Original Paper

Basic Knowledge of Army Troops and their Relatives in Rangpur towards Antibiotic

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Abstract

Introduction: Inappropriate use of antibiotic may create several problems including emergence of drug resistant microorganisms, the rising costs of health-care services and the development of side effects. Misconceptions regarding antibiotic can lead to misuse of antibiotics. So, consumers' knowledge towards antibiotic may play a vital role in the success of treatment process.

Objectives: To investigate the level of basic knowledge towards antibiotics among troops of Bangladesh Army and their relatives in Rangpur, Bangladesh.

Materials and Methods: This cross-sectional study was conducted from January to March 2015 for 12 weeks using the structured questionnaire involving 389 respondents attending outdoor of various departments of Combined Military Hospital (CMH), Rangpur. A random knowledge score system was used to assess basic knowledge based on the answers provided.

Results: The mean age of the respondents was 30.434 years (SD=6.5365) with male (53.47%) predominance. Out of 389 respondents, 219(56.30%) respondents had a moderate level of knowledge. Most of the respondents (89.72%) could correctly identify that antibiotics are indicated for the treatment of bacterial infections. However, 348(89.46%) respondents incorrectly thought that antibiotics are also used to treat viral infections. Most of the respondents wrongly believed that antibiotics are indicated to relieve pain (68.69%) and reduce fever (77.38%). About 270(69.41%) respondents were aware of antibiotic resistance phenomena in relation to overuse of antibiotics. Age, sex and educational level were significantly associated with knowledge towards antibiotic.

Conclusion: Educational intervention is needed to promote prudent use of antibiotic.

Key-words: Antibiotic, Knowledge, Bangladesh Army troops and their relatives.

Introduction

Antibiotics are one of the most prescribed medicines and are used liberally by people all over the world[1]. Between 2000 and 2010, total global antibiotic consumption increased by more than 30 percent, from approximately 50 billion to 70 billion standard units, primarily in the developing world[2]. Though for the last seven decades antibiotics have saved million of lives, in the recent past the emergence and spread of several drug resistant microorganisms has rendered the management of many infectious diseases difficult. The world is possibly facing the single biggest threat against antibiotic resistance in the area of infectious diseases[3]. Though resistance to antibiotics is a natural and inevitable biological phenomenon, it is accelerated by inappropriate use of antibiotics[4,5]. Furthermore, inappropriate use of antibiotics produce unwanted allergic reactions, can mask the correct diagnosis and delay appropriate therapy, increase morbidity, mortality and health care costs[6].

The lack of knowledge may greatly influence the probability of inappropriate use of antibiotics[7]. To solve the problem of inappropriate use of antibiotic, it is necessary to understand patients' knowledge which may facilitate the development of strategies to educate patients[8]. Moreover, consumers can play an important role in reducing the inappropriate and excessive utilization of antibiotic. There are studies among general public regarding knowledge, belief and behaviour on antibiotic use[9-13]. On the other hand, Azevedo MM et al[14] had conducted study to assess

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knowledge of students towards antibiotics. Knowledge of primary and tertiary care attendants towards antibiotics was assessed in other studies[15,16]. This study aimed to investigate the level of basic knowledge towards antibiotic among troops of Bangladesh Army and their relatives in Rangpur, Bangladesh.

Materials and Methods

This cross-sectional study was conducted over 12 weeks from January to March 2015 using structured questionnaire. Respondents were the patients and their relatives (e.g. patients' family members) attending outdoor of various departments of Combined Military Hospital (CMH), Rangpur. A sample size of 395 was selected for this research with 95% confidence interval.

A convenience sampling method was adopted. The inclusion criteria were: (1) serving/served Bangladesh Army troops and their relatives (son/daughter/father /mother) (2) adults aged 18 years and over; (3) respondents who were aware of the term 'Antibiotic'. Exclusion criteria was: (1) health care providers or students from any medical/health related field. Respondents were explained about the objectives of the study and verbal permission was taken from them. They participated voluntarily without any problem. On average, the respondents required 15-20 minutes to complete the self-administered questionnaire.

