kill 129.5 per 100,000 people, a tenth of all deaths [3], and there is an estimated tripling of that number due to comorbidity [4]. However, the least severe form of a respiratory infection, the common cough and cold, receives little attention.

As western biomedicine becomes more embedded throughout the world, pharmaceutical medicine use is increasingly prevalent. They are sold in an unregulated fashion outside of OECD countries, which can lead to drug stalls (pharmacies) permeating a village [5,6]. The drug sellers are generally receive little education about the pharmaceutical medicines they are selling. They are also encouraged by medical representatives from different pharmaceutical companies who are eager to add another person to their client list [5]. Drug sellers push these drugs on their customers, who rarely know better and treat the drug sellers as "mini- doctors." It is in this environment that children suffering from the common cold and cough seek to be treated. How is their cold and cough treated by caregivers and drug sellers? The researchers tried to find out the answer to these questions with this study.

While usage of pharmaceutical medicines is prolific, several points demarcate the importance of antibiotics in this study. There is a burgeoning epidemic of antibiotic resistance [7], which directly impacts treatment of the common cough and cold. In most low-income countries, antibiotics are usually the most prescribed and used pharmaceutical medicines taken for many ailments [6, 7, 8, 9, 10]. They are also frequently misused because of the high cost of completing a full dose [11] and lack of knowledge on the part of the drug seller and the caregivers of children [6, 8, 12].

In Bangladesh, a study was done in 1994 on attitudes towards acute respiratory infection treatment by mothers in Matlab [13], but the researchers did not find a published study about the use of pharmaceutical medicine in the treatment of common cough and cold among the under-five children.

The objectives of this paper were to find the knowledge, perceptions and practices of caregivers and drug sellers in relation to using pharmaceutical medicines in treating the common cough and cold, the sources of information for the caregivers and drug sellers, and factors associated with use and non-use of pharmaceutical medicine in Bagnibari village.

The operational definition of a pharmaceutical medicine is a biomedical drug produced by a pharmaceutical company and purchased at a local pharmacy.

II. METHODOLOGY

This research was undertaken as an exploratory qualitative study based on grounded theory. Grounded theory is a reverse type of traditional research theory where data is collected first instead of developing a hypothesis; collected data is analyzed to create theories. It is particularly useful in situations where there is little literature or when a new topic is being studied.

2.1 Setting

Bagnibari, a village in Savar, is undergoing urbanization as highways and multiple roads are being constructed, and communication with Dhaka becomes easier. There are many factories (garment and furniture) surrounding it, as well as land cultivating paddy and other forms of farming land. In the nearby Akran Bazaar, pharmaceutical use is widespread, and they are easy to access with seven pharmacies in the small village. Six of them are situated at the corner of Akran Bazaar and one 1.5 km north from the corner of Akran Bazaar.

2.2. Sample population

Two target groups were identified- caregivers of children under five years of age and drug sellers from local pharmacies.

2.3. Data collection, Ethics, and the Process

During the short data collection phase, the research team identified and spoke with four drug sellers and 15 individual caregivers. The Bengali-speaking researcher would approach households to ascertain willingness and availability, and if the residents had under-five child children they were requested to participate. Drug sellers were approached similarly, with the additional request for conducting observation in their pharmacies. All observations were over the period of 2 to 3 hours. Verbal informed consent was taken. Purpose, risks, and benefits were explained, and participants were told they could stop the interview or ask the researchers to leave at any point if they were not comfortable with their presence or questions.

Caregivers were interviewed via a prepared guide, who also participated in a social mapping exercise (map of pharmacies). A focus group discussion was held with several caregivers. During each activity, the non-Bengali speaker would take detailed observational notes to corroborate findings from the translated interviews.

Drug sellers were both observed and interviewed. Three of the drug stores at the corner of Akran Bazaar and the distant one were visited on different days and different times. The presence of the non-Bangladeshi researcher provided unwarranted distraction because she was female and American, and crowds clustered at every pharmacy which affected the usual nature of the drug sellers' business. Due to this and other responsibilities, only the Bengali speaker was present during two observations. However, both researchers were present in every interview.

