An assessment on attitudes on antibiotic usage and knowledge regarding antibiotic resistance among the general public in Sri Lanka

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1. Introduction

The emergence and spread of antibiotic resistance have become a significant burden worldwidein recent decades (WHO, 2014). Antibiotics referred to the medicines formulated to treat and prevent bacterial infections which are administered to patients based on a certified health care professionals' prescription (Ajibola et al, 2018). Antibiotic resistance leads to increased healthcare costs, limited drug options for treatment, and longer hospital stays (World Health Organization, 2015).

In Sri Lanka, Anti-microbial resistance is a key challenge that has been faced by the health care sector. A study conducted at NHSL in 2014 has shown that almost all bacterial pathogens which are responsible for Ventilator-Associated Pneumonia were multidrug resistant. A similar study was carried out in teaching hospital Anuradhapura which has identified 70% of clinically significant Acinetobacter spp., to be having resistance to two or more antimicrobial agents (Liyanapathirana and Thevanesam, 2016). The data reveal the need for a potent action that can address the occurrence of antibiotic resistance in Sri Lanka. Antibiotic resistance is known to be associated with incomplete courses, inadequate dosing, and counterfeit drugs. The improper use of antibiotics may arise from a complex interaction between numerous factors, such as diagnostic uncertainty, prescribers' knowledge, perceptions of patients to the patient-doctor interaction, andinsufficient patient education by physicians. In addition, other factors include patients' knowledge, beliefs, and attitudes towards antibiotic use, self-medication, and patients' experience with antibiotics (Ajibola et al, 2018). Therefore, this study aimed at investigating into the burden from patients' aspect by evaluating their attitude and knowledge of Antibiotic resistance towards antibiotics usage.

2. Materials and Methods

The survey was conducted during the period from May to July 2021. The Sample size was 600 which comprised of students below 21 years of age, salaried employees, non-salaried employees, and unemployed personals. A literature review was conducted to identify potential items for the study instrument from similar previous studies. Based on the literature search, the study questionnaire was adapted from validated surveys (Awad et al, 2015). Data were collected anonymously via a self-administered online questionnaire form, which was randomly distributed among the community.

Close-ended questions were included in the first section that recorded the respondents' socio-demographic characteristics. Section two to seven consisted of the practice of antibiotic use, self-medication, knowledge, and attitude about antibiotics, doctors' habits, and the patient-doctor relationship. Section eight consisted of 10 statements to evaluate respondents' knowledge about antibiotic resistance with a five-point Likert scale.

3. Result and Discussion

According to the demographic characteristics of 600 individual respondents, 67.7% were females and 85% were between the 21-29 age category. Most of the respondents were well-educated, having 81% above the Advanced level, with 72.5%, undergraduates and 9%, possessing postgraduate qualification. Table 01 shows the self-medication pattern of the respondents.

Table 01. Self-medication pattern of respondents

	Practice	Frequency n	Percent %
Reasons for self-medication	*To save time due to busy schedule*	476	45.51
	Ability to purchase drugs easily from pharmacies	230	21.9
	High costs of visits to doctor	109	10.4
	Less severity of the disease	225	21.51
	Lack of trust toward doctors	6	0.57
Locations for obtaining medications	*pharmacies*	480	55.7
	supermarket pharmacies	208	24.15
	from home (previously purchased)	132	15.33
	borrow from friends	41	4.76
From whom get advice	*pharmacist*	382	62.52
	family members	142	23.24
	Friends	87	14.24
factors considered for selection of antibiotics	*Type of antibiotic*	415	31.58
	Brand of antibiotic	182	13.85
	Price of antibiotic	141	10.73
	Indication for use	192	14.61
	Adverse reactions	215	16.36
	Availability	169	12.86
Dose determination	*Consulting doctor*	418	40.38
	Consulting pharmacist	300	28.9
	Family members	48	4.63
	Internet	100	9.6
	Media	2	0.19
	Previous experience	156	15.0
	Guessing	11	1.06

Out of all participants, 457 (76.2%) self-medicated themselves with antibiotics as shown in table 1. Regarding the reasons for self-medication (n=421, 42.5%) because it is convenient due to their busy schedules, most of the participants selected antibiotics for self-medication on basis of a recommendation from pharmacists (n=382, 62.5%). Nearly 31% of their selection was based on antibiotic type. The majority of participants (n=413, 52%) obtained from pharmacists; 16.6% (n=132) of responses stated that they used previously purchased antibiotics for self-medication and 5.2% (n=41) responses stated that they obtained antibiotics from friends. The dose determination had been done mainly by consulting a doctor (40.38%) followed by pharmacists (28.9%), previous experience (15%), internet (9.6%), family members media, and guessing had also been practiced by few respondents (<5%).

