Parental Malpractices Regarding Antibiotics Use in Early Childhood with Upper Respiratory Tract Infections

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Abstract

Background: Despite the fact that more than 90% of upper respiratory infections in children are viral in origin, there is a high frequency of Antibiotics overuse in children who come with these infections. Concerning, the overuse of Antibiotics in children, which is frequently observed, is causing an increase in microbial resistance among the pediatric population. **Aim:** Assess parental malpractices regarding Antibiotics use in early childhood with upper respiratory tract infections. **Study design:** Descriptive correlational design **Setting:** outpatient pediatric clinics of Suez Canal University hospital and Medical Complex Hospital in Ismailia city. **Sample:** non-probability purposive sample of 220 homogenous women who have preschoolers with upper respiratory infections were included. **Study tools:** Data was collected using structured interviewing questionnaire. **Results:** There was statistically significant relation between total level of knowledge and age, occupation, and level of education of the studied mothers also; there was statistically significant relation between total malpractices scores and occupation, level of education and income of the studied mothers, while there was no statistically significant relation between total malpractices scores and age of them. **Conclusions:** Less than half of the studied mothers had unsatisfactory knowledge, and less than two thirds of them had unacceptable practices when it came to giving Antibiotics to their preschoolers who had upper respiratory tract infections. There was a statistically significant positive correlation between mothers' knowledge and their practices. **Recommendations:** Mothers were expected to attend educational sessions in order to improve their understanding and behavior about the use of Antibiotics on their children.

Key Words: Antibiotics, Malpractices, Upper Respiratory Tract Infections.

Introduction:

Infections of the upper respiratory tract (URTIs) are described as "self-limited irritation and swelling of the upper airways with associated cough, without evidence of pneumonia and without a history of chronic obstructive pulmonary disease (COPD), emphysema, or chronic bronchitis" ***(Thomas & Bomar, 2020)***. They are brought on by infections that affect the upper respiratory system, specifically the nose, sinuses, pharynx, larynx, and subglottic region of the trachea ***(Godman et al, 2019)***.

Upper respiratory infection is a phrase that doctors and other healthcare professionals frequently used to refer to the common cold, however it is excessively broad. They are caused by infections of the upper respiratory tract, especially of the nose, sinuses, pharynx, larynx, and subglottic area of the trachea. ***(Alzaid et al., 2020).*** The common cold, tonsillitis, pharyngitis, laryngitis, sinusitis, otitis media, and nasal obstruction are all symptoms of URTIs. ***(Mustafa et al., 2020)***. They can develop from bacterial or viral infections, as well as fungal or helminthic

infections, though these are less prevalent. ***(Snelson et al., 2021)***.

The majority of URTIs are caused by viruses. The typical cold can be brought on by more than 200 different viruses. Rhinoviruses, coronaviruses, adenoviruses, coxsackieviruses, influenza and parainfluenza viruses, human metapneumo viruses, respiratory syncytial viruses (RSV), and other viruses are among those that cause URTIs. ***(Rohde, 2019).*** Numerous viruses exhibit recognizable seasonal patterns. Some viruses, such human metapneumo viruses (HMPV), respiratory syncytial viruses (RSV), and influenza viruses circulate throughout the autumn and winter months. Year-round sickness is caused by other respiratory viruses as adenovirus and rhinovirus ***(Kwiyolecha et al., 2020).***

Before the 2003 Severe Acute Respiratory Syndrome (SARS) epidemic, the 2012 Middle East Respiratory Syndrome (MERS) outbreak, and most recently, the new coronavirus pandemic that began in December 2019 in Wuhan, China, coronaviruses had ceased to garner global attention. However, Coronaviruses are spherical virions with a core shell and surface projections resembling a solar corona, and Tyrell and Bynoe originally described them in 1966. ***(Tu. et al, 2020).*** Additionally, atypical bacteria (chlamydia and mycoplasma) as well as Group A streptococci, Neisseria gonorrhoeae, Corynebacterium diphtheria, Streptococcus pneumonia, Haemophilus influenza, and Moraxella catarrhalis can cause URTIs. **(Rohde, 2019)**.

