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Maternal Practices Regarding Oral Antibiotics Administration

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Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

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ABSTRACT

Aim: This study was to evaluate the maternal practices regarding oral antibiotics administration.
Methods: A cross-sectional descriptive study design was utilized. A convenient *sample* of one hundred mothers who were visiting the general and chest out-patient clinics and fulfilling the study criteria was enrolled. One structured interview *questionnaire* was designed specifically for this study after a thorough review of the literature and previous researches**.** It included two parts: Personal characteristics of the mothers and their practices in administering oral antibiotics for their young children.
Results: The study results found that the mean age of mothers was 27.3± 4.6 years, 26.00% were illiterate and 78.00% were housewives. Also, showed that 70.0% of mothers had poor scores regarding antibiotics administration. Likewise, 66% of the studied mothers didn't complete the full course of antibiotics as prescribed regardless of the child's improvements. Too, 42% of mothers were using the teaspoon followed by 30.0% using syringe to measure antibiotic doses. Moreover, 78% were giving the previously prescribed antibiotics without prescription. Furthermore, there was a highly statistically positive correlation found as regard mothers' education and their total score of practices (r=0.29, P=0.003). Also, statistically positive correlations were found between mothers' age, occupation, and residence and their total score of knowledge (r= 0.16, 0.25, 0.18, P=0.09, 0.01 and 0.008) respectively.

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Conclusions: The majority of mothers had poor scores regarding the total score of oral antibiotics practices. Too, the errors during antibiotics administration were evident by mothers. So, the ministry of health should set a policy to limit un-prescribed antibiotics purchasing from pharmacy shops.

Keywords: Maternal practices; oral antibiotics administration.

1. INTRODUCTION

Pediatric medication administration comprises a difficult task for the mothers. Because they are usually the primary caregiver for children throughout childhood [1]. Medication errors cause appreciable morbidity and mortality in children [2] and it is a significant global concern and can cause serious medical consequences for patients [3].

Today, antibiotics are the most commonly sold drugs in developing countries. The rampant and excessive use of antibiotics for any and every condition has intensified the problem of antibiotic resistance [4]. Antibiotic misuse in children is especially prevalent [5]; 10% of Greek parents [6] and 60% of Mongolian parents admitted to having self-medicated their children with antibiotics in the past 2 weeks [7].

Drug utilization in children is of great concern worldwide. Many drugs for infants and children are used in outpatient settings [8,9]. In addition, parents also using the previous prescription to treat the symptoms of ailments similar to those previously treated [10]. Furthermore, the administration of drugs at home may result in errors for the children, made by parents or caregivers, and may occur during administration, or by giving the drugs in the incorrect intervals or doses [11].

1.1 Significant of the Study

Pediatric medication errors are occurring at an alarming rate; these errors are both preventable and expensive to the health care system. It often leads to severe and devastating consequences for children and their families. All of these challenges mean that the safe administration of pediatric medication requires safeguards beyond those provided to adults. However, this area remains significantly understudied. Pediatric medication errors can cause disability, death, physical and psychological harm. Also, it increases the cost of hospitalization [12]. Research in this particular area is necessary to identify and correct the mothers' faulty or mistakes in the knowledge and practices that would be advance the level of safe medication especially antibiotics administration for their children.

1.2 Aim of the Study

This study aimed to evaluate the maternal practices regarding oral antibiotics administration.

2. MATERIALS AND METHODS

2.1 Research Question

What are the maternal practices regarding oral antibiotics administration?

2.2 Study Design

Cross-sectional descriptive study design was utilized.

2.3 Study Setting

The study was conducted at outpatient clinics (general and chest clinics) in Assiut University Children Hospital. It was a university hospital in Upper Egypt that treat the children's diseases for many governorates from El-Minia to Aswan since 2005. It had about 12 clinics e.g. endocrine, nutrition, renal, rheumatic clinic, etc.

2.4 Study Subjects

A convenient sample of one hundred mothers who were visiting the general and chest out-patient clinics in the mentioned study setting for four months. With the following inclusion criteria: Having a child aged five years or less with common illnesses such as cough, diarrhea, throat problems, fever, and receiving oral antibiotics. Also, they were responsible for giving oral antibiotics to the child.

2.5 Tool of Data Collection

One structured interview questionnaire was designed specifically for this study after a thorough review of the literature and previous researches by [1,13,14]. It included two parts:

Part 1: Personal characteristics of the mothers included; age, level of education, occupation, and residence.