The questionnaire was developed by reviewing earlier studies[9-12,17]. The questions in the questionnaire were grouped broadly into two categories: (a) socio-demographic characteristics of the respondents (b) knowledge on antibiotic. The respondents' knowledge was tested with 12 statements covering role of antibiotics (five statements), identification of antibiotics (two statements), dangers of antibiotics (antibiotic resistance, allergic reaction and side effects: one statement for each) and completion of treatment course (2 statements) with ''yes, no, do not know'' responses. The questionnaire was constructed by principal author in English language initially and then translated into Bengali language. A pilot study was conducted on 20 volunteers and subsequently some of the questions were reconstructed for better understanding. To assess the knowledge on antibiotics one mark was awarded for each correct answer and zero for each wrong or 'do not know' response, with a maximum obtainable correct score of 12. A random knowledge score system was used to assess the level of knowledge based on the answers provided. The total knowledge score was determined by three level indicated by poor (0-4), moderate (5-8), good (9-12). All data were analyzed using Microsoft Excel.The influence of demographic characteristics on knowledge was analyzed using Chi Square test. The level of statistical significance was set at $p<0.05$. The data was subjected to simple descriptive statistical analyses including frequency distribution, mean and finally was expressed in percentage.

Results

A total of 395 questionnaires were distributed to the attendees at the outpatient departments of CMH Rangpur. However, 6 of the questionnaires were found incomplete and therefore were excluded from the analysis (usable rate of 98.48%). In demographic characteristics (Table-I), out of 389 respondents, most of the respondents (56.04%) were within the age group of 25-34 years. The mean age of the respondents was 30.434 years (SD=6.5365). Among 389 respondents, 208(53.47%) were male and 181(46.53%) were female. Most of the respondents (92.03%) had completed at least Secondary School Certificate (SSC) examination. Majority of the respondents were housewives (46.53%) followed by Non-commissioned officers (41.64%), Sainiks (8.23%), Retired persons (1.54%) and others.

Table-I: Distribution by demographic characteristics (n=389)

Characteristics	Number	Percentage
Age (Years)		
18-24	69	17.74
25-34	218	56.04
35-44	89	22.88
45-54	13	3.34
Gender		
Male	208	53.47
Female	181	46.53
Educational status		
Upto Class X	31	7.97
SSC	187	48.07
HSC and above	171	43.96
Employment status		
Housewife	181	46.53
Others(student,businessperson)	4	1.03
Sainik	32	8.23
Non-commissioned officer	162	41.64
Junior commissioned officer	4	1.03
Retired person	6	1.54

More than half of the respondents (56.30%, n=219) had a moderate level of knowledge with a median total knowledge score of 5 out of 12 (Table-II).

Table-II: Level of knowledge (n=389)

Level of knowledge	Number of respondents	Percentage
Poor (0-4)	153	39.33
Moderate (5-8)	219	56.30
Good (9-12)	17	4.37

Table-III: Association of demographic characteristics with level of knowledge(n=389)

Characteristics	Level of knowledge			P value (x^2 test)
	Poor (Percentage)	Moderate (Percentage)	Good (Percentage)	
Sex				
Male	70 (33.65)	127 (61.06)	11(5.29)	
Female	83 (45.86)	92 (50.83)	6 (3.31)	0.042
Age (Years)				
18-24	33 (47.83)	35 (50.72)	1(1.45)	
25-34	87 (39.91)	123 (56.42)	8 (3.67)	
35-44	26 (29.21)	57 (64.05)	6 (6.74)	0.036
45-54	7 (53.85)	4 (30.77)	2 (15.38)	
Educational Status				
Upto Class X	16 (51.61)	15(48.39)	0 (00)	
SSC	73 (39.04)	110(58.82)	4(2.14)	0.049
HSC and above	64(37.43)	94(54.97)	13(7.60)	