The prevalence of URTIs in children and the overuse or improper use of Antibiotics to treat them has been shown in several researches from both developing and industrialized nations. ***(Hammour et al., 2018)***. Bacterial resistance, which is the capacity of bacteria to survive when exposed to drugs that would ordinarily restrict their development or kill them, is characterized by the incorrect prescription of Antibiotics by doctors and the misuse of Antibiotics by the general public. ***(Amin et al, 2022)***. Abuse of Antibiotics has resulted in Antibiotics resistance worldwide, posing long-term risks. The majority of anti-microbials won't work against common bacterial infections by 2050, which would result in an annual death toll of 10 million people. Antibiotics are unhelpful for managing a viral illness and are ineffective for treating viral infections in general. ***(Biezen et al., 2019)***.

There are several variables that lead to parents misusing Antibiotics on their URTI-stricken kids. These factors include: lack of mothers' knowledge about the causes of upper respiratory tract infections, lack of mothers' knowledge about Antibiotics therapy, parental malpractice regarding Antibiotics use, parental attitude, physician beliefs, high incidence of infectious diseases in children, lack of access to health care facilities, and high incidence of infectious diseases in children. ***(Perera et al., 2021)***.

Self-medication with over-the-counter (OTC) drugs, reusing previously prescribed drugs without seeing a doctor, and the accessibility of Antibiotics as an OTC drug at neighborhood pharmacies are a few instances of how Antibiotics are misused. (***Zakai, 2019***). Since the use of Antibiotics doesn't significantly shorten the time it takes for patients with these viral infections to recover, it is important to encourage doctors to prescribe fewer medications to treat common URTIs. Mothers and other careers must have the required information to take Antibiotics sparingly and effectively. ***(MacDougall & Cosgrove, 2020)***.

It is beyond a shadow of a doubt that parents' knowledge and behavior regarding Antibiotics resistance for their children with upper respiratory tract infections will have a significant impact on their child's condition and response to the course of treatment, as well as on the children's recovery process.

Significance of the study:

In young children, upper respiratory tract infections (URTIs) are frequent and recurring illnesses. Since most URTIs are viral in origin, Antibiotics are typically not necessary. More than half of pediatric cases in Egypt were treated with Antibiotics by non-specialized doctors, and the majority of these prescriptions were incorrect. ***(Amin et al., 2022).*** The condition of preschoolers and their course of treatment are significantly impacted by Antibiotics resistance, which results from improper use of Antibiotics. ***(Byrne et al., 2019)***. So, this study will be conducted to assess parental malpractices regarding Antibiotics use in early childhood upper respiratory tract infections.

Aim of the study:

The study aimed to assess parental malpractices regarding Antibiotics use in early childhood with upper respiratory tract infections.

Research questions:

1. What is the level of parental' knowledge regarding Antibiotics use in early childhood with upper respiratory tract infections?
2. What is the level of parental' malpractices regarding Antibiotics use in early childhood with upper respiratory tract infections?
3. Is there correlation between parental' malpractices and their knowledge regarding Antibiotics use in early childhood with upper respiratory tract infections?

Research objectives:

1. Assess parents' knowledge about Antibiotics use in early childhood with upper respiratory tract infections?
2. Identify parents' malpractices regarding Antibiotics use in early childhood with upper respiratory tract infections?
3. Determine the relationship between parents' knowledge and malpractices regarding Antibiotics use in early childhood with upper respiratory tract infections?

Operational definition:

Parental malpractices regarding antibiotics use: refer to actions taken by parents or caregivers that lead to inappropriate or excessive use of antibiotics in children, which can have negative consequences for the child's health. These malpractices may include: Giving antibiotics without medical prescription, not completing the full course of the prescribed antibiotics, sharing antibiotics with others or using antibiotics for viral infections ***(Perera et al., 2021)***.

Research Design:

Descriptive correlational design was used to achieve the study aim.

Setting:

This study was conducted at outpatient pediatric clinics of Suez Canal University hospital which consisted of 5 rooms, two of them were dedicated for examining sick children where they can receive medical care and treatment from healthcare professionals, one for vaccinations, and another for the general examination of the child to monitor his development and growth, and the last

room is a waiting big room for sick children until they are examined.