2.4. Data Analysis

Verbatim transcripts were prepared directly after return from the field. In this way, both written and verbal data were transcribed before they were forgotten or lost. Transcripts were coded manually and organized with the help of Atlas. Individually

before comparing and finalizing the coded transcripts.Through an iterative process of coding, certain themes began to emerge from the data.

III. FINDINGS

There are seven pharmacies in Bagnibari, and all the caregiver participants lived within a fifteen-minute walk of a pharmacy. Most of them lived within five minutes. The participants had varying socioeconomic statuses, as evident by their houses and clothes. One participant had a mud house with reed roof; her clothes and those of her children were worn, though clean. Others had tin roofs and concrete walls. Only one participant had a compound of several houses, a large courtyard, goats, cows and chickens with troughs for feeding and watering, and electricity.

The drug stalls were all well-kept. All but one drug stall had a curtain separating the backroom from the front sales counter, either for storage or because they once had a visiting doctor. Pharmaceutical medicines of any kind were available without prescription. This is a common practice in Bangladesh. All drug sellers reported that business was going well.

Overall, findings showed that pharmaceutical medicines were used extensively to treat the common cold and cough in under-five children. They were demanded by caregivers and recommended by drug sellers. Both drug sellers and some caregivers had some knowledge about the signs of severity associated with coughing.

A typical experience of one caregiver coming to the drug seller is as follows:

> Saima came with her child, Mahmud, and said, "Doctor *bhai*, please treat my child. His father will pay you later." Aftab, the drug seller, asked, "What happened?" Saima replied that he had fever. Aftab put his hand over the child's forehead and asked why it was wet. Saima replied that she had poured some water to reduce the fever. "How old is he?" the drug seller asked. "Four years," Saima answered. Aftab asked if other drugs had been given to Mahmud, and Saima said No. The drug seller took out two bottles of syrup, Amoxicillin (antibiotic) and Napa (painkiller). He wrote on a piece of paper how many tea spoons should be taken per day. The total cost of drugs was 75 taka (USD1).

Aftab, a typical drug seller, was concerned about the appropriateness of Saima's treatment of baby Mahmud and checked to see if Mahmud had a fever before prescribing. Unusually, in this instance, he sold Amoxicillin, an antibiotic in the penicillin family, along with Napa, a painkiller. But he asked if she had used anything else, either to make sure there would be no drug reaction or to make sure that the child had not already been taking antibiotics. Although he did not ask if she was literate, he still marked the packages of drugs with slashes to indicate the number of doses per day. Saima, after trying her best to reduce her child's fever, came to the drug seller to seek his advice. Trusting the drug seller's advice, she took the drugs home. In this small community, families knew each other, and the drug seller was willing to wait for the father to pay later.

3.1. Factors Associated with Use and Non- Use of Pharmaceutical Medicines

There are several factors that are associated with pharmaceutical medicine use and non- use, including delay, desire and cost. Most caregivers would attempt to cure childhood illnesses first with herbal medicines, like *tulsipata* and *bakoosh pat* (leaves of medicinal plants), before going to the pharmacy. So there was a delay factor involved in using pharmaceutical medicines. A mother would try the herbs for two to three days, and if it does not work, they would go get syrup from the pharmacy.

Cost was not an issue because drug sellers allowed their customers to pay for part of the purchase and finish payment at a later date. Multiple women at the focus group agreed that this was quite common. However, some caregivers said that they or others might choose medicines based on how much money they had. An educated, middle-class mother said that others would ask for the better drug even if they cannot afford all the medications.

Since all participants lived in walking distance from a pharmacy, distance did not seem to be a factor. However, one participant stated that pharmaceutical medicines were cheaper in Savar than they are in Akran Bazaar. Although it was only a difference of 5 taka but of course one needs to take into consideration the cost of transportation from Bagnibari to Savar. Akran bazaar was just round the corner and Savar bazaar was far.