From the assessment of the knowledge regarding the role of antibiotics (Table-IV), it was found that the highest correct response in the knowledge domain was in identifying antibiotics as a means of treating bacterial infection (89.72%). However, 348(89.46%) respondents incorrectly thought that antibiotics are used to treat viral infection, which is the highest incorrect response in the knowledge domain. Furthermore, 301(77.38%) respondents incorrectly thought that antibiotic can cure all infection. For the identification of antibiotics, more than half of the respondents (51.67%) could correctly identify that paracetamol is not an antibiotic. In addition, about 270(69.41%) respondents correctly answered that overuse of antibiotics could cause antibiotic resistance.

Table-IV: Knowledge statements (n=389)

Statement	Correct	Incorrect	Do not know
Antibiotics are medicines that can kill bacteria	349(89.72)	32 (8.23)	8(2.05)
Antibiotics can be used to treat viral infections	25(6.43)	348 (89.46)	16 (4.11)
Antibiotics can cure all infections	72(18.51)	301(77.38)	16 (4.11)
Antibiotics are indicated to relieve pain	105(26.99)	268(68.89)	16(4.12)
Antibiotics are used to reduce fever	80(20.56)	205(52.70)	104(26.74)
Penicillin is an antibiotic	175(44.99)	114(29.30)	100(25.71)
Paracetamol is an antibiotic	201(51.67)	148(38.05)	40(10.28)
Overuse of antibiotics can cause antibiotic resistance	270(69.41)	90(23.14)	29(7.45)
Antibiotics may cause allergic reaction.	167(42.93)	127(32.65)	95(24.42)
Antibiotics do not cause side effects	118(33.33)	212(54.50)	59(15.17)
Taking less antibiotic than prescribed is healthier than taking the full course prescribed.	220(56.56)	126(32.39)	43(11.05)
Taking an antibiotic should be stopped when symptoms are improving	164(42.16)	200(51.41)	25(6.43)

Figure-I shows most of the respondents (78.66%) got information about antibiotics from doctors. Other sources of information includes medical assistant (MA) (9.25%), nurse (3.60%), television and newspapers (6.43%) and others.

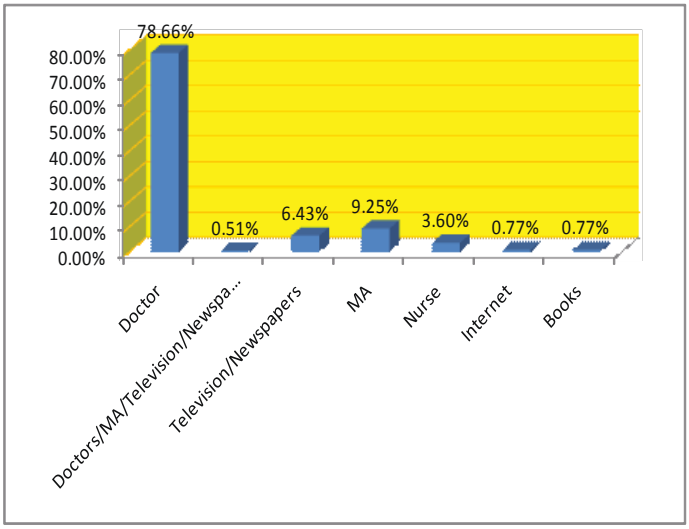

Fig-I: Percentage of participants by sources of information about antibiotic.

Discussion

This study found respondents have superficial knowledge regarding antibiotics. There is a great confusion regarding how antibiotic works against diseases. Most of them knew that antibiotics are effective against bacterial infections (89.72%), but had inappropriate knowledge regarding antibiotic's effectiveness for viral infections. More than half of the respondents (89.46%) wrongly believed that antibiotics can be used to treat viral infections. This finding is comparable with a study conducted in Malaysia (83%) by Lim KK and Teh CC[12] but lower proportions were observed by McNulty CA et al[9] in Britain (54%), by Widayati A et al[11] in Indonesia (71%).