The second setting was the outpatient pediatric clinics of Medical Complex Hospital in Ismailia city which consisted of 7 rooms, two of them were dedicated for examining sick children where they can receive medical care and treatment from healthcare professionals, the second two big rooms are a waiting rooms for sick children until they are examined and another two rooms for the general examination of the child to monitor his development and growth, and the last one is for vaccinations.

Target population:

Mothers of preschoolers who visited the outpatient pediatric clinic in the above-stated settings with their children who had upper respiratory tract infections.

Sample equation:

The following equation was used to estimate how many participants there would be in this research: ***(Sahai & Khurshid, 1996).***

$$n = t^2 \times p(1-p)/m^2$$

Where:

n = the sample size

t = confidence level at 95% (standard value 1.96)

p = is estimated prevalence in the study area = 0.17

m = margin of error at 5% (standard value of 0.05)

The prevalence was calculated based on the actual number of patients who visited the pediatric outpatient clinic in the settings described above over the 12-month period from 1 January 2022 to 31 December 2022. The prevalence was calculated by dividing the average number of children under the age of six who visited the outpatient clinic each month with URTIs (247) by the average number of children who visited the clinic each month with other diagnoses (1453).

Prevalence = 247/1453= 0.169 _ 0.17

By applying the previous figures to the equation, the sample size will be: $n = \frac{(1.96)^2 \times 0.17(1-0.17)}{(0.05)^2}$ = ***216.7***= ***217 _ 220***

Sample size:

The estimated sample size is 220 mothers of preschoolers who visited the previously indicated environment with their children who had upper respiratory tract infections.

Type of Sampling:

Non-probability purposive sampling method was used in the current study. The sample (homogenous sample) was selected according to the following exclusion criteria:

Exclusion Criteria:

1. Mothers of kids with any kind of chronic illness.
2. Mothers of preschoolers with any congenital defect that impairs the respiratory system' correct function.
3. Mothers whose preschool-aged children have immunodeficiency disorders and are contagious URIs.

Tool of data collection:

A structured interviewed questionnaire was used in this study; it was adapted from ***(Panagakou et al., 2011)*** following an evaluation of the relevant literature. The tool was then translated into Arabic utilizing the reverse translation technique. The

questionnaire was divided into the following three sections:

Part 1: Socio demographic data about mothers and their sick child:

It asked 10 questions regarding the following topics: the age of the mother, their education level, where they lived, if they were married, what they did for a living, how much money they made each month as a family, how many children they had, how old and which gender the ill child was, and what order the child's siblings were born.

Part 2: Mothers' knowledge about Antibiotics nature, Antibiotics use and Antibiotics resistance:

It included 20 questions to test mothers' knowledge of the nature of Antibiotics, how to use them, and how to recognize the emergence of bacterial resistance. The questions covered topics like the causes of URTIs, sources of information on Antibiotics, how Antibiotics affect bacteria and viruses, when to use them if a child has a fever, the negative side effects of Antibiotics, how to use Antibiotics to lessen the complications of URTIs, when to avoid using Antibiotics, and how to recognize the emergence.

Scoring system:

For the 20 knowledge questions, the right answers received a (1) while the wrong ones received a (0). There were 20 total knowledge scores; the sum of the individual item scores was divided by the number of items to determine the average score for the segment. These scores were transformed into a percentage score. When the percentage score was 60% or more, knowledge was deemed satisfactory; when it was less than 60%, it was deemed unsatisfactory.

Part 3: Mothers' self-reported practices regarding Antibiotics use:

It comprised 18 questions to evaluate mothers' practices about the use of Antibiotics, including: how to use Antibiotics for preschool children with upper respiratory tract infections, including dose, mode of administration, parents' self-medication, the justifications for administering an Antibiotics to a kid without first seeing a pediatrician, the justifications for modifying the kind or dosage of an Antibiotics without first seeking advice, the timing of temperature monitoring before administering medicines, and when to finish an Antibiotics course.

Scoring system:

For the 18 practice items, the correct answers received a score of (1) while the erroneous ones received a score of (0). There were 18 total practices scores; the item scores were added together, the amount was divided by the number of things, and the result was the mean score for the portion. A percentage score was created from these scores. If the percentage score was 60% or more, reported practices were deemed good; if it was less than 60%, they were deemed unsatisfactory.

