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# Knowledge, Attitudes And Practices On Antibiotic Therapy Among Parents Of Children Admitted To A Specialized Children's Hospital In Sri Lanka

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**Abstract:-** Antibiotics are used to prevent and treat bacterial infections. It is mostly prescribed for sick children globally than for adults. Antibiotic resistance is a critical global health issue. Over-prescription and inappropriate self-medication are the main culprits of antibiotic resistance. The objective of this study was to assess knowledge, attitudes and practices regarding antibiotic therapy among the parents of children getting admitted to a specialized children's hospital in Sri Lanka. A descriptive cross sectional study was carried out with 403 participants at Sirimavo Bandaranayake Specialized Children's Hospital, Sri Lanka from January to March, 2020. A pre-tested, self-administered questionnaire was used to collect data. Participants had 51.85% overall knowledge on scale. Urban parents had higher knowledge (59%) than rural parents. 67% have never heard of antibiotic resistance and 69% have never received health education on antibiotics. 25% recognized that antibiotics can treat bacterial infections. Amoxicillin was the mostly identified antibiotic. 80.9% responded that antibiotics cure viral flu. Majority (64%) strongly agreed that parents should be further educated on pediatric antibiotic use. Parents had good attitudes (78.21%) and practices (71.27%) in using antibiotics. The study concludes that Sri Lankan parents have moderate knowledge but they have achieved good attitudes and practices. Parental health education on antibiotics was critically poor. Parents believe that they should be further educated on judicious antibiotic use. Majority never self-medicate antibiotics to children without physicians' prescription. Physicians were the main source of information, and involvement of nurses and other healthcare professionals was low. Telecommunication minimally contributes in community health education on antibiotics.

**Keywords:** Antibiotics, Parents, Paediatric, Antibiotic resistance, Knowledge

**Introduction -** Antibiotics are medicines, which are used to prevent and treat bacterial infections as defined by the World Health Organization-WHO (World Health Organization, 2018). One of the major causes to seek medical advices world widely is acute illnesses in children (Williams *et al.*, 2018). They are more prone to get infectious diseases than adults and it is often difficult to etiologically diagnose them because of the non-specific manifestations of infections. Therefore, the microbiological tests are more appropriate for the infected children to confirm their definitive indication and to decide the initiation of rational antibiotic therapies (Chaw *et al.*, 2018). The evidence shows that, globally, the most common prescription drugs given to children are antibiotics(Vangay *et al.*, 2015). Antibiotic resistance is a rapidly emerging global public health crisis, especially in countries where resources of health care are limited (Williams *et al.*, 2018)(Chaw *et al.*, 2018)(Van Hecke *et al.*, 2019)(Hsia *et al.*, 2019)(McMullan *et al.*, 2019)(Fink *et al.*, 2020)(Schrier *et al.*, 2018). In developing countries where health facilities such as laboratory testing facilities for the community are limited, the bacterial species such as *Streptococcus*, *Salmonella* and *Helicobacter pylori* have reported antibiotic resistant patterns. In these countries, the infectious diseases are common and hold higher rates (Chaw *et al.*, 2018). Inappropriate

prescribing of antibiotics for children can be commonly noted during regular clinical practice in clinical setup (McMullan *et al.*, 2019)(Choe and Shin, 2019). According to WHO, self-medication can be defined as using pharmaceutical or medicinal products by the consumer to treat self-recognized disorders or symptoms, the intermittent or continued use of a medication previously prescribed by a physician for chronic or recurring disease or symptom, or the use of medication recommended by lay sources or health workers not entitled to prescribe medicine (Arulmoli, Sivachandiran and Perera, 2009). It increases inappropriate use of antibiotics, further leading to antibiotic resistance (Al-Dosari, 2013). Antimicrobial stewardship program is the most appropriate strategy to prevent antimicrobial resistance and has been recognized as the key intervention to promote effective and proper prescribing of antibiotics. But there is a remarkable lack of assessment to evaluate the effectiveness of AMS program (McMullan *et al.*, 2019). It focuses on improving the quality of treatment by initiating appropriate use of antibiotics and reducing its' over use (Schrier *et al.*, 2018).