In this study, most of the respondents (77.38%) wrongly believed that antibiotics can cure all infections. In contrast, this misconception was comparatively low in previous studies by Widayati A et al[11] and Oh AL et al[10] which were 40% and 25% respectively. Moreover, a study carried out in Bangladesh by Saha MR et al showed, 30% participants thought that antibiotics can be used in any disease[16]. Confusion persisted when most respondents of this study wrongly believed that antibiotics are indicated to relieve pain (68.89%) and reduce fever (77.38%). On the other hand, these findings were comparatively low (51% and 46.6% respectively) in a study by Oh AL et al[10] in 2009. More than half of the respondents failed to identify penicillin as an antibiotic and lacked the knowledge to differentiate between antibiotic and other medicine, eg paracetamol. This finding is consistent with the study by Oh AL et al, which reported that 56.9% respondents identified paracetamol as antibiotic[10]. Two hundred and seventy (69.41%) respondents had the knowledge regarding risk of overusing antibiotic such as antibiotic resistance. But as it was structured Questionnaire, their knowledge regarding definition of antibiotic resistance could not come into view. A study by Oh AL et al[10] found that 59.1% general people in Malaysia knew overuse of antibiotic can cause antibiotic resistance.

More than half of the respondents (56.56%) had correct knowledge to complete the full course of antibiotics which is comparable to previous studies done in Hong Kong (58%) by You JHS et al[13] and Taiwan (50.1%) by Chen C et al[18]. Oh AL et al[10] in their study observed that higher proportion of the respondents (71.1%) had correct knowledge to complete the full course of antibiotics. A survey by Pechère JC et al[19] carried out in 9 countries noticed that 69% of the patients claimed to have taken the course until the end (United Kingdom, 90%; Thailand, 53%). A study by Saha MR et al[16] carried out in outpatient departments of 3 tertiary hospitals in Bangladesh showed that 51.71% of the patients did not complete the full course of therapy.

One hundred and sixty seven (42.93%) respondents correctly answered that antibiotic may cause allergic reaction. In a study by Oh AL et al, this finding was slightly higher (53.9%)[10]. In comparison, Lim KK and Teh CC in their study observed that the majority (82.5%) were aware about the allergic reactions caused by antibiotics[12].

One hundred and eighty (33.39%) respondents wrongly believed taking less antibiotic than prescribed is healthier than taking the full course prescribed which is similar to the study by Lim KK and Teh CC[12]. In this study half of the respondents (51.41%) wrongly thought that antibiotic should be stopped when symptoms improved. In comparison, this percentage is comparatively low in similar studies[10,12,20]. In study by Saha MR et al[16] in Bangladesh, 39.14% of the respondents replied that they stopped antibiotics when the symptoms disappeared.

Taking suboptimal dose of antibiotic is one of the causes of increasing antibiotic resistance[21]. Higher educational level is significantly associated with increased knowledge towards antibiotic which have already been evidenced in previous studies[10,13,17,22].

However, this study had some limitations. A convenient sampling method was utilized in this study, it might create the possibilities for selection bias. Moreover, this study only emphasized consumers' knowledge regarding antibiotic. Further study may be carried out regarding their behaviour and attitude towards antibiotic use.

Conclusion

This study identified the area of misperceptions towards antibiotics among the respondents. There are scopes for improving the consumers' knowledge of antibiotic use through educational interventions. Strategy should be made in this aspect among army troops and their relatives immediately. According to findings of present study, emphasis may be given more to female, older age, and those with lower formal education. On the other hand, doctors must explain their prescribing decision to the patients in detail. Other health care professionals should inform correctly about antibiotics during dispensing. Moreover, a policy could be taken at government level to grow awareness regarding antibiotics through campaign, seminar, symposium etc.

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