Method:-

Preparatory phase:

- Using the available books, articles, periodicals, magazines, and internet searches, a review of the historical and contemporary literature on upper respiratory tract infections in preschool children and Antibiotics use by mothers for their children was conducted in order to familiarize oneself with the research problem and create the study tool.

Pilot study:

- After the creation of the research tool and before the data collection began, a pilot study was conducted. It was tested on 10% (22 mothers) of the sample to see if it was clear, objective, and practical, as well as to see how long it would take to complete the data collection tool (20–30 minutes). Modifications were made where needed, and participants in the pilot research were not included in the study sample.

Tool validity and reliability:

- Five pediatric nursing professionals were given the study's tool to verify its validity, to help with language clarity, and to ensure that the information was acceptable. Cronbach's alpha was used to verify the tool's reliability and ensure that it was internally consistent. The whole questionnaire's reliability (internal consistency) was 0.55.

Field work:

- The researchers started gathering data after getting approval from the administrators of the aforementioned hospitals and outpatient clinics to move forward with the proposed study. Over the course of three months (from the beginning of February 2023 to the end of April 2023), the actual fieldwork was completed. The researchers gathered information from mothers of preschool children who had upper respiratory tract infections at the outpatient pediatric clinics on Sunday, Monday, Tuesday, and Wednesday from 9 AM to 12 PM. Each mother was invited to complete the questionnaire during a one-on-one interview when they were at the waiting rooms at the clinics. It took between 20 and 30 minutes to fill.

Ethical consideration:

- Primary approval was obtained from the Research Ethical Committee in the Faculty of Nursing, Suez Canal University (committee no. 200 at 2/2023). Written letters were issued from the dean of the faculty to the directors of the previously mentioned study setting to seek their approval for carrying out the study. An official permission was obtained from the director of the study setting, after explanation of the aim, nature, and duration of the study.

- Prior to each mother's involvement in the study, written agreement was sought from her following a thorough description of the goal and design of the investigation. The data was collected voluntarily, anonymously, and confidentially, and it would only be used for the investigation, according to the researcher. Additionally, the mother who agreed to participate was given the assurance that their ability to leave the trial at any point would have no effect on the treatment received from the outpatient pediatric clinic.

Statistical design:

The gathered information was arranged, edited, calculated, and then examined using a percentage distribution. The statistical package of the social sciences (SPSS) software, version 20, was used to conduct the statistical analysis. Data analysis methods included descriptive statistics, frequency analysis, and arithmetic means for percent distribution. Chi-square, T-tests and Pearson correlation test were used to compare qualitative category variables. Statistical

significance was considered at P-Value < 0.05.

Results:

Table (1): Shows that 50.5% of the studied mothers were between the ages of 30 and less than 40 years. The mean age is 32.58±7.26 and 51.4% of the studied mothers lived in the urban area while 48.2% of them lived in rural areas. Also; illustrates that 36.4% of the studied mothers had moderate education, 28.2% of them were highly educated and only 8.1% were illiterate. The majority (87.3%) of the studied mothers was married, and the income level of 70.9% of them was sufficient. Moreover, 70% of the studied mothers were without work, while 20% of them their work wasn't related to the medical field. But only 10% of these mothers, their work were related to medical field.

Table (2): Illustrates that the range of children for each mother was (1-6) with Mean ± SD (3.43±1.58). Regarding gender of sick child, this table shows that 51.4% of the studied mothers their current sick child were female. Regarding ranking of the child among his siblings, about 20.5% of children were the first child, while 29.1% of children were the second child.

Figure (1): Illustrates percentage distribution of the studied mothers' total knowledge scores and answers research question number 1. This figure shows that 54.3% of the studied mothers have satisfactory level of knowledge, while 45.7% of them have unsatisfactory level of knowledge regarding Antibiotics use to their preschool children suffering from upper respiratory tract infections.

Figure (2): Illustrates percentage distribution of the studied mothers' total malpractices scores about Antibiotics use and answers question number 2. This figure shows that 62.7% of the studied mothers have unsatisfactory level of practice, while 37.3% of them have satisfactory level of practice regarding Antibiotics use to their children suffering from upper respiratory tract infections.

