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The Level of Knowledge and Practices of Parents in Kosovo Regarding the Use of Antimicrobials: A Quantitative Analysis

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Abstract

Antibiotics are potent drugs used to treat bacterial infections. The misuse or unnecessary use of antibiotics can lead to antibiotic resistance (Fischbach, Walsh, 2009). Side effects of antibiotics constitute one of the top ten causes of morbidity and mortality in the USA (Shapiro, Hicks, Pavia, & Hersh, 2014). One of the contributing factors to irrational use of antimicrobials is self- medication and self-treatment by patients themselves. This quantitative research aimed to analyze the level of knowledge and practice of parents in Kosovo regarding the use of antimicrobials for their children. The results indicate that, although the majority of parents have an average level of knowledge, there is a problematic aspect in practice, where some of them use antibiotics without consulting a doctor. Based on the findings of this study, it is recommended to establish clear protocols for the use of antimicrobials and increase awareness among citizens to combat misuse and resistance to antibiotics in Kosovo.

Objective: The aim of this study is to identify the current level of knowledge and practices of parents regarding the use of antimicrobials in Kosovo and to provide important information for the development of policies and strategies to contain antimicrobial resistance in this context.

Methodology: This research is a quantitative study, using a standardized questionnaire on knowledge, beliefs, and self-medication practices with antibiotics for their children by their parents (version 2015) and analyzed in the statistical package (SPSS). In this study, 453 parents of children aged 0 to 15 years were surveyed. Of these, 49.2% are female, while 50.8% are male. The average age of the respondents is 39.64 years, with a standard deviation of 6.92. Parents were surveyed through self-completion of the questionnaire used in this study. The criteria for participants in this study were: Parents who consent to be part of this study, should not be medical staff, and should not have children with chronic respiratory diseases.

Results: Parents reported their assessment of their access level to healthcare services. According to them, only 4.3% of parents claimed to have poor access, 30.2% average, and 64.4% claimed to have good and very good access to healthcare services. Only 1.5% of parents believe they are not informed at all about the correct use of antibiotics, 31.3% responded little, 49.9% moderately, and 17.2% thought they were very informed about the correct use of antibiotics. As for the adverse effects of antibiotics, the percentages vary, with 17.5% of parents agreeing that antibiotics have no adverse effects, 12.1% neutral, and 70.2% disagreeing with the statement. Regarding how often parents receive explanations from pediatricians about the use of antibiotics, 6.4% never receive explanations, 33.5% sometimes, while others claim to receive sufficient information.

Conclusion: The study on the level of knowledge and practices of parents in Kosovo regarding the use of antimicrobials has revealed some significant findings. Firstly, the results indicate a certain level of lack of information and knowledge among parents regarding the use of antimicrobials. This lack of information may affect their practices in using these drugs.

1. Introduction

Antibiotics are powerful drugs used to treat bacterial infections. The use of antibiotics when they are not necessary, or their misuse, can lead to antibiotic resistance (Fischbach & Walsh, 2009). Data show that in Europe, 25,000 patients die every year as a result of superinfections that cannot be treated with antibiotics due to the resistance developed against them (Grigoryan, Monnet, Haaijer-Ruskamp, Bonten, Lundborg, & Verheij, 2008; Väänänen, Pietilä, & Airaksinen, 2006). The side effects of antibiotics represent one of the ten leading causes of morbidity and mortality in the United States (Shapiro, Hicks, Pavia, & Hersh, 2014).

One of the contributing factors to the irrational use of antimicrobials is self-medication and self-prescription by patients. In Baghdad, Amoxicillin is the antibiotic most commonly used by parents for self-medication (Jasim, 2014). The reasons for self- medication reported in a study conducted in Sharjah include: previous experience with similar symptoms (52.6%) and “minor” illnesses (35.3%). Antibiotics were most frequently used without a doctor’s prescription for respiratory tract symptoms such as sore throat (54.7%), cold/flu (44.7%), and nasal discharge/nasal congestion (29.5%) (Alawadhi, 2010).

The use of antibiotics in hospitals in Kosovo is very high. Among hospitalized patients, 43% of adults and 58% of children were treated with antibiotics at least once during their hospital stay (Raka, Goosens, Mulliqi, Versporten, Krasniqi, & Kostyanev, 2015).

Research Objective

This study aims to systematically analyze the knowledge, beliefs, and practices of parents in Kosovo regarding the use of antibiotics in children. Specifically, it focuses on:

- Analyzing the demographic structure of the surveyed parents.
- Examining the effect of factors such as socio-economic status and educational level of parents on the rational use of antibiotics.
- Determining the level of knowledge among parents in Kosovo regarding the proper use of antimicrobials.
- Providing evidence-based recommendations for improving this situation.

