

Assessment of Parental Knowledge in Using Over the Counter and the Prescribed Medications for their Children

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Abstract

Background: Children are the most vulnerable population and are dependent on their parents for medication administration. Parental knowledge of medication administration refers to their understanding of the principals involved in administering medication safely and effectively. The term Over-The-Counter (OTC) drug refers to a medication that can be purchased without a medical prescription. In contrast, prescription drugs require a prescription from a healthcare professional. **Aim of the study:** The study aimed to assess parental knowledge in using OTC and the prescribed medication for their children. **Design:** A descriptive design was utilized to conduct this study. **Setting:** this study was conducted at pediatric outpatient clinic, and inpatient units at children Hospital affiliated to Ain-Shams University Hospitals. **Subject:** Purposive sample of 200 parents, who were accompanying their children for treatment and follow-up. **Tool:** A structured interviewing questionnaire was designed by the researcher to assess the parents' knowledge in using OTC and the prescribed medications for their children. **Results:** More than one-third of the studied parent had a satisfactory level of knowledge regarding OTC medication. Three-quarters of the studied parents had a satisfactory level of knowledge regarding prescribed medication. **Conclusion:** More than one-third of the studied parents had a satisfactory knowledge level regarding OTC medication, while three-quarters of them were having a satisfactory knowledge level regarding the prescribed medication. Factors affecting parental use of OTC and the prescribed medications were previous, frequency, reasons for use medications, and sources for their information. **Recommendations:** Raising awareness of children's parents regarding OTC and the prescribed medications for their children.

Keywords: Children, Over-the-Counter Medication, Parental Knowledge, Prescribed Medication

Introduction

Children are the most vulnerable population and are dependent on their parents for medication administration. Children are not "little adults" and many differences may exist in the absorption, distribution, metabolism, and excretion of drugs between the pediatric and adult population. The pharmacokinetic characteristics of the drug differ with gender and age (Sezer et al., 2022).

Medicine is any substance or combination of substances that may be used in or administered to human beings either to restore, correct, or modify physiological functions by exerting a pharmacological, immunological, or metabolic

action, or to make a medical diagnosis. The rational use of medicine is a primary component of treatment in achieving expected therapeutic benefits. Medicine plays a significant role in individual and community health because it alleviates detrimental issues threatening life and health when used properly and rationally. However, it may have unfavorable effects when used improperly. (Stewart et al., 2018).

In the treatment of minor illnesses, when problems are self-limited, self-care can be used. The principles for considering health problems as minor illnesses include having a limited duration and being perceived as non-threatening to the pediatric patient. Self-care includes self-medication (SM), which the World Health Organization (WHO) defines as “The selection and use of medicines by individuals to treat self-recognized illnesses or symptoms” in the pediatric use of medicines by the parent or caregiver to treat a child’s illnesses or symptoms (Ukwishaka et al., 2020).

The term of Over-The-Counter (OTC) drug refers to a medication that can be purchased without a medical prescription. In contrast, prescription of drugs requires a prescription from a doctor or other healthcare professional (Marathe et al., 2020). The OTC drugs have become an indispensable part of medical treatment prescribed by general practitioners (GPs) as well as of home management by SM. This is confirmed by previous studies showing high and regular use of OTC drugs (Wangler and Jansky, 2022).

The OTC consumption has several advantages; it saves the opportunity cost of the time that physicians spend taking care of minor illnesses, and at the same time, shortness of parent’s time to attend health services. Despite these well-recognized advantages, the OTC poses risks and disadvantages for a child’s health. These include making the wrong diagnosis, taking the incorrect dose of a drug, adverse reactions, drug interactions, addiction, abuse, and also delaying the correct diagnosis by masking other severe health conditions. Inappropriate medication usage is clinically unwelcome because it exposes the user to damage without their knowledge (Tavares et al., 2022).

In using prescribed medication, monitoring prescription patterns plays an important role in emphasizing the rational use of drugs. It also helps to assess the appropriateness of a therapy and constitute future guidelines that improve drug utilization patterns and restrict irrational prescribing. Parental pharmacotherapy literacy plays a very important role in the management of childhood illnesses, as it contributes to their future decisions, expectations, and practice with medicine use (Kaur et al., 2020).

Pediatric nurses should take a more active role in monitoring the drugs prescribed by a doctor and how they are administered, as well as OTC drugs, such as measuring medication doses accurately, using standard administration devices, and using weight-based dosing. Thus, parents will be able to provide better education to parents and caregivers about adherence to medication regimens, adverse effects, symptoms, drug interactions, disease course, and non-pharmacological care of minor ailments to ensure a more rational use of medications. Finally, home visits by nurses may be necessary to reduce parental administration of OTC medication and provide drug-related information to parents (You et al., 2015).

Significance of the study

Various studies have shown that using OTC medication is a common behavior, with 32.5–81.5% of the world population having experienced self-medication (Zhang et al., 2022). According to a study conducted in Australia, 40% of children use OTC medicines every month. Research in the USA has shown that about 80% of those who took OTC have done so for pain relief, and half consumed them for relief of cold symptoms (fever, cough, and sore throat) (Krajnović et al., 2019).

Worldwide practice of OTC drugs has been reported to increase day by day. The studies which were conducted in developed countries revealed high prevalence among parents like in Germany 25.2%, France 96%, China 62%, Italy 69.2%. Likewise, in developing countries prevalence rate is quite high. In, Pakistan the prevalence was found to be 51.3%, 59% in India, and in Brazil about 56.6% (Gohar et al., 2017). According to Egyptian study, the incidence revealed that was 86% (Adane et al., 2022).

From the researcher experience it was observed that there were scarce studies conducted and focused on assessing parental knowledge in using OTC and prescribed medications for their children. So, it's very important to carry out this study to shed light on OTC and the prescribed medications used by parents for their children.

Aim of the Study

The study aimed to assess parental knowledge in using over-the-counter and the prescribed medications for their children.

Research Questions:

- 1- What is parental knowledge in using OTC and the prescribed medications for their children?
- 2- What are the factors affecting parental knowledge in using OTC and the prescribed medications for their children?

Subject and Methods:

Study Design:

A descriptive research design was used to achieve the aim of this study.

Study Setting:

The study was conducted at pediatric outpatient clinics and inpatient units at Children Hospital, affiliated to Ain-Shams University Hospitals. The outpatient pediatric medicine clinic consisted of 6 beds for examination, while the total beds on the floor of the inpatient pediatric medicine unit were 40 beds.

Study Subjects:

A purposive sample that included 200 parents (80 of them from the inpatient pediatric medicine unit and 120 of them from the outpatient clinic who were accompanying their children for treatment and follow-up at the previously mentioned setting throughout the