Inappropriate parental education, fewer number of children in the family, and less exposure to sources of health information, especially social media and telecommunication, are significant reasons of weak parental knowledge on antibiotics. Generally, the existing misconceptions and inappropriate knowledge lead parents to misuse antibiotics and promote self-prescribing patterns. The parents do not consider the fact that some illness of children do not require antibiotic treatments. Parents expect the physicians to prescribe antibiotics to sick children even though it is not needed (Hernández-Díaz *et al.*, 2019).

The results reflect the sources of information which help parents to gain the knowledge regarding antibiotic use and the risk of developing antibiotic resistance among children due to misuse of antibiotics. It helps to evaluate the effectiveness of current antibiotic related health educational interventions and programs in Sri Lanka. Furthermore this is helpful in designing and updating health educational interventions and antibiotic guidelines using modern telecommunication methods and social media to approach the parents of children as well as the general population of Sri Lanka.

**Objective -** The general objective of this study is to assess the knowledge, attitudes and practices regarding antibiotic therapy among the parents of children admitted to a specialized hospital in Sri Lanka.

**Methodology -** A descriptive cross sectional study was conducted at the medical wards of Sirimavo Bandaranayake Specialized Children's Hospital, Peradeniya, Sri Lanka from January to March, 2020. 403 parents of children who were admitted to the medical wards participated. Parents who were illiterate in Sinhala or Tamil were excluded from the study. A pre-tested, self-administered, structured questionnaire was used to collect data. The collected data was arranged in a MS Excel spread sheet. IBM SPSS Statistics version 21 was used to analyze data.

**Results and discussion -** Among total 403 participants, there were 389 (96.5%) mothers. Majority of the participants were educated up to advanced level, Sinhala (88.3%), and living in rural sector (74.4%). Most families received a gross monthly income between 25,001-50,000LKR. 26.6% were working mothers. Sri Lankan parents in this study had overall 51.85% knowledge on antibiotics on the scale, which is greater than the assessed overall knowledge in rural Chinese parents (39%). Similarly to the Chinese study, urban Sri Lankan parents showed higher overall knowledge (59.37%) than rural (50%) and estate living (43.88%) parents (Yu *et al.*, 2014). More than half (69%) of parents responded that they have never received

health education on antibiotics. Among 31% of parents who have received health education responded that physicians (45.14%), Nurses and other healthcare professionals (16.73%), and pharmacists were (10.51%) their main sources of education which is a similar response to previous studies in China, Palestine and Saudi Arabia, but the contribution of doctors was over 80% in those countries (Yu *et al.*, 2014)(Zyoud *et al.*, 2015)(Al-Ayed, 2019). The contribution of newspaper and telecommunication on health education regarding antibiotics in Sri Lanka was significantly low according to the results.

