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Needs assessment and the development of teaching materials for pharmaceutical safety education for informal healthcare providers and villagers in rural northeastern Bangladesh

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Abstract

Context: Rural Bangladeshi villagers rely on informal healthcare providers, including private medicine sellers, who lack formal pharmaceutical training. Services provided by these practitioners may have harmful consequences due to misprescription. We developed a pilot programme to educate villagers, medicine sellers, and informal health providers about pharmaceutical safety for vulnerable citizens.

Programme Description: We identified villages in Sylhet and conducted qualitative interviews of villagers, private medicine sellers, and non-governmental organisation (NGO) workers to determine patterns of misprescription and cases in which medications caused harm as formative work for a pilot medication safety education programme for villagers and informal providers.

Evaluation: Based on our results, we created educational flyers about pharmaceutical safety and produced a skit to be performed at community centres for informal healthcare providers, medicine sellers, and villagers.

Future Plans: Educational materials will be distributed in the pilot areas and future pre- and post-test knowledge assessments will be conducted among villagers, medicine sellers, and informal providers. If successful, additional materials will be created to address other pharmaceutical safety topics and the pilot program could be expanded to other NGO work regions.

Keywords: *Informal Healthcare Providers, Village Doctors, Bangladesh, Pregnancy, Medication Safety, Medicine Sellers*

Context

Over the past four decades, the government of Bangladesh has enacted programmes targeted at effectuating its constitutional commitment to ubiquitous, quality healthcare. Bangladesh has faced a significant shortage of healthcare providers (Mahmood *et al.*, 2010) particularly in rural regions (Ahmed *et al*., 2011). These shortages have caused rural Bangladeshis to seek care from village doctors and medicine sellers who lack training and this practice has been associated with higher rates of misprescription. Mahmood *et al*. (2010) found that 65% of patients received some care from a village doctor in Chakaria and Iqbal *et al*. (2008) found that medications prescribed by informal providers for common illnesses were inappropriate and could be classified as harmful.

Given that the healthcare worker shortage is profound and that this issue will not be immediately resolved, educating village doctors, medicine sellers, and other informal providers to avoid misprescribing may improve the quality of existing healthcare in rural Bangladesh (Ahmed *et al*., 2009; Bhuiya, 2009; Iqbal *et al*., 2009; Mahmood *et al*., 2010). Village doctors and medicine sellers indicate their willingness to learn and interventions have been successful in decreasing misprescribing and in improving health care in Bangladesh and other low-resource settings (Chuc *et al*., 2002; Hamid *et al*., 2006; Goodman *et al*., 2007; Ahmed *et al*., 2009; Alam *et al*., 2015).

We gathered formative information, in collaboration with a non-governmental organisation (NGO), to develop teaching materials for a pilot pharmaceutical safety education programme for informal healthcare providers, private medicine sellers, and villagers in Sylhet, Bangladesh. Based on the findings we created a preliminary set of educational materials, including flyers

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and skit scripts, to address medication safety among pregnant women and children under the age of five years.

Description of Programme

This project took place in ten villages in Sunamgonj and Sylhet districts within Friends in Village Development Bangladesh (FIVDB)'s hoar, or flooding, work areas. This project region was chosen because annual flooding prevents villagers from travelling to formal, urban-based health centres and thus, care is primarily sought among private medicine sellers and other informal health providers. This NGO work area also contains Community Learning Centres (CLCs) where implementation of the study results are anticipated. FIVDB, in collaboration with St. Louis College of Pharmacy and Washington University in St. Louis, conducted semi-structured, in-depth qualitative interviews among seven private medicine sellers and eight FIVDB NGO staff, as well as eight focus groups among villagers (eight people per focus group) (Table I). These three interview groups and the number interviewed were chosen because they represented who would potentially use and be trained to teach the education materials developed from this study. Interview content included: 1) symptoms for which villagers seek care; 2) medication prescribing practices; 3) cases of misprescribing; 4) topic and material development preferences for an education program; and 5) estimated costs to visit a medicine seller. Focus groups and in-depth interviews were conducted by two trained interviewers and a codebook was created based on the themes identified above.

Results indicate that villagers sought medical treatment for a variety of illnesses such as headaches, diarrhoea, and fever (Table II). Villagers reported suspicion that medications caused harmful side effects including skin rashes and miscarriage. They further suspected that they had been given incorrect medications for their ailments, citing cases when they were given pain medication instead of antibiotics for infections (Table II). They also reported that they would stop taking antibiotics when they felt better and would discontinue use before the full course of treatment was complete. The total estimated cost of visiting a medicine seller per villager, including round-trip transportation and medication expenses, ranged from 50 to 500 Bangladeshi taka (BDT) ($1 USD= 78 BDT) depending on the distance travelled and transport mode used (*e.g.* boat). Villagers reported wanting education about pharmaceuticals, the appropriate use of medications for common ailments, and which medications to avoid during pregnancy and in young children. Education program material development preferences are listed in Table II.