Table (3): Illustrates that there was statistically significant relation between total level of knowledge and age, occupation, and level of education of the studied mothers where p value is (.04, .001 and .007 respectively).

Table (4): Shows that there was statistically significant relation between total malpractices scores and occupation, level of education and income of the studied mothers where p value is (.02, .000 and .001 respectively), while there was no statistically significant relation between total malpractices scores and age of the studied mothers where p value is (.409).

Table (5): Illustrates correlation between total knowledge and total malpractices scores of the studied mothers regarding Antibiotics use to their preschool children and answers the question number 3. This table shows that there was statistically significant positive correlation between mothers' knowledge and their malpractices scores with r .225; P value < .001*

Table (1): Percentage distribution of the studied mothers' demographic data (n=220).

Mothers' demographic data	N	%
Age (Years)		
< 20	6	2.7
20 < 30	68	30.9
30 < 40	111	50.5
40 ≥50	35	15.9
Mean ±SD Range	32.58±7.26 18-55	
Residence		
Rural	106	48.2
Urban	114	51.8
Education level		
Illiterate	18	8.1
Moderate	80	36.4
Above average	60	27.3
High	62	28.2
Marital status		
Married	192	87.3
Divorced	20	9.1
Widowed	8	3.6
Income		
Sufficient	156	70.9
Insufficient	64	29.1
Occupation		
Related to medical field	22	10
Not related	44	20
Without work	154	70

Table (2): **Percentage distribution of the studied mothers' children demographic data (n=220).**

Children' demographic data	N	%
Number of children		
1	22	10
2 < 4	141	64.1
>4	57	25.9
Mean ± SD Range	3.43±1.58 1-6	
Gender		
Male	107	48.6
Female	113	51.4
Rank		
First	45	20.5
Second	64	29.1
Third	50	22.7
Fourth or more	61	27.7

Figure (1): Percentage distribution of the studied mothers' total knowledge scores (n=220).

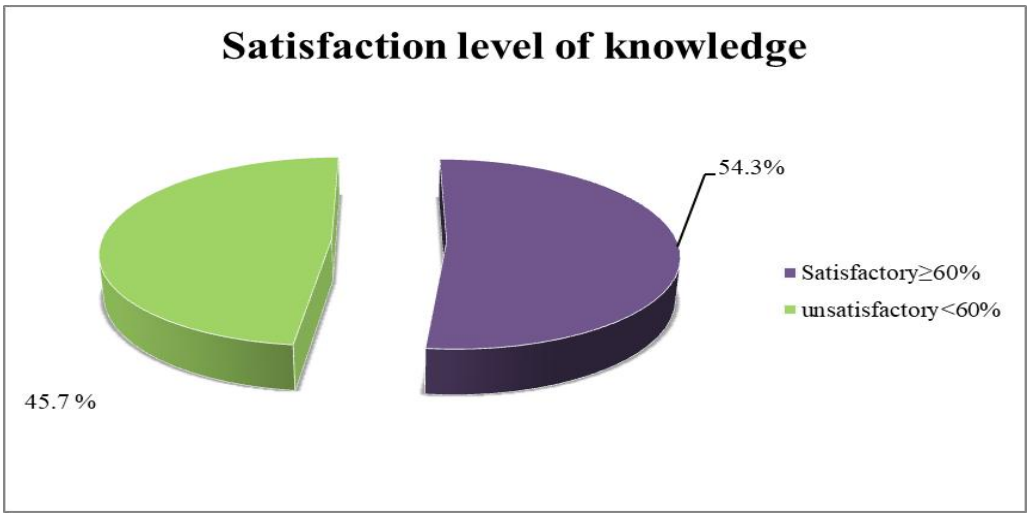

Figure (2): Percentage distribution of the studied mothers' total malpractices scores about Antibiotics use (n=220).