Through this research, we hope to contribute to a deeper understanding of the factors influencing antibiotic use at the family level in Kosovo and to encourage targeted interventions to preserve the effectiveness of these vital medicines for future generations.

Methodology and procedures

This research is a quantitative study that used a standardized questionnaire to collect data on parents' knowledge, beliefs, and practices related to self-medication with antibiotics for their children (version 2015). The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS).

Sample: The study included a total of 453 parents of children aged 0 to 15 years. Of these, 49.2% were female and 50.8% were male. The average age of the participants was 39.64 years, with a standard deviation of 6.92.

Procedure: Parents were surveyed through self-administration of the questionnaire used in this study. The inclusion criteria for participants were: the parent had to consent to participate in the study, could not be a medical professional, and could not have children with chronic respiratory diseases.

Instrument: The instrument used was the standardized questionnaire on parents' knowledge, beliefs, and practices regarding self-medication with antibiotics for their children (Al-Azzam, Edwards, & YouJ, 2015). The questionnaire was originally in English, translated, and adapted into Albanian using the Brisley method.

In addition to demographic data, the questionnaire was structured into three main sections:

1. **Knowledge** – assessing parents' understanding of concerns related to infections and antibiotics.
2. **Attitudes** – evaluating parents' feelings, beliefs, and perceptions about antibiotic use.
3. **Practices** – examining how parents practically demonstrate their knowledge and behaviors regarding antibiotic use.

Results

In the first question, parents reported their perceived level of access to healthcare services. According to their responses, only 1.32% of parents stated that they had very poor access, while 3.97% stated they have poor access to healthcare services.
Overall, parents reported having good access to healthcare services, with 30.24% indicating average access, and 64.46% stated they have good or very good access to healthcare services.

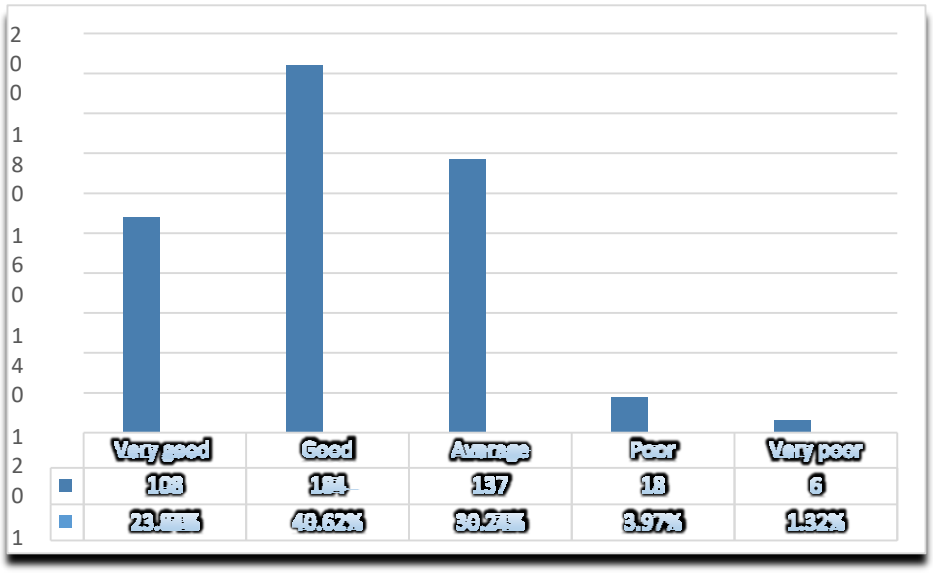

Figure 1. How would you describe your access to healthcare services?

When asked about the proper use of antibiotics, 43.90% of parents stated that they are moderately informed, 17.2% very well informed, 17% were not much informed.
14.3% of parents indicated that they are a little informed about the proper use of antibiotics, while 1.5% were not informed at all.

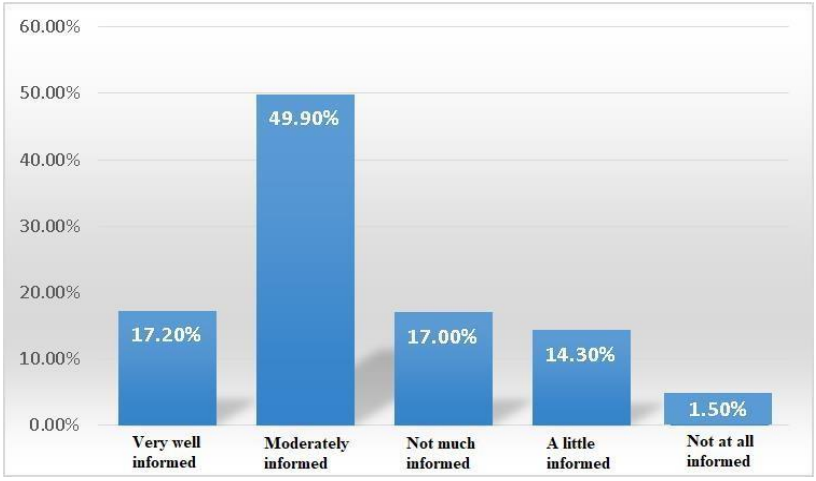

Figure 2. How well do you think you are informed about the proper use of antibiotics?