Medicine sellers reported that most patients were prescribed between two and six medications for each condition. Four of the seven medicine sellers interviewed reported that they feel comfortable in recognising medications that are contraindicated in pregnant women; five of the seven medicine seller interviewees did not feel comfortable recognising drug-drug interactions between commonly prescribed medications and supplements in pregnant women. Medicine sellers indicated that they wanted to know more about what medications were harmful for children under the age of five years and for pregnant women. They also expressed interest in resources that provided standard national treatment guidelines.

Interviews with FIVDB staff suggest that their primary concern was overprescribing of antibiotics.

NGO staff, villagers, and medicine sellers indicated a preference for posters or flyers that could be distributed to households and hung in pharmacies, medicine seller shops, informal health provider locations, and CLCs. Additionally, FIVDB staff reported that based on their history of creating education programs for villagers in this region, the most effective information dissemination about medication safety would occur using existing FIVDB CLC education sessions and community skits.

Table I: Qualitative interview participants

Group	Method	Total	Villages	Male
Medicine sellers	In-depth interview	7	6	100%
Villagers	Focus group (8 people per group)	7	5	50%
NGO Staff	In-depth interview	8	N/A	25%

Table II: Qualitative interview topics and results

INTERVIEW TOPICS	INTERVIEW RESULTS
Common Illnesses for which Medication was Prescribed	Fever, Influenza, Common Cold, Diarrhoea, Gastric Pain, Skin/Eye/Ear Infection, Joint Pain, Malnutrition
Medications Commonly Prescribed to Pregnant Women	Paracetamol, Omeprazole, Pantoprazole, Folic Acid, Iron, Zinc, Teracycline, Cefurozime, Fecurozime/Clavulanic Acid
Medications Commonly Prescribed to Children < 5 Years Old	Paracetamol, Omeprazole, Ranitidine, Cefradine, Cefizime, Ciproflozacin, Amoxicilin, Metronidazole, Saline Solution, Meclizine, Salbutamol, Chloramphenicol (eye drops)
Cases of (Suspected) Adverse Medication Effect and/or Inappropriate Dispensation	Child experienced rash following ingestion of expired medication, abortion induced by antibiotic use, child was given pain medication for rheumatic fever instead of antibiotics
Desired Educational Content	Written guidelines, Easily dispensable for hanging in pharmacy or home, Informational performances

Evaluation

In order to address knowledge gaps about pharmaceutical safety for young children and pregnant women, educational materials were developed based on the qualitative research results. The development of material content was done in conjunction with educational experts in Bangladesh and produced in Sylheti, a Bengali dialect. The materials included colour-coded flyers that addressed which commonly prescribed medications should be used with caution or not at all in pregnant women (Figure 1). Medications were incorporated into teaching materials based on safety categorisations issued by the Food Drug Administration (FDA) (U.S. FDA). A flyer was created containing information for pregnant women on the reasons for avoiding certain medications in order to increase understanding of how important medication safety is and to increase compliance. Similarly, posters were created with information on unsafe medications and medications to be used with caution in children as well as a handout that explains the need to avoid dispensing adult-dosage medication to children, the importance of finishing a full course of antibiotics, and how to handle medication allergies.

Education sessions and poster distribution will occur within the pilot education programme geographic areas. Posters will be distributed to medicine sellers and other informal health care providers, hung in pharmacies and medicine stores, placed in CLCs, and given to villagers for their homes. Designated NGO staff will conduct biannual teaching sessions using this programme's materials among medicine sellers and villagers.

Figure I: An example of the colour-coded layout used for educational materials

In addition to the posters above, results of the interviews indicated that villagers felt they could benefit from more effective communication with medicine sellers. In order to address this, a skit script was written that demonstrates a villager-medicine seller interaction with simulated questions that a villager can ask of a medicine seller. The skits will be performed by community actors at CLCs biannually and integrated into FIVDB's comprehensive CLC health education programme.

Future Plans

Qualitative and quantitative pre- and post-training session assessments will be conducted. Qualitative assessments of the current teaching materials among medicine sellers and villagers will take place to further adapt the content for this population. If assessments indicate a substantial increase in knowledge of pharmaceutical practices and a reduction in misprescribing, the programme will be expanded to other NGO work areas with further programme assessments. Reducing harmful medicine seller prescribing practices will contribute to a much-needed improvement of the quality of healthcare available in rural Bangladesh.

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