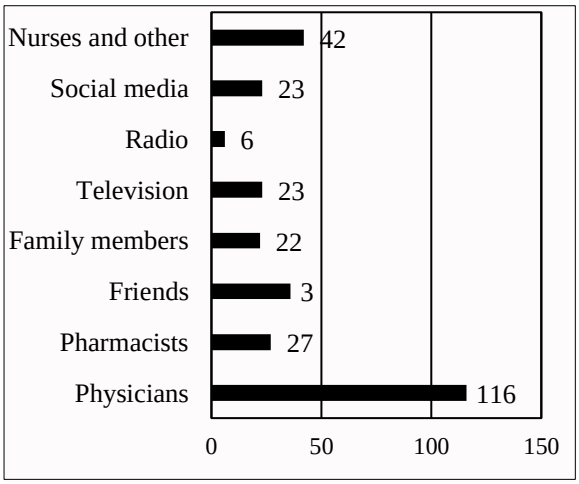


*Figure 1 - Sources of Health Information on Antibiotics*

From the participated population in this study, 272(67%) of parents identified that antibiotics fight against infections. Among that, 73.4% of parents thought that antibiotics can cure viral infections which is a similar finding in rural Chinese parents (79%) (Yu *et al.*, 2014). Only 25.1% of parents knew that antibiotics are indicated for bacterial infections. A previous study in Sri Lanka concluded that only 4.7% knew that antibiotics fight against bacterial infections (Premaratne *et al.*, 2006), which shows an improvement of parental knowledge over the years. Even though the participants identified pneumonia (51.9%), urinary tract infections (45.9%), and meningitis (33%) as antibiotic indicated diseases, they also identified viral flu (80.4%), common cold/influenza (54.5%), and Dengue fever (35.7%) can be treated with antibiotics. Similar results were found from China and Jordan. In both countries, more than 70% of participants did not know that antibiotics are solely indicated for bacterial infections, and reported that antibiotics could be indicated for fever, sore throat, and rhinitis (Yu *et al.*, 2014)(Mukattash *et al.*, 2020). The results show that the Sri Lankan parents recognized Amoxicillin (48.9%), Cefuroxime (19.0%) and Penicillin (19.4%) as antibiotics, meanwhile Paracetamol (35.5%), Piriton (28.0%), and ORS (25.3%) were also identified as antibiotics.

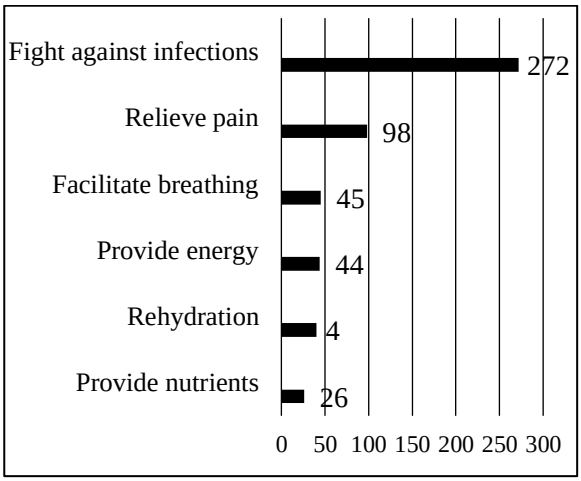


*Figure 2 - Purposes of antibiotics*

67% of Sri Lankan parents in this study had never heard of the term "antibiotic resistance", and 39.7% of parents failed to decide whether antibiotic resistance is a global public health issue, but 83% American parents were familiar with the term (Szymczak *et al.*, 2018). Almost all the parents (96.3%) agreed that they should be further informed about judicious use of antibiotics. Chinese parents also showed the same results that 68% of them had little knowledge on antibiotic resistance and majority wished to be educated more about appropriate use of antibiotics. Furthermore 63% agreed that excessive antibiotic use can increase the risk of antibiotic resistance (Yu *et al.*, 2014).