The attitudes of the respondents on the use of antibiotics, the median (IQR) attitude score was 3 (2.0)out of a maximum score of 6, which showed a moderate level. Nearly one-third of respondents were uncertain whether to use antibiotics for treatment of sore throat or not. It showed a high rate of negative attitudes to the use of antibiotics for the treatment of cough. The multivariate logistic analysis identified that the age category 40-49 years, education level, education level category graduate/ bachelors, monthly income, and work in the medical field as the factors which were significantly associated with the attitude score.

The median (IQR) knowledge score of respondents was 4 (2.0) out of a maximum score of 8 which showed moderate knowledge; 6.5% did not indicate any correct response, whereas 35.6% listed 1-3 correct responses show a low level of knowledge. The majority of respondents correctly agreed only on the statements: "if you get side effects during a course of antibiotics treatment, you should stop taking them as soon as possible" and "different antibiotics are needed to cure different diseases". They showed low knowledge about whether antibiotics were effectiveagainst cough, cold, viruses, fungal, and bacterial infections. The majority were uncertain about the usage and safety of antibiotic usage. The study results were comparable to the results reported in Kuwait (Awad et al., 2015).
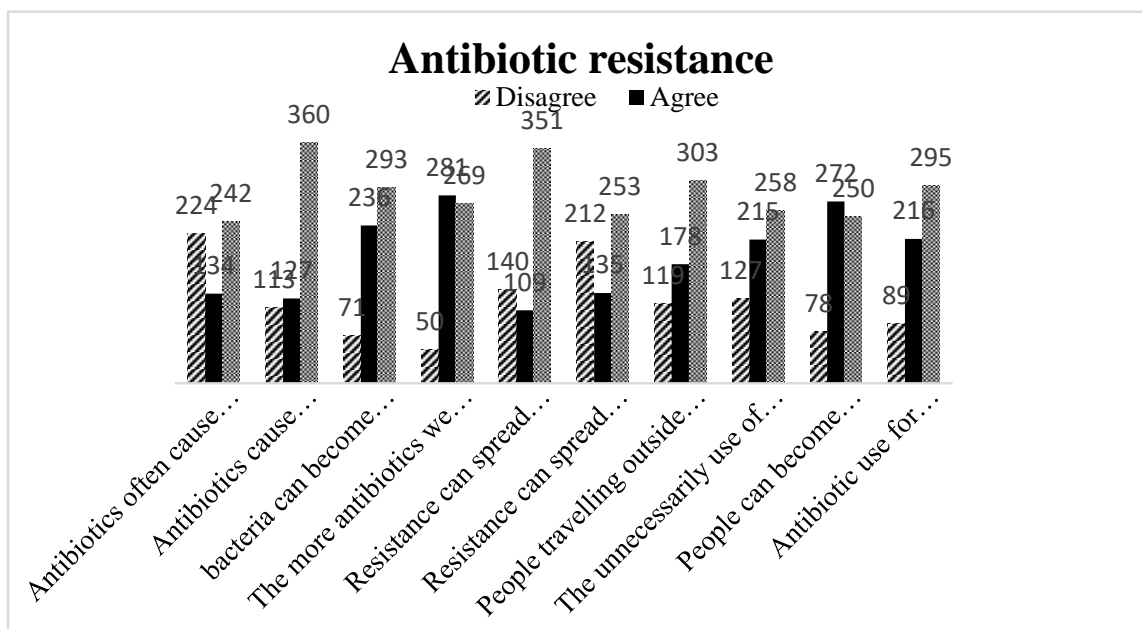

Figure 01. Knowledge on antibiotic resistance

Further, the study population was less knowledgeable and uncertain about antibiotic resistance. The median (IQR) knowledge on antibiotic resistance score was 2 (2.75) out of a maximum score of 10 which shows low knowledge. Nearly half of the respondents incorrectly agreed that "people can be resistant to antibiotics". The majority was uncertain on eight statements

out of tenas illustrated in the figure, which signals the gap between the proper knowledge on the burden of antibiotic issue.

The findings illustrate that there is a clear confusion and misconception among the focused population regarding antibiotics and their uses which leads to irrational use of antibiotics, arising aimportant issue that results in serious medical, social, and economic consequences. It was figured out that community pharmacists were the most accessible health care providers that can be contributed to public knowledge about correct antibiotic usage.

4. Conclusions

The study reveals that there was a significant association between age, education level, and occupation with the knowledge level. Low knowledge on antibiotic resistance provides further insight into designing future interventions to promote specific messages to reduce the knowledgeand attitude gaps as an effort towards preventing the development of antibiotic resistance. The malpractices needed to be studied in depth to understand why people practice them and what can be predicted. Proper awareness programmes, extension services are needed to be brought together with changes in the health care sector to eliminate the AMR burden successfully.

5. References

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