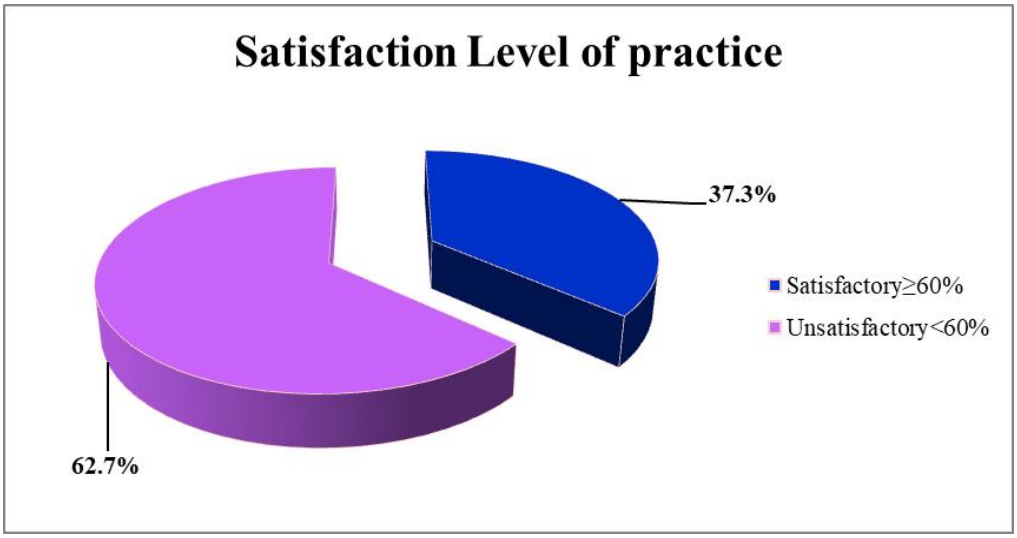

Table (3): Relation between demographic data of the studied mothers and their total knowledge score (n=220)

Mothers' demographic data	Total knowledge				X^2(P value)
	Sat.		Unsat.		
	N	%	N	%	
Mother age (Years)					
a) < 20	2	40	4	60	10.03**(.04*)**
b) 20 < 30	43	63.2	25	36.8	
c) 30 < 40	56	50.5	55	49.5	
d) 40 ≥50	13	37.1	22	62.9	
Occupation					
a) Related medical field	18	81.8	4	18.2	14.02**(.001*)**
b) Not related	28	63.6	16	36.4	
c) Without work	68	44.2	86	55.8	
Education					
a) Illiterate	5	27.8	13	72.2	14.01**(.007*)**
b) Can read and write	4	25	12	75	
c) Intermediate education	39	48.7	41	51.3	
d) High average education	26	59.1	18	40.9	
e) High education	40	64.5	22	35.5	

X^2 is chi-square test, P value is **significant <.05**

Table (4): Relations between demographic data of the studied mothers and their total malpractices scores regarding Antibiotics use (n= 220).

Mothers' demographic data	Total practice				X^2(P value)
	Sat.		Unsat.		
	N	%	N	%	
Mother age (Years)					
a) < 20	2	40	4	60	2.79(.402)
b) 20 < 30	29	42.6	39	57.4	
c) 30 < 40	40	36	71	64	
d) 40 ≥50	9	25.7	26	74.3	
Occupation					
a) Related medical field	12	54.5	10	45.5	7.87**(.02*)**
b) Not related	21	47.7	23	52.3	
c) Without work	47	30.5	107	69.5	
Education					
a) Illiterate	2	11.1	16	88.9	26.99**(<.000*)**
b) Can read and write	2	12.5	14	87.5	
c) Intermediate education	29	36.3	51	63.7	
d) High average education	10	22.7	34	77.3	
e) High education	37	59.7	25	40.3	
Income					
a) Sufficient	67	42.9	89	57.1	11.41 (**.001***)
b) Insufficient	13	20.3	51	79.7	

X^2 is chi-square test, P value is **significant <.05**

Table (5): Correlation between total knowledge and total malpractices scores of the studied mothers regarding Antibiotics to their preschool children (n=220).