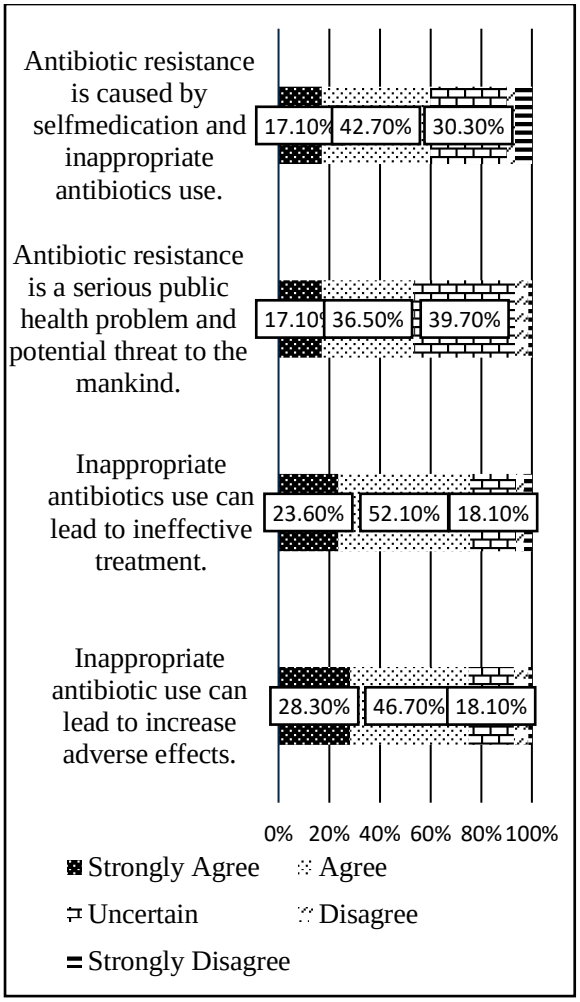


*Figure 3 - Parental knowledge on antibiotics*

In general, participants had 78.21% good attitudes in the scale regarding antibiotic therapy. Majority of parents reported that they never give antibiotics to their children without physicians' prescription in any circumstances. 26% of parents think that sometimes they can self-medicate antibiotics to their children either when they think the child's condition is not too serious or when the physicians have prescribed same antibiotics previously, for the same symptoms, while 19.90% parents sometimes tend to give antibiotics to children when they do not have enough time to spend at clinics or lack of money to pay for medical consultation. A local study showed the same results except 89% mothers implied that mild symptoms in child is a reason for self-medication practices (De Silva *et al.*, 2017). Lebanese parents (24.7%) also showed the same results of self-prescribing antibiotics to children because of unaffordable clinic visits (Hallit *et al.*, 2020).

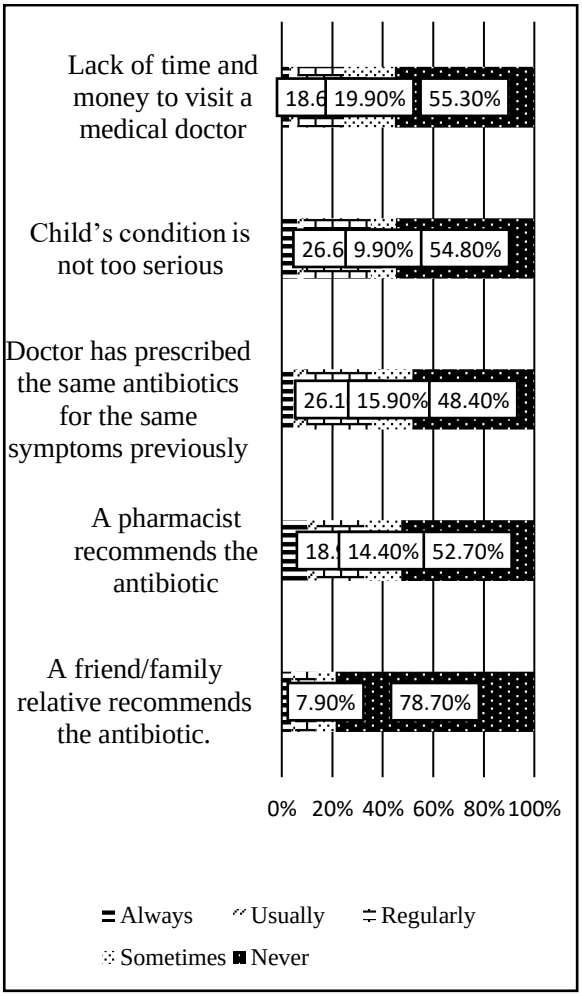


*Figure 4 - Parents' reasons for self-medicating antibiotics without physicians' prescriptions*

Almost all the parents (96.3%) agreed or strongly agreed that they should be further informed about judicious use of antibiotics. Majority of the parents believed that antibiotics are excessively used in Sri Lanka, and they think that the physicians should confirm the cause of illness using laboratory test or physical examination, before prescribing antibiotics to children. Rural Chinese parents also showed the same results that 68% of them had little knowledge on antibiotic resistance and majority wished to be educated more about appropriate use of antibiotics. Furthermore 63% agreed that excessive antibiotic use can increase the risk of antibiotic resistance (Yu *et al.*, 2014).