In Figure 3, we present the parents' responses regarding the safety of antimicrobials. A total of 4.2% of parents *strongly agreed* that antibiotics have no side effects, 13.5% *agreed*, 12.1% were *neutral*, 38.6% *disagreed*, and 31.6% *strongly disagreed*.

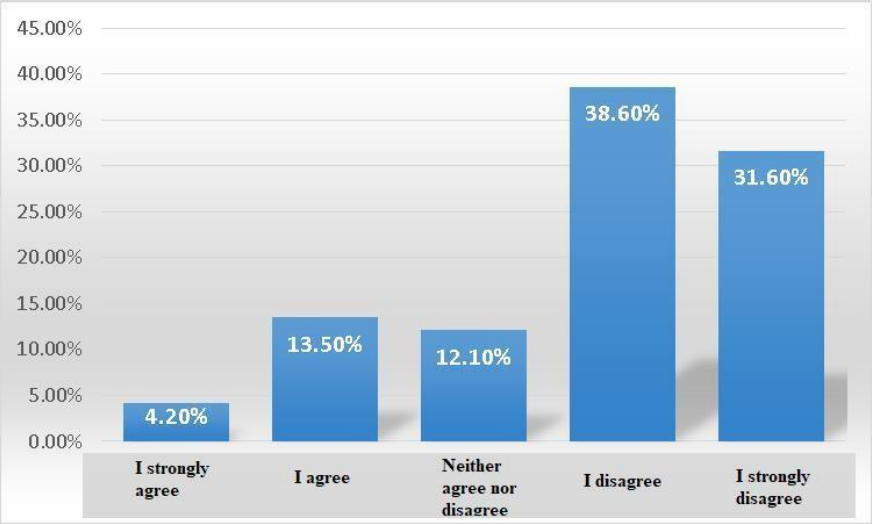

Figure 3. Parents's responses to "Antibiotics have no side effects"

Parents' responses regarding how often the pediatrician explains their child's condition and whether the child should use antibiotics show that 6.4% answered *Never*, 12.4% *Sometimes*, 12.1% *Often*, 21.4% *Most of the time*, and 47.7% *Always* (Figure 4).

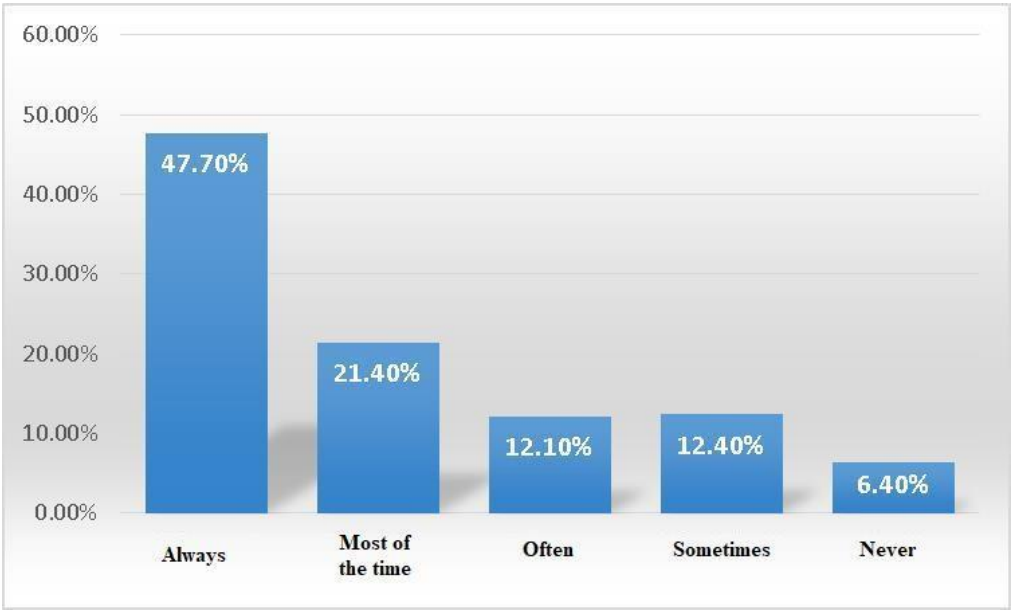

Figure 4. How often does your pediatrician explain your child's condition and whether your child should use antibiotics?