3.2. Sources of Information about Pharmaceutical Medicines for Caregivers and Drug Sellers

Both caregivers and drug sellers had various sources of information which constructed their beliefs and practices.

For the drug sellers, the main source of information was their experience in selling drugs in a pharmacy for a variable period of time. The most commonly cited training course was the "licentiate medical faculty" (LMF) course, a course initiated by the Bangladesh government that trains people for six months to two years about pharmaceutical medicines and their common use, as well as the most common diseases and their treatment. Some of the drug sellers in this study also worked for MBBS doctors before becoming a drug seller or they had observed doctors in hospitals. It was a family business in only one case and that drug seller said he also took part in an LMF course.

Sources of knowledge for caregivers included the drug sellers, their neighbors, learned practices in the family and only infrequently the private clinics they had previously gone to.

3.3. Perceptions of Caregivers in Relation to Using Pharmaceutical Medicines

14 out of 15 caregivers perceived that a syrup (mild painkiller and antipyretic Paracetamol) was the best treatment for common cold and cough among children. Few preferred a powder suspension. Most knew about herbal remedies, and all but one sought to use herbal remedies first.

Finishing the drug regimen was very important to nearly all the women because money had been spent, and the illness would not be completely cured unless all the syrup was taken.

Two caregivers perceived the local drug sellers to be uneducated, which affected their use of pharmaceutical medicine. One believed that the drug prescribed by the drug seller might kill her child. The other woman wanted her child cured immediately. She thought that the local drug seller did not have the education to cure her child so fast.
Most caregivers had the perception that pharmaceutical medicines were important to cure their children. One stated that she would "go to the pharmacy first," and another said that the herbal medicine "used to work before the medicine was available," but because the medicine is available, she would go and buy that anyway.

Disposal of the medicine was also discussed. All participants stated that they discarded the bottle after the child was better. It was perceived to be dangerous to use expired medicines by several women. An educated, middle-class caregiver said that using expired medicine "creates a reaction, and you can die from it." She knew someone who had been "severely" sick from using expired medicine. All caregivers said they discarded bottles appropriately. Several discarded bottles were noticed in the backyards of caregivers.

3.4. Perceptions of Drug Sellers in Relation to Using Pharmaceutical Medicines

Drug sellers had varying perceptions on the use of pharmaceutical medicines to treat the common cold and cough. Some did not offer antibiotics and only offered syrups like Napa. Some thought that low-dose antibiotics were appropriate and would give a higher dose if it was not effective; one recommended it immediately. One drug seller preferred SQUARE brand medications over others but did not give a reason. SQUARE was considered a prestigious and trustworthy pharmaceutical company of Bangladesh.

A drug seller had the perception that doctors over-prescribed antibiotics in an attempt to cure a patient in their first visit, thus making them more willing to come back. One of the mothers also mother agreed with this opinion. The same drug seller was worried about antibiotic resistance in his village.

3.5. Practices of Caregivers Relating to Using Pharmaceutical Medicines in Treating the Common Cough and Cold

Some caregivers try home remedies for two or three days before going to the pharmacy. Other caregivers go to a pharmacy in Akran Bazaar within a day. One differentiated based on age because the cough and cold is frequent among infants (under one year). All caregivers said they followed the directions of the drug seller in relation to use, meaning they gave the medicine to the child the prescribed number of times a day and the prescribed number of days or until the bottle was empty.

Caregivers said they would buy the medicine that the drug seller recommended regardless of cost, but most also said the final decision was their own.

They also chose specific medicines that had worked previously before buying other recommended medicines. All caregivers recommended the use of Napa syrup for the treatment of under-five children with cough and cold.

Napa syrup is a paracetamol syrup that contains 120 mg of paracetamol per dose of 5 mol syrup. Other medicines purchased or described by caregivers included Amoxicillin, Histacin (Antihistamine), Cef3, DiCef, Sefrad (different local antibiotics) and unnamed antibiotics.

