

# Antibiotic Dispensing and Consuming Awareness at the Community Level of Rangamati Sadar

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## ABSTRACT

**Background:** Antibiotic resistance is one of the major health problems, especially in developing countries, where relatively easy availability of antibiotics have led to higher incidence of abuse of antibiotics and greater levels of resistance compared to developed countries. The objective of this study was to investigate the existing knowledge, attitude, practice and awareness among the respondents about antibiotics.

**Materials and methods:** This descriptive cross-sectional survey was conducted among 336 peoples (120 medicine dispensers, namely pharmacists, and 216 consumers, as general public) selected by purposive, non-probability sampling, data collected by face to face interview, using a piloted mixed-type questionnaire.

**Results:** Among the dispensers, 65.0% have completed some sort of pharmacy course, 65.0% supplied antibiotics to the consumers without prescription, and 65.8% used to deliver antibiotics by considering signs and symptoms. All pharmacists had some understanding about antibiotics. On the contrary, 48.2% consumers did not have any idea about the medicines they consume. Most dispensers know about the correct doses (88.3%) and durations (87.5%) of almost all types of antibiotics. Significant numbers of consumers had almost no knowledge about the correct doses (56.9%) and durations (60.6%) of antibiotics. Among the dispensers and consumers, significant numbers have some knowledge on the adverse effects of dispensing (85.0% vs. 56.5%) and consuming (88.3% vs. 70.4%) antibiotics without doctor's recommendation, respectively. 76.7% dispensers have some ideas about the reasons of ineffectiveness of antibiotics. Conversely, 79.1% of consumers were almost unaware about the causes of antibiotic resistance.

**Conclusion :** The knowledge, attitude and practice about the awareness on rational use of antibiotics among the peoples of Rangamati Sadar were not found satisfactory. Adequate consciousness about the appropriate use of antibiotics and the demerits of improper use of it and its resistance should be apprehended by appropriate health education campaigns among the peoples.

**Key words :** Antibiotic resistance; Medicine dispensers; Medicine consumers; Antibiotic awareness.

## INTRODUCTION

There are 45 tribes living in the different parts of Bangladesh<sup>1</sup>. The estimated population of tribal peoples in Chattogram Hill districts is 1.35 million, of which 90% live

in hilly areas<sup>2</sup>.

In recent decades, antibiotic resistance and reduced sensitivity to bacteria have become a major public health problem in many countries. The World Health Organization has proposed regional strategy on antimicrobial resistance with the goal to minimize the morbidity and mortality due to antimicrobial resistant infection<sup>3</sup>.

In Bangladesh, people take antibiotic irrationally to prevent and treat various kinds of infections. But the improper use or misuse of antibiotics leads them to resistance. The people of Rangamati are also in the same risk. Cultural, socio-economic and technical factors as well as poor understanding about antibiotics contribute to this resistance.

The study aimed at finding out the level of awareness on antibiotic dispensation and consumption. In addition, the study tried to reveal the factors behind the cause of antibiotic resistance in the community level of Rangamati.

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## MATERIAL AND METHODS

This descriptive cross-sectional study was conducted at some selected localities of Rangamati Sadar Upazila, during the period of January to March 2019. Before conducting the survey, prior approval from the Ethical Review Committee of Rangamati Medical College was obtained. A total of 336 persons were selected conveniently, having age range from 16 to 64 years. Among them, 120 respondents were medicine dispensers, namely 'pharmacists', and 216 were general public, i.e. medicine consumers, residing at Rangamati Sadar Upazila. A questionnaire was developed containing information on 'base-line' socio-demographic characteristics of the respondents, specific information particularly obtained from medicine dispensers (Pharmacists) and comprehensive information about antibiotic awareness among medicine dispensers and consumers both. After explaining the purpose of the survey and obtaining verbal consent, the respondents were interviewed face to face and the data received were entered onto a questionnaire for each individual. The compiled data were assessed manually using a computer. IBM – SPSS Statistics (V. 20.0) software was used for necessary statistical analyses. The association between information of the respondents was verified by Pearson's Chi-square test of significance and p value less than 0.05 was considered as statistically significant. The finalized information was presented using univariate and bivariate tables.

## RESULTS

The mean ages of dispensers and consumers were quite similar ( $39.17 \pm 10.88$  years SD vs.  $33.11 \pm 12.15$  years SD) with a nearly comparable range (19 – 64 years vs. 16 – 60 years). Among the dispensers, 58.3% were within 30 to 50 years of age, while about 52% of the consumers were under 30 years of age. All dispensers and 70.4% among the consumers were males. Most of the respondents have studied up to Primary and Secondary levels (65.8% dispensers vs. 90.3% consumers) (Table I).