In Figure 5, we present the percentage distribution of parents' responses to the question, "How often does your pediatrician recommend performing a throat or nasal swab before using antibiotics?" This indirectly shows the proportion of doctors who prescribe antibiotics without completing the necessary tests to assess the patient's condition.

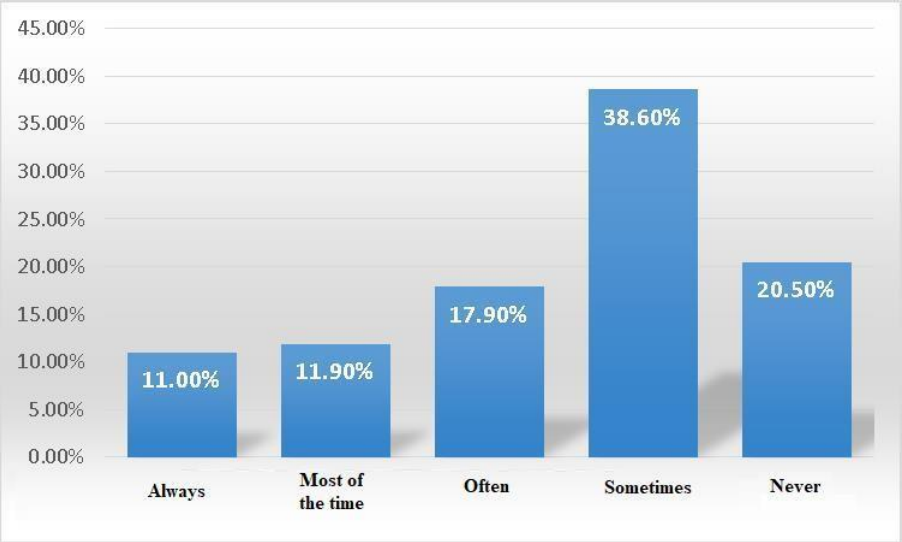

Figure 5. How often does your pediatrician recommend performing a throat or nasal swab before using antibiotics?

There is a significant positive correlation between parents' perceived access to healthcare services and their economic income level, the mother's educational status, and the father's educational status, shown in table 1.

Table 1. Correlations.

	Mother's educational status	Father's educational status	Parents' economic income level	Access to healthcare services
1	1			
2	.643**	1		
3	-.165**	-.170**	1	
4	.149**	.164**	.174**	1

Legend: * (p<0.05), **(p<0.01)

Discussion

The results of this study clearly and comprehensively demonstrate the level of knowledge and attitudes of parents in Kosovo regarding antimicrobial therapy, specifically their knowledge, adherence to recommendations, and trust in the pediatrician in relation to their child. The study found that parents in Kosovo show moderate compliance regarding the use of antimicrobials, which is comparable to countries in the region (Cantarero-Arvalo, Hallas, & Kaae, 2017; Napolitano, Izzo, Di Giuseppe, & Angelillo, 2013; Garofalo, Di Giuseppe, & Angelillo, 2015; WHO, 2014; Panagakou, Spyridis, Papaevangelou, Theodoridou, Goutziana, Theodoridou, & Hadjichristodoulou, 2011; Toska & Geitona, 2015; Awad & Aboud, 2015), but does not reach the level observed among parents in the European Union and the United States (Shapiro et al., 2014). This level is higher than that reported in Middle Eastern, Asian, or African countries (Khushboo, Shyamal, Ranjit, Viral, & Ritu, 2015; Agarwal, Yewale, & Dharmapalan, 2015; Suaifan, Shehadeh, Darwish, Al-Ijel, Yousef, & Darwish, 2012; Awad, Eltayeb, Matowe, & Thalib, 2005; Al-Dossari, 2013; Chinnasami, Sadasivam, Ramraj, & Pasupathy, 2016; Abu Farha, Suyagh, Alsakran, Alsous, & Alefishat, 2016).

Recommendations

For the Healthcare System:

- Implement Antibiotic Stewardship Programs (AMS) in all hospitals and primary care clinics.
- Develop national clinical guidelines for antibiotic use in common respiratory infections in children.
- Provide continuous training for pediatricians and family physicians on rational antibiotic use and effective communication with parents.

For Parental Education:

- Conduct national media campaigns emphasizing that "Antibiotics do not work against viruses" and highlighting "Antibiotics' side effects."
- Include this topic in routine pediatric consultations for prevention.

For Future Research:

- Conduct qualitative studies to explore the underlying reasons behind parents' beliefs and practices.
- Perform observational studies examining physicians' prescribing practices directly.

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