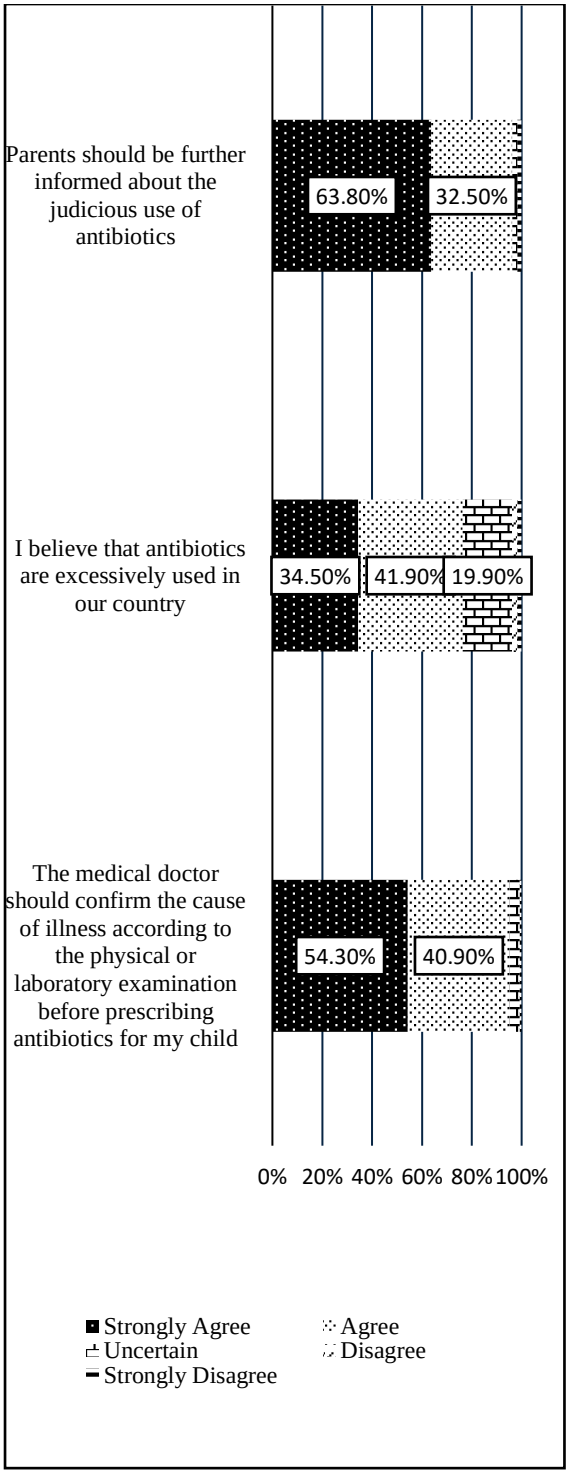


*Figure 5 - Parental attitudes towards antibiotics*

The participants had 71.27% good practices in utilizing antibiotics. Majority (81.6%) of the participants reported that they do not preserve leftover antibiotics at home. Opposite to this result, Chinese parents reported that they tend to keep antibiotics at home for future use and self-medicate children with leftover antibiotics (Yu *et al.*, 2014).

