Determinants of Antimicrobial Use towards Management and Control of Diarrhoea Diseases among Under-Five Children in Zomba, Malawi

Dieckens Binali, Fanuel Lampiao and **Janelisa Musaya**

University of Malawi, Malawi

Introduction

Diarrhoea is one of the furthermost general infections that under-five children suffer throughout the world. Infectious diseases (including diarrhoea) are a leading cause of illness and death throughout the world. The vast diversity of microbes joint with their capacity to advance and adapt to altering surroundings, populations, practices and technologies produce enduring threats to health and frequently encounters researcher's noble efforts of preventing and controlling infectious diseases. Since children are still developing immunological system and poor sense of hygiene among the parents, these children are prone to many infections, the commonest among them being diarrhoea and ARI. Despite the fact that appropriate treatment of diarrhoea is simple and can be done at home, seeking care from appropriate providers outside the home is commendable because detrimental practices founded on misconceptions and beliefs are prevalent, especially in developing countries where mortality due to diarrhoea is high. Antibiotics remains one of the common measures used to treat the infection, which has led to increased usage; nevertheless, the extent to which an individual is prompted to use antibiotics in handling diarrhoea in the Malawian setting is unknown. This study was aimed at establishing the factors that prompt caregivers to use antibiotics in treating childhood diarrhoea.

Methods

Caregivers with under-5 children who suffered from diarrhoea 2 weeks formerly the study were engaged for the interviews. The sample size was 264 which was derived using the following formula:

$$n = \frac{\left((Z_{1-\alpha/2})^2\, p(1-p)\right)}{d^2}$$

where;

n= required sample size

Z= level of probability that the true prevalence lies within chosen e or confidence level at 95%

P= prevalence of diarrhea (22%) according to MDHS, 2016

d= level of precision required/margin error at 5% (standard value of 0.05)

So, if P = 0.22

d = + or -5% Z = 1.96

= 1.962 (1-0.22)0.22/0.052

= 263.687 264 mothers

A total of 269 (which slightly above the required sample size) mothers/caregivers were interviewed during one on one interactions. The study was conducted at four health facilities that are located in Zomba City which include; Sazi, Matawale, Police and City clinic. One-on-one interviews were used to generate quantitative data and two focus group discussions were done to generate qualitative data. Zomba city council and Zomba district health offices provided a signed approval to conduct the study in the district. Furthermore, ethical approval was sought from College of Medicine Research and Ethics Committee (COMREC) including a signed consent which was sought from study participants before the interview. Quantitative statistics was entered in CSPro version 7 and exported to STATA version 12 for investigation.

Results

Predictors	Odds Ratio	Std. Err.	z	P>z	95% CI
No drugs at the facility	1.126	0.358	0.37	0.71	0.60-2.10
Long distance to the healthy facility	1.939	0.625	2.05	0.04	1.03-3.65
Knowledge of the medical condition	0.901	0.281	0.33	0.74	0.49-1.66
Quality of care at the facility	1.110	0.374	0.31	0.75	0.57-2.15
Constant	1.639	.408	1.99	0.047	1.01-2.67

Table 1: Multivariable logistic regression on factors that influence use of antibiotics in treating childhood diarrhoea

As seen in table 1 above, the odds that mothers/caregivers will not go to the healthy facility because of lack of drugs at the facility are 1.12 times higher than that they will go to the healthy facility. The odds of not going to the health facility due to long distances covered are 1.93 times higher compared to the odds of going despite the clinic being far from their homes. The odds of not going to the healthy facility given that they have previous knowledge of the diarrhea condition are 10% (1-0.9x100) lower than the odds of going. The chances that mothers/caregivers will not go to the facility because of poor quality of services are 1.11 times higher than the chances that they will go because of poor services.

The study established that mothers/caregivers use antibiotics in managing diarrhoea due to unavailability of health facilities in nearby distances (OR 1.93, 95% CI: 1.03-3.65; P<.04), inadequate stock of drugs at the facility (OR 1.12, 95% CI: 0.60-2.10; P<.71), poor quality of medical care at the health facility (OR 1.11, 95% CI: 0.57-2.15; P<.75) and previous knowledge of the diarrhoea condition (OR 0.90, 95% CI: 0.49-1.66; P<.74). The study established that distance covered by mothers/caregivers to the health facility is an important factor such that investment on the same will go in a long way of improving the quality of primary health care. Deliberate efforts by the Government of Malawi i.e. promotion of mobile clinics and closely monitoring its outcome, constructing more healthy posts in areas with critical distance challenges can go a long way in challenging the status quo. The quality of care being provided at these health facilities should be improved by ensuring that drugs are always available, establishing good relationship between the patient and health service provider and reduction of waiting time at the healthy facility. On the other hand, drug use regulations should be improved at all levels and that health professionals should be encouraging mothers/caregivers to refrain from engaging in self-medication behavior as it has devastating effects on increased drug usage thereby contributing to drug resistant which poses a threat to anti-microbial resistance.

Conclusion

These findings add on the new knowledge on the determinants of antimicrobial use in diarrhoea management that is more specific to the Malawian situation. The antimicrobial resistance is more serious among under-five children since that is the period where there is growth spurt and development of vital organs. Since their immune system is not fully developed and that any damages happening during this time is irreversible especially in the first 2 years of life, there is need to exercise great caution when treating under-five children who are also presented with diarrhea disease. The GOM should focus on interventions that lessen sharing behavior of drugs among households by encouraging local councils through decentralization to include by-laws stopping the malpractice as well as targeted mass awareness on the dangers of self-medication. More also, communities should be encouraged to take full course of medication even though the disease symptoms diminish before the dosage elapses because such behavior contributes to drug resistance hence posing a serious threat to antimicrobial resistance efforts. There is a strong need to improve accessibility of medical facilities across the nation to ensure that the general citizenry irrespective of social-economic status are motivated to visit the government-owned health facilities. In addition, need to preserve the existing antibiotics due to the sharp decrease in the discovery of new antibiotics after 1970 such that efforts to make antimicrobial resistance a reality should be embraced by every nation including Malawi.