Part 2: Mothers' practice in administering oral antibiotics for their young children. It includes six main categories: *right antibiotic* (3 items) e.g.: "What is your first action when your child becomes ill?", *right dose* (8 items) e.g.: "Devices used in measuring and administering antibiotic", *right time* (2 items) e.g.: "Maternal practices in case of forgetting administration of child's medication on time", *right approach* (5 items) e.g.: " Method of giving the child more than one medication at the same time", *post-care* (6 items) e.g.: "Medication storage", *antibiotic administration* (8 items) e.g.: "Completing the full course of antibiotic regardless the child's improvements ".

2.5.1 Scoring

Each item of mothers' practice in administering oral antibiotics was scored as follows; one for correct response, and zero for incorrect response. The mothers` practices were considered accurate according the literatures. The total score was 32.

Total percent score of practice = the obtained scores from 32 items of practices ×100 / 32

Poor = less than 16 score (<50%)
Fair = 16 to less than 20.8 score (50-65%)
Good= 20.8 score and more (≥65%)

2.6 Methods

- **Permission:** An official permission to collect data was obtained from the Dean of Faculty of Nursing, Assiut University.
- **Tool validity and reliability:** The tool validity was 95%, and it was estimated by 5 expertise in the pediatric nursing field. Also, the tool reliability was R=0.84, which was done by Alpha Cronbach's test.
- **Pilot study:** It was carried on 10% of the sample to assess clarity of the sheet and time needed to fulfill the sheet. As a result of the pilot study, no necessary modifications were done to the sheet.
- **Field of the work:** Data were collected from December 2017 until February 2018. The duration to fill the questionnaire was about 25 minutes for each interview. Data collection was done two days a week by the researcher.

2.7 Statistical Analysis

Data were coded, entered, and cleaned using the Statistical Package for Social Science (SPSS Inc., Chicago, IL, USA) version 20. Data analysis was done in the form of univariate analysis: Descriptive statistics (frequency & percent for qualitative data, mean ± SD for quantitative data). Bivariate analysis: cross-tabulation. Correlation coefficient was used to test the difference between the proportions of qualitative data. Statistical significance level was considered when p-value ≤ 0.05.

3. RESULTS

Table 1 Illustrated that the mean age of participants was 27.3± 4.6 years. Also, it was found that illiterate mothers represent 26.00%. Moreover, 78.00%of mothers were housewives and 84.00% were residing in rural areas.

Fig. 1 clarified that 98.0%, 80.0%, 56.0%, and 52.0% of studied mothers had poor scores concerning the right time, right approach, right antibiotic, and the right dose of antibiotic in administering oral antibiotics to their young children respectively.

Fig. 2 showed that 70.0% of mothers had poor scores while only 5.0% of them had good scores regarding antibiotics administration.

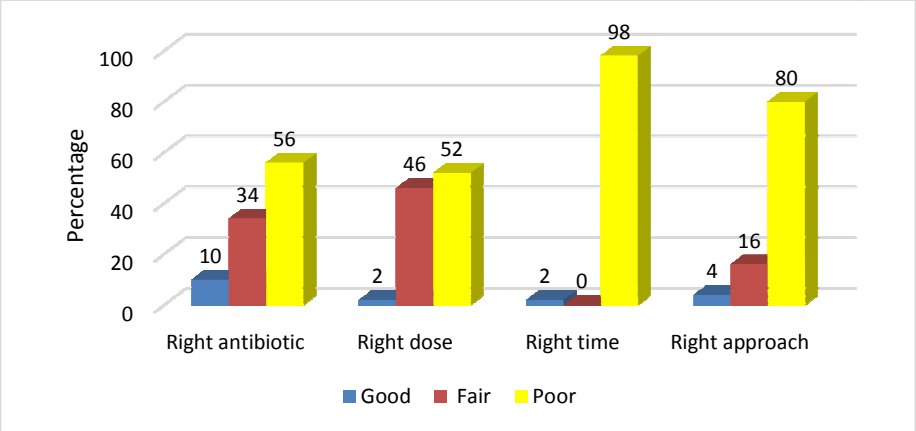
Fig. 3 demonstrated that 66% of the studied mothers didn't complete the full course of antibiotics as prescribed regardless of the child's improvements.

Fig. 4 revealed that 42% of mothers were using the teaspoon to measure antibiotic doses followed by 30.0% using the syringe.