Among the pharmacist, majority (65.0%) have completed their pharmacy course. Most of the pharmacists (65.0%) disclosed that they have supplied Antibiotics to the patients or consumers on their demand without any prescription. Moreover, 65.8% of the dispensers agreed that they used to deliver Antibiotics to the consumers by considering the signs and symptoms of diseases by themselves (Table II).

Among the respondents 69.0% had the correct concept about which medicines are antibiotics. Appropriate dose and duration of each antibiotic was clear to 59.2% and 56.5% respondents, respectively. The consciousness about timely administration of antibiotics in proper doses was clear among 64.0% respondents. Though 66.7% respondents have ideas

about the adverse effects of dispensing antibiotics without doctor's advice, 76.8% of them have the knowledge about the adverse effects of consuming antibiotics without doctor's advice. Most (66.7%) of them were aware of the consequences of not consuming antibiotics in full course while 59.2% had almost no idea about the causes of ineffectiveness of antibiotics (Table III).

**Table I :** Base-line socio-demographic characteristics of the respondents (n = 336).

	Dispensers (n = 120)	Consumers (n = 216)	Total (n = 336)
<b>Age groups :</b>			
< 30 years	27 (22.5%)	112 (51.9%)	139 (41.4%)
30 – 50 Years	70 (58.3%)	67 (31.0%)	137 (40.8%)
> 50 Years	23 (19.2%)	37 (17.1%)	60 (17.8%)
<b>Sex :</b>			
Male	120 (100.0%)	152 (70.4%)	272 (80.9%)
Female	0 (0.0%)	64 (29.6%)	64 (19.1%)
<b>Educational status :</b>			
Up to primary	2 (1.6%)	93 (43.1%)	95 (28.3%)
Secondary	77 (64.2%)	102 (47.2%)	179 (53.3%)
Graduate & above	41 (34.2%)	21 (9.7%)	62 (18.4%)
<b>Occupational status :</b>			
Businessman	75 (62.5%)	48 (22.2%)	123 (36.6%)
Service holder	37 (30.8%)	59 (27.4%)	96 (28.6%)
Day labourer	0 (0.0%)	26 (12.0%)	26 (7.7%)
Others	8 (6.7%)	83 (38.4%)	91 (27.1%)
<b>Income level :</b>			
< Tk. 10000	28 (23.4%)	113 (52.3%)	141 (42.0%)
Tk. 10000 – 30000	78 (65.0%)	70 (32.4%)	148 (44.0%)
> Tk. 30000	14 (11.6%)	33 (15.3%)	47 (14.0%)

**Table II :** Specific information particularly obtained from medicine dispensers (Pharmacists) (n = 120).

	n	%
Completed any pharmacy course?		
Yes	78	65.0
No	42	35.0
Ever given Antibiotics to patients on demand without prescription?		
Yes	78	65.0
No	42	35.0
Ever given Antibiotics by considering the signs & symptoms of diseases?		
Yes	79	65.8
No	41	34.2

**Table III :** Comprehensive information on antibiotic awareness obtained from the respondents (n = 336).

	Dispensers (n = 120)	Consumers (n = 216)	Total (n = 336)
Q.1: Know which medicines are Antibiotics?			
Yes	120 (100.0%)	112 (51.8%)	232 (69.0 %)
No	0 (0.0%)	104 (48.2%)	104 (31.0 %)

Q.2: Know about the correct doses of all types of Antibiotics?			
Yes	106 (88.3%)	93 (43.1%)	199 (59.2 %)
No	14 (11.7%)	123 (56.9%)	137 (40.8 %)
Q.3: Know about the correct durations of all types of Antibiotics?			
Yes	105 (87.5%)	85 (39.4%)	190 (56.6 %)
No	15 (12.5%)	131 (60.6%)	146 (43.4 %)
Q.4: Know about the correct usage of Antibiotics in proper doses and duration?			
Yes	109 (90.8%)	106 (49.1%)	215 (64.0 %)
No	11 (9.2%)	110 (50.9%)	121 (36.0 %)
	Dispensers (n = 120)	Consumers (n = 216)	Total (n = 336)
Q.5: Have any idea about the adverse effects of dispensing Antibiotics without Doctor's advice?			
Yes	102 (85.0%)	122 (56.5%)	224 (66.7 %)
No	18 (15.0%)	94 (43.5%)	112 (33.3 %)
Q.6: Have any idea about the adverse effects of consuming Antibiotics without Doctor's advice?			
Yes	106 (88.3%)	152 (70.4%)	258 (76.8 %)
No	14 (11.7%)	64 (29.6%)	78 (23.2 %)
Q.7: Have any idea about the adverse effects of not consuming Antibiotics in full course?			
Yes	107 (89.2%)	117 (54.1)	224 (66.7 %)
No	13 (10.8%)	99 (45.9%)	112 (33.3 %)
Q.8: Have any idea about the causes of resistance/ineffectiveness of Antibiotics?			
Yes	92 (76.7%)	45 (20.9%)	137 (40.8 %)
No	28 (23.3%)	171 (79.1%)	199 (59.2 %)

● Pearson's Chi-square test significances : Q.1 to Q.8 (p < 0.001), Highly Significant.