List of Pharmaceutical Medicines Used in Treatment

Caregivers usually did not use antibiotics to treat the common cough and cold. They would only use them when the cold was severe in most cases because of the worry that the antibiotic would harm the children.

List of the most commonly used drugs
Napa syrup
Histacin syrup
Tyrosin syrup
Amoxicylin syrup
Cefradin syrup

Caregivers associated several factors with coughing severity: wheezing, vomit, chest in drawing, sunken eyes, and loss of appetite.

3.6. Practices of Drug Sellers in Relation to the Use of Pharmaceutical Medicines in the Treatment of Common Cold and Cough among under-five children

Drug sellers would measure the temperature of children present when the caregiver came for medicine if they had a thermometer, which was noticed in two of the pharmacies. All asked the mothers for the symptoms. The usual process of prescribing included verbal instruction by the drug seller about the use of medicine. The drug seller would mark the packet for the caregiver. They would instruct them to discard the syrup at the end of treatment or after using it for five to seven days. One said to stop treatment of Napa syrup when the fever was gone, but others said to use it for the entirety of the prescribed treatment.

Their most frequent recommended drug was Napa syrup. Other drugs were antihistamines (Tysin), prescribed in a similar way, and antibiotics. One drug seller in particular recommended antibiotics to most customers coming to his pharmacy. Some drug sellers also recommended a home remedy to reduce fever: pouring cold water over the child's head.

Drug sellers occasionally referred customers to doctors when the child had a severe cough, high fever, or if the medication had not made the child better. They also accepted partial payment if a customer could not afford the full cost of the medicine at the time when their child was sick and they needed to buy the medicine immediately.

IV. DISCUSSION

The findings organized themselves into several themes. Broadly, caregivers and drug sellers existed together in an amicable relationship where caregivers would mostly depend on drug sellers to treat their children, and drug sellers would take that relationship quite seriously. Most importantly, pharmaceutical medicines were used commonly in the treatment of under-five common cold and cough by caregivers and recommended by drug sellers, and children were given low-impact medicines because caregivers and drug sellers were very concerned about medicinal effects on their children.

4.1. Factors Affecting the Use and Non-Use of Pharmaceutical Medicines

The factors affecting the use of pharmaceutical medicines were cost, desire, location, and delay. Cost was rarely an issue because of the relationship between the drug sellers and the locals. Also, location was not a large factor because all participants were relatively close to a pharmacy. Delay was the largest factor that related to the use of other kinds of medicine. 14 out of 15 caregivers would use herbal remedies before using pharmaceutical medicines. Because of the poverty in the village, it was likely that they sought to use locally-grown herbs available in gardens and nearby shrubs before spending their hard-earned money on pharmaceutical medicines. Because caregivers could list the signs of a severe cough and cold when asked and could speak of occasions when they went to the clinic or drug seller immediately upon recognizing those symptoms, delaying the treatment of a severe cough or cold did not seem to be usual in severe cases.

All participants stated that they used pharmaceutical medicines. Whether this points to the medicalization of Bagnibari or a desire to become Westernized is beyond the scope of this research. But the participants stated that they would no longer go to local healers when pharmaceutical medicines were available because they now had the knowledge that the latter were more effective. However such responses could also be influenced by the presence of a western researcher.

4.2. Sources of Knowledge

According to our findings, drug sellers were knowledgeable about pharmaceutical medicines. However, they did not translate all of their knowledge to their customers, the caregivers, who were found to receive most of their knowledge from the drug sellers.

Most caregivers were unaware of the actual use of the pharmaceutical medicines they were giving to their children. While this problem is not unique to Bagnibari or Bangladesh, it does highlight an unmet need for health information in the community. There is an information gap that needs to be bridged between the drug sellers and the caregivers about the pharmaceutical medicines themselves. This also addresses the issue of the legal status of the drug sellers as prescribers of pharmaceutical medicines such as antibiotics.