Items	Total malpractices scores	
	Pearson Correlation	Sig. (2-tailed)
Total Knowledge	.255	**<.001***

***Significant<.05**

Discussion:

Unjustified Antibiotics usage, which is frequently observed in children, is causing a worrying rise in microbial resistance in the pediatric population. Antibiotics misuse and abuse are global problems, but they are especially problematic in underdeveloped nations because of their comparatively higher infection rates, limited sanitary infrastructure, and inadequate public health knowledge ***(Trinh et al., 2020).***

The incidence of Antibiotics misuse in children presenting with nonspecific illnesses such as upper respiratory tract infections is well-documented. More than 90% of URTIs in children are of viral etiology, ideally treated with symptomatic management. Despite the evidence that Antibiotics treatment does not alter clinical outcomes or reduce complication rates when compared to placebo, Antibiotics overuse in early childhood URTIs remains problematic ***(El Feghaly et al., 2020)***. Since management of early childhood URTIs depends considerably on parents' perception of the diseases as well as their perception of treatment regimens, the objective of our study was to assess parental malpractices regarding Antibiotics use in early childhood with upper respiratory tract infections.

The current study's findings on the income levels of the investigated mothers (Table 1) showed that fewer than three quarters of the mothers had sufficient income. From the researchers' point of view**,** this result increases their financial capacity to buy more expensive Antibiotics, regardless of their effectiveness or suitability for the patient's condition. This result is consistent with ***AL- Saleh et al., (2020)*** who discovered in their study about "Influencing factors of knowledge, attitude, and practice regarding Antibiotics use in children with upper respiratory tract infections in Dubai" that three quarters of the participants had a modest income.

Concerning level of education of the studied mothers (Table 1), the current study illustrated that more than one third of the studied mothers had moderate education, while more than one quarter of them were highly educated. From the researchers' point of view, this result may be explained by the fact that the majority of the study's female participants choose technical education, and their level of education is poor. As a result, the moms may find it challenging to absorb and interpret the information concerning Antibiotics. The current study finding runs directly counter to ***Lakshmi & Vijayasamundeeswari, (2021)*** who carried out research on "Assessing the knowledge, attitude, and practice of Antibiotics use in under-5 children with respiratory tract infections among mothers attending a pediatric outpatient department" and found that more than half of the moms in the study had advanced degrees.

The present study reported that the studied mothers have many children with a range of (1-6) children with Mean±SD (3.43±1.58) (Table 2). From the researchers' point of view, this outcome could lead to mothers self-medicating their children since they don't have enough time to inquire about and learn about Antibiotics. This study's finding was backed by **Albalawi et al., (2020)**

who reported in their study about "Knowledge, attitude, and practices of parents regarding the use of Antibiotics among their children with upper respiratory tract infections" that the studied women had a large family, ranging in size from 1 to 7.

On assessing the studied mothers' total level of knowledge regarding Antibiotics use to their children suffering from upper respiratory tract infections (Figure 1). The present study reported that more than half of them have satisfactory level of knowledge. From the researchers' point of view, these results imply that the majority of the study's moms place a high value on their pediatrician. As a result, because the majority of the study's moms rely on doctors for medical advice, doctors must devote more time to teaching mothers about the proper use of Antibiotics. A small percentage of the women in the study still rely on the media as their primary source of knowledge about the use of Antibiotics in children, despite living in a high-technology area. These outcomes are in contrast with **Nasimfar & AmuzMehr, (2018)** who conducted a study about "Evaluation of knowledge, attitude, and practice of parents on the use of Antibiotics for acute upper respiratory tract infections in children admitted to Motahari Hospital of Urmia in 2017–2018" and discovered that the average degree of parental awareness is less than half.

In relation to studied mothers' total level of malpractices regarding Antibiotics use to their children suffering from upper respiratory tract infections (Figure 2).The present study revealed that more than two thirds of them have unsatisfactory level of practices. From the researchers' point of view, the fact that mothers may purchase their child's Antibiotics from pharmacies without a prescription and store them at home in case they are needed may be to blame for this outcome. Therefore, cheap availability of Antibiotics, home storage practices, and a lack of compliance with medical advice are linked to self-medication and Antibiotics abuse, which leads to Antibiotics resistance. This comes in the contrast line against **Nasimfar & AmuzMehr, (2018)** who discovered that less than two thirds of parents had reported good practices regarding Antibiotics use to their children suffering from upper respiratory tract infections.