## DISCUSSION

The average age of the respondents (n = 336) found in this survey that was  $35.27 \pm 12.05$  years with a range between 16 to 64 years. Most of respondents were under 50 years of age (80.8% among the dispensers vs. 82.9% among the consumers). Majority (About 81%) of the respondents was male and about 19% of the respondents were female.

It was revealed in this study that 65.0% of the pharmacists dispense antibiotics on demand without prescription. It was also found that 65.8% pharmacists dispense antibiotics by considering signs and symptoms of diseases. Hadi MA et al evaluated knowledge, attitude and practices of community pharmacists towards dispensing antibiotics without prescription in Makkah Province, Saudi Arabia and found that more than two-thirds (70.5%) of the pharmacists were not aware that was illegal practice<sup>4</sup>. Do Thi Thuy Nga et al in northern Vietnam revealed 'over the counter' sales of antibiotic without a prescription was 88% in urban and 91% in rural pharmacies. They also showed that 50% in urban and 28% in rural areas consumers commonly requested antibiotics without having a prescription<sup>5</sup>. Different studies from Abu Dhabi, UAE and Bangalore, India found that

68.4% and 66.7% antibiotic were sold over-the-counter without prescriptions respectively<sup>6,7</sup>. All those studies showed almost similar results to our study though some other study in Zambia showed that 97% clients requested non-prescribed antibiotics and 100% pharmacies dispensed it<sup>8</sup>.

On the other hand, Mohitosh Biswas et al in Rajshahi city, Bangladesh, found 26.7% of the participants experienced self-medication with antibiotics<sup>9</sup>. Others reported self-medication and purchasing of antibiotic without medical prescriptions in 23.3% and 35.2% of the respondents in Egypt and Pakistan<sup>10,11</sup>.

Self medication or receiving antibiotics among the populations depends on the educational and economical status and level of awareness. The lower level of receiving antibiotics in those studies may be due to the demographic characteristics of their study population. The population of the present study was in a remote district of Bangladesh without any industrialization. About 42% of the studied population was within low socio-economic status and 81.6% has educational status up to secondary school certificate level or below. The findings of the higher level of antibiotic dispensing by pharmacist and taking by the consumers were consistent with those demographic characteristic.

This study revealed that the concept about which medicines are antibiotics was known to 69.0% and knowledge about the correct and appropriate dose and duration of each antibiotic was clear to 59.2% and 56.6% respectively. Among the respondents 64.0% expressed importance of timely administration of antibiotics in proper doses. In Bangladesh, one study found that 74% did not know the appropriate use of antibiotics. They also reported that 51.71% did not complete the full course of therapy and 28.86% did not maintain dosing schedule. In addition, they reported 61.03% of the people knew that an antibiotic is a prescription drug and should not be used without doctor's prescription<sup>12</sup>. In the region of Hail, Saudi Arabia, out of 500 participants, only 34% completed antibiotic course<sup>13</sup>. Thuy Van Ha et al in Vietnam with 1000 households explored that 64.2% people were aware of prescription drugs and more than two-thirds (67.4%) of participants were aware of antibiotic use<sup>14</sup>. A public awareness study in a region of Cyprus revealed that approximately 70% of the respondents have intermediate knowledge on antibiotic consumption<sup>15</sup>. This study found that 66.7% of the respondents were aware of the consequences of not consuming antibiotics in full course.

It was apparent from this survey that 66.7% respondents have clear ideas about the adverse effects of dispensing antibiotics without doctor's advice, while 76.8% knew that antibiotics should not be consumed without doctor's advice. In the rural areas of Bangladesh around 44% doctors prescribe antibiotics in cold and fever before diagnosis. 48.6% patients

think that it is not always necessary to strictly follow the doctor's prescription<sup>16</sup>.

It was evident from the survey that only 40.8% respondents have clear concepts about the causes of antibiotic resistance, while 59.2% had almost no idea about the causes of ineffectiveness of antibiotics. Idea about antibiotic resistance varies in different studies from 36.2% in Saudi Arabia, 55.8% in Vietnam and 66% in Cyprus, which gives a picture of great amount of unawareness and a severe consequences of development of antibiotic resistance<sup>13,14,15</sup>.

### CONCLUSION

The level of knowledge regarding use and course of antibiotics among the respondents of Rangamati Sadar Upazila is poor, though majority of the pharmacists have completed their pharmacy course and most of them also dispense antibiotics by symptoms without any prescription. A sizeable majority of the respondents across the Upazila had no idea about the causes of ineffectiveness of antibiotics although majority was aware of the consequences of not using antibiotics in full course.

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### DISCLOSURE

All the authors declared no competing interest.

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