4.3. Perceptionsof Caregivers and Drug Sellers

Caregivers and drug sellers both perceived the best pharmaceutical medicine to be Napa syrup, a paracetamol syrup. This is fever and pain reducing syrup and appropriate for the treatment of the common cough and cold.

A concern brought out in the study was the length of use and how long one should use the medicines to achieve the best efficacy. Some participants only used it for a couple of days and went to a private clinic if the symptoms did not decrease. However, since it was not a strictly regimented medicine, stopping the use of paracetamol was not though to affect the child's recovery.

Caregivers also used the knowledge from drug sellers and perceived that discarding the syrup bottles after the illness was very important. This led to them not saving the medication or possibly avoiding bad or expired medicine the next time a child was sick.

Some caregivers believed that the drug sellers in Akran Bazaar were uneducated and that the doctors in Savar would treat their children more appropriately. Interestingly enough, one of the drug sellers felt that the doctors in Savar actually used inappropriate treatment. This confusion could be curtailed with an open dialogue.

The one drug seller who perceived that SQUARE medications were the best could have been the target of a medical representative, as discussed in the Bangladesh Health Watch [5] or he could have simply preferred SQUARE brand. He gave no specific reason for his preference.

4.4. Practices of Caregivers and Drug Sellers in the Use of Pharmaceutical Medicines

All caregivers except one actually preferred not to use antibiotics unless necessary because they believed it was dangerous for children to have too many antibiotics. In our effort to triangulate, it was found that the drug sellers (except one) tried to either not prescribe antibiotics or prescribed a low-dose antibiotic, if necessary. The antibiotic calamity spoken of the literature is not present in Bagnibari based on these findings [7].

Caregivers said they were given verbal instructions on how to use the pharmaceutical medicines, and dosage was marked on the packet. Drug sellers were observed giving these instructions with every pharmaceutical sold for a child. While some caregivers asked for specific medicine instead of asking the drug seller for a recommendation, they were still given instructions on how to use it to cure their child. This was in opposition to earlier literature that says there is a lack of knowledge [5, 6, 8, 12]. The instructions given were appropriate for the medicine.

As discussed in the previous section, Napa syrup was considered to be the best pharmaceutical medicine and was the most used and recommended.

4.5. Limitations

Only one person spoke Bangla, which made interviews and note-taking a challenge. The time of the study period was short, so full data saturation could not be reached. It was also very difficult to know when drug sellers were performing for the researchers rather than conducting business as usual. One drug seller admonished a customer for using the wrong word because the observer was

taking notes. Researchers were also unsure as to whether the research topic and subsequent interview questions would lead caregivers to speak more about pharmaceutical medicines; however, this limitation was not much of a handicap through the triangulation of drug seller observation and yard debris findings. The interview guide was structured to not immediately specifically ask about pharmaceutical medicines but rather their general treatment strategy for the common cold and cough. There was no funding available to recompense drug sellers or caregivers for their time, which led to less than amiable drug sellers for subsequent researchers. Because the study was limited to the common cold and cough, asking about pneumonia or severe coughing could have given different results.

V. CONCLUSION

This study gives a picture different than the literature available on the subject. Evidence shows that caregivers do not generally use antibiotics for the common cold and cough, nor are the drug sellers uneducated; while a certificate can be faked, and bribes can be readily used, each drug seller actually detailed parts of their education, which seems to be true.

Themes also came under two larger factors: urbanization and medicalization; as discussed earlier, it is unknown exactly what effect either has, but caregivers prefer medicines and have greater access to them than they previously had. As a caregiver mentioned, if the medicine works best, there is no need to treat it in another traditional or cultural way.

5.1. Recommendations

More research should be done on this topic to see if findings are generalizable beyond the village of Bagnibari. Also, since one drug seller believed in the importance of a particular brand of medicine, more information should be found on the practices of medical representatives and the quality of different brands, despite the limitations delineated in the Bangladesh Health Watch [5]. A new intervention should be established to improve the knowledge of the drug sellers in a visible format to make the community aware of their education.

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