Concerning the relation between the studied mothers' total level of knowledge and their age (Table 3), the present study found that there was a statistically significant relation between the total level of mothers' knowledge and their age, wherein mothers aged (20 <40) years were more knowledgeable than the other age groups. From the researchers' point of view, this finding could be explained by the fact that young moms are more likely than older mothers to be able to read or use the internet to look for the information they require. Mothers under the age of 20 were also likely to have poor levels of schooling, which contributed to their inadequate level of understanding. This finding goes in line with **Vaz et al., (2015)** in his study about "Prevalence of parental misconceptions about Antibiotics use" in which they found that mothers of younger age were less likely to answer knowledge questions about Antibiotics use correctly. Another

study opposes the current study which was conducted by **Okide et al., (2020)** who conducted a study about "Parents' Knowledge, Attitudes and Use of Antibiotics in Upper Respiratory Infections in Nigerian Children" and discovered that Parents who were over 30 years old had a lot more information about Antibiotics than their younger counterparts had.

Concerning the relation between occupation of the studied mothers and their total level of knowledge (Table 3), the present study revealed that there is a high statistically significant relation between the total level of mothers' knowledge and their occupation. Accordingly, whenever the mother is an employee with a job in the medical field and when she has a thorough understanding of URTIs and Antibiotics. From the researchers' point of view, the results of the present study may be explained by the fact that women who work in the linked medical sector have the opportunity to learn more information as a consequence of their career, which also affects their level of knowledge.

In the present study, it was found that there's statistically significant relation between the educational level of the studied mothers and their total level of knowledge (Table 3). From the researchers' point of view, the current study's findings may be explained by the fact that educated mothers are expected to know more about URTIs and Antibiotics than uneducated mothers and are more likely to be able to obtain information about them. The information concerning Antibiotics may also be challenging for mothers with low educational levels to acquire and appreciate. This finding was supported with a study which was conducted by **Abozed et al., (2016)** about "Maternal knowledge and treatment practices regarding the use of Antibiotics among their children with upper respiratory tract infection" and found that there is a statistically significant relationship between mother's educational level and their knowledge.

According to relation between demographic characteristics of the studied mothers and their total level of practices regarding Antibiotics use (Table 4), the current study revealed that there was no statistically significant relation between total level of practices and age of the studied mothers, and malpractices were common in all age groups. The current result was different with **Salama et al., (2018)** who reported in their study about "Parents knowledge, attitude and practice of Antibiotics use for upper respiratory tract infections in children: a cross-sectional study in Ras Al khaimah, United Arab Emirates" that improper practices of Antibiotics use were significantly common among mothers of younger ages (18-30 years old). The current study also reported that there was a statistically significant relation between total level of reported practices and occupation, level of education and income of the studied mothers. The findings of the current study were goes in line with **Salama et al., (2018)** who reported that malpractices of Antibiotics use were significantly common among low-income mothers and low educated mothers and mothers who were employed had higher level of practices than not working ones.

Regarding correlation between total knowledge level of the studied mothers and their total level of malpractices (Table 5), the finding of the current study revealed that there was a statistically significant positive correlation between mothers' total level of knowledge and their total level of practices**.** From the researchers' point of view, in the current study, moms had lower levels of knowledge and practices, and the overall level of practices rose with the total level of knowledge. Education programs are therefore required to fill the information gap, advance people's practices, and influence their behavior in order to justify Antibiotics usage, curtail self-medication, and prevent misuse.

Conclusion:

According to the present study findings, it can be concluded that more than half of the studied mothers have a satisfactory level of knowledge and more than one third of them have satisfactory level of practices regarding Antibiotics use to their preschool children suffering from upper respiratory tract infections. Also, there was a statistically significant positive correlation between mothers' total level of knowledge and their total level of malpractices.

Recommendations:

At the light of study results, the present study recommends:

- Mothers should regularly attend educational workshops to improve their understanding of and behavior surrounding the use of Antibiotics on children.
- Physicians, chemists, nurses, the media, and community-based initiatives may all work together to increase public understanding of Antibiotics usage, which would then help to decrease the use of Antibiotics for self-medication.
- Comprehensive educational programs about proper Antibiotics use were necessary for mothers as they are the main care givers for children.

Limitation of the study:

Many mothers were anxious because their children were tired and they could not complete the questionnaire before the examination, but the researchers tried to overcome this by having the mother complete the questionnaire after the examination and reassuring her on the child's health status.

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