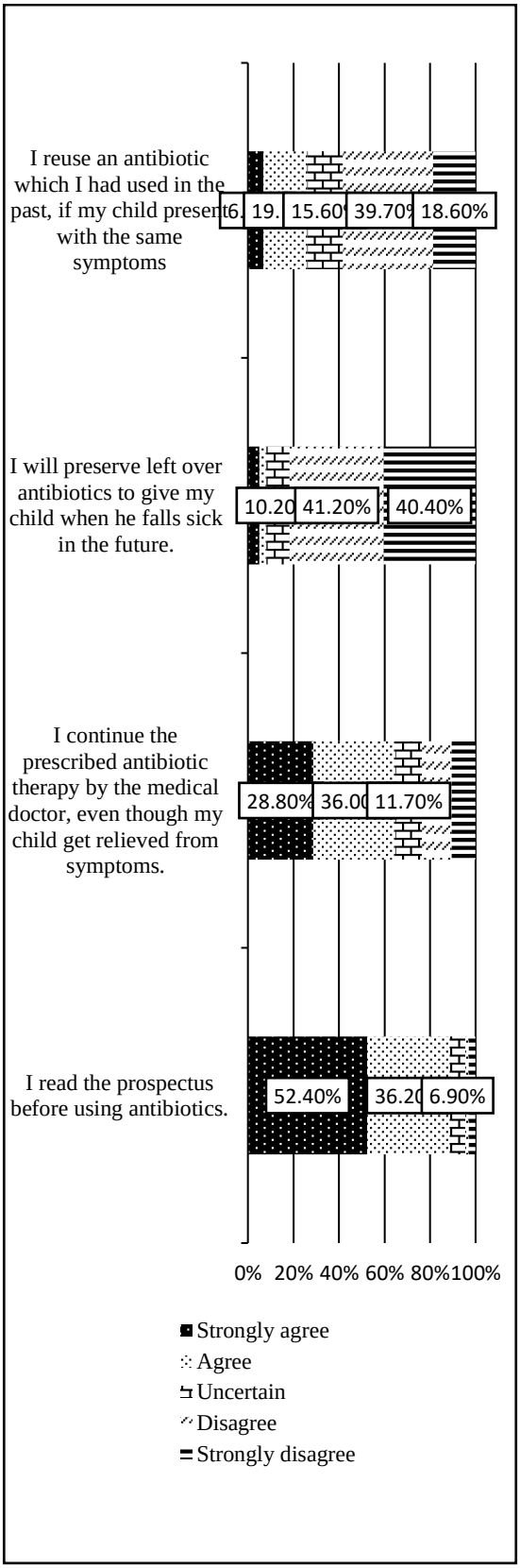


*Figure 6 - Parental practices*

**Conclusion -** Sri Lankan parents have moderate (30%-50% on scale) knowledge on paediatric antibiotics therapy but they have achieved good attitudes and practices. The exposure of parents to health education was critically poor in areas such as knowledge on use and types of antibiotics, bacterial diseases and antibiotic resistance. Parents believe that they should be further educated on judicious use of antibiotics. Majority of parents never self-medicate antibiotics to their children without medical prescription. More than half of the parents tend to continue recommended antibiotic therapy even if the symptoms get relieved. They knew that inappropriate use of antibiotics cause adverse effects and ineffective treatment. Physicians were the main educators on antibiotics, and involvement of nurses and other healthcare providers was low. Telecommunication methods and newspapers minimally contribute in community health education regarding antibiotics.

**Limitations -** The study was conducted in a selected study setting. There was a lack of participants from some sociocultural groups, and residential areas. The study did not approach dosing and administration practices of parents in giving antibiotics to children, and sociocultural influences on antibiotics, which is important to understand of parental practices, beliefs, and misconceptions.

**Future recommendations -** Conducting an island survey in future to assess the knowledge attitude and practices including participants from all provinces belonging to different strata should be considered. Designing new effective health education programmes is important. Self-medication, drug dosing and administration pattern of antibiotics in children could be studied in future studies. A survey is recommended to identify the scope of telecommunication in community health education. Furthermore, the establishment of strict antibiotic guidelines should be considered in a legal aspect.

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