Table 1. Personal data of the studied mothers (N=100)

Personal data	No	%
Mother's age (years)		
Mean ± SD (Min and Max)	27.3 ± 4.6 (19-37)	
Mother's Education		
Illiterate	26	26.00
Educated *	74	74.00
Mother's occupation		
Housewives	78	78.00
Working	22	22.00
Residence		
Rural	84	84.00
Urban	16	16.00

**The educated mothers were 74.00%; 8.00% were read and write, 14.00% had preparatory education, 40.00% had a high school education, 8.00% had a university education, and 4.00% had a master's degree*



Good ≥ 65 %, fair 65-≤50% and poor <50%

Fig. 1. Percentage distribution of medication rights' total score practices among the studied mothers

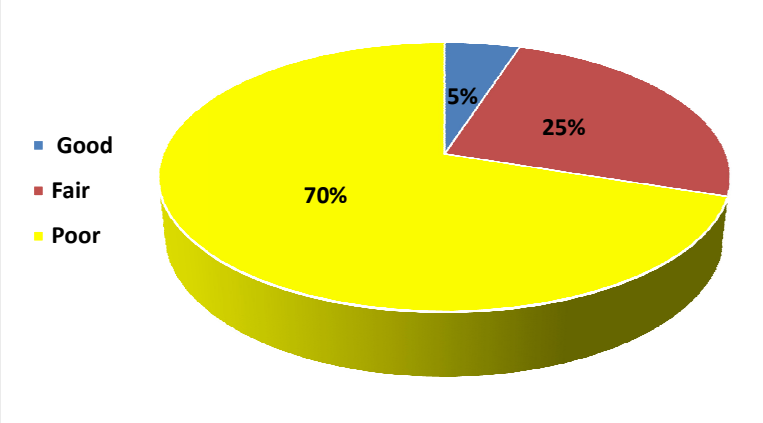


Fig. 2. Percentage distribution of total score practices of oral antibiotics among the studied mothers

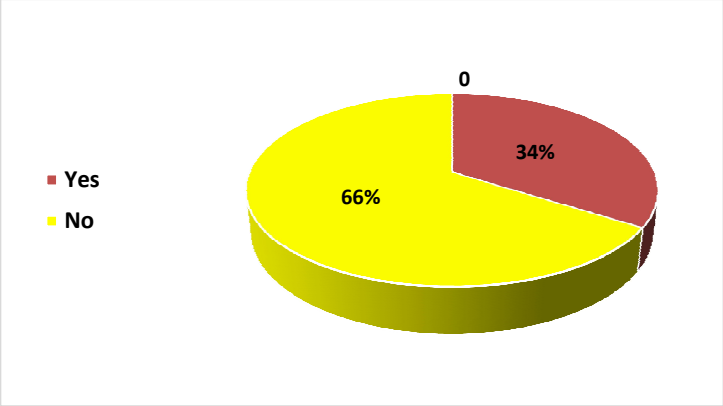


Fig. 3. Percentage distribution of the studied mothers who were completing the full course of antibiotics as prescribed regardless of the child's improvements

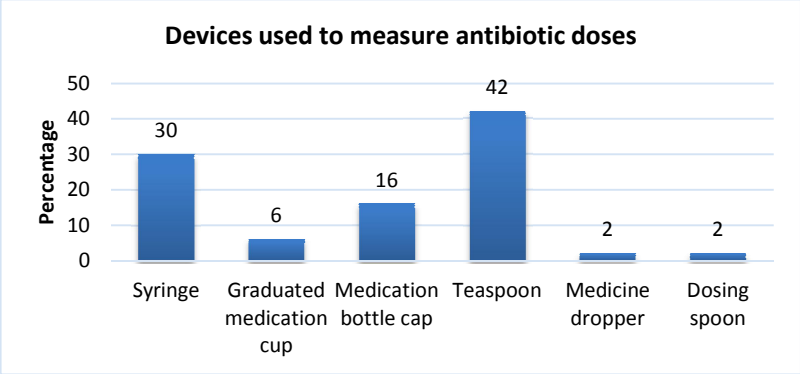


Fig. 4. Percentage distribution of the devices used to measure antibiotic doses among the studied mothers

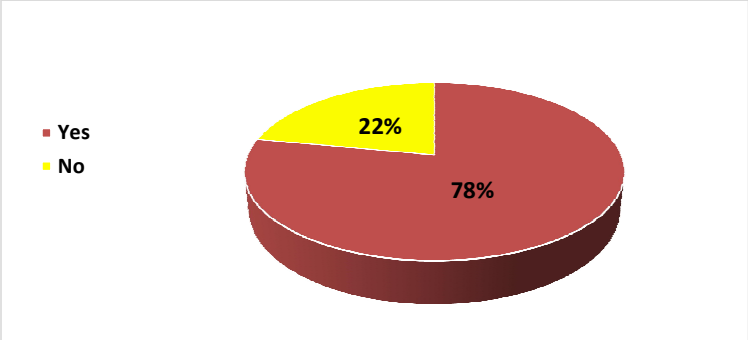


Fig. 5. Giving previously prescribed antibiotics without prescription

Table 2. Correlation between the total score of mothers' practice and their characteristics

Mother's characteristic	R	P-value
Mother's age	0.16	0.009
Mother's education	0.29	0.003
Mother's occupation	0.25	0.01
Mother's residence	0.18	0.008

Fig. 5. Indicated that the majority of mothers (78%) were giving the previously prescribed antibiotics without prescription.

Table 2 represented that there was a statistically positive correlation found as regard mothers' education and their total score of practices (r=0.29, P=0.003). Also, between mothers' age, occupation, and residence and their total score of practices (r= 0.16, 0.25, 0.18, P=0.09, 0.01 and 0.008) respectively.

4. DISCUSSION

The findings of the present study found that more than two-thirds of mothers had poor scores as regards the total score of oral antibiotics practice. These findings were in agreement with Dadari [15], Mallah et al. [16], Sun et al. [17], Hassan et al. [18] and Rashwan et al. [1]. IMCI Survey at the outpatient clinic in Egypt, WHO [19] and Walsh et al. [14] confirmed that there were gaps and misconceptions in the knowledge that contributed to parents' medication errors. These may be due to several factors as education of the mothers, poverty, lack of information sources as mass media, failure of communication between mothers and health care providers that lead to gaps in the continuity of medication administration process at houses.

Regarding the right antibiotic (medication); more than half of mothers have poor scores. The result was in the same line with Shawq et al. [20] and Rashwan et al. [1]. This result can be interpreted that there were many causes as giving previously prescribed medication; some of them find difficulties to read doctors' instructions and low socioeconomic level. The findings of the current study also, revealed that the majority of mothers were administering previously prescribed medication for the child or his siblings without consulting a pediatrician. This result was consistent with Sontakke et al. [10]. According to WHO guidelines [21]; it was indicated that over-the-counter, traditional and herbal medicines are readily available, but their use is generally not evidence-based and is often inappropriate. Counterfeit and substandard medicines are widespread.

The findings of the current study represent that slightly more than half of the mothers have poor knowledge related practice about right dose of antibiotics. The reasons may be due to false beliefs and thoughts of mothers that increasing the amount or frequency of medication would improve the child's condition rapidly. Also, most of mothers didn't use graduated medication devices in administering medication. These findings were congruent with Ali et al. [11] and Wolf et al. [22] who cited that 50% of parents or more make errors when dosing liquid medications. In addition, the findings of the present study are consistent with Diane and Samantha [23] who reported that household teaspoon was the device that most frequently used for measuring liquid medication. Moreover; they reported that dosing errors were due to misinterpreting instructions, confusing teaspoons and tablespoons and misreading a dosage. Giving the wrong dose is considered one of the most serious medication errors in children. Mendelsohn et al. [24] found that approximately most dosing errors were involving overdosing.

The present study indicated that more than three-quarters of mothers giving previously prescribed antibiotics used in a similar illness without prescription. This finding was in concurrent with Hassan et al. [18] and Rashwan et al. [1]. It is estimated that more than 50% of antibiotics worldwide are purchased privately without prescription. Several studies reported a considerable parental use of antibiotics without consulting pediatricians, particularly for colds, upper respiratory tract symptoms, and sore throat. These findings are parallel to the results of the current study where the majority of mothers were administering the same antibiotics which were used in a previous similar illness without prescription. Pediatrician's over-prescription of antibiotics for certain illnesses such as sore throat and diarrhea makes mothers convinced that antibiotics are the drugs of choice that should be used to relieve such illnesses [7].

The results of the current study indicated that there is a statistically significant positive correlation between mothers' occupation and education as regards the total score of practice. It is referred to more information and exchange of different experience which educated and working mother gain these practice in working place. Also, an educated mother had the ability to read the medication label and instructions related to giving medications.

5. CONCLUSION

The current study results concluded that the majority of mothers had poor scores as regards the total score of oral antibiotics practices in caring for their young children with common illness. The errors during antibiotics

administration were evident by mothers as the right time, right approach, completing the full course of antibiotics as prescribed regardless of the child's improvements, and giving the previously prescribed antibiotics without prescription. So, the study recommended that the ministry of health should set a policy to limit un-prescribed antibiotics purchasing from pharmacy shops. Also, mass media should raise the awareness of mothers and the entire general public regarding antibiotics administration. Likewise, hospitals of children should have a big role in giving health education programs for mothers.

CONSENT AND ETHICAL APPROVAL

It was secured from the Ethical Committee of Faculty of Nursing, Assiut University. The researcher clarified the aim and nature of the study for the studied mothers. They were informed that they had the right to participate or not in the study. Written Consent of the studied mothers was attained to participate in the study. The mothers were informed that their information would be confidential and used only for the study.

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COMPETING INTERESTS

Author has declared that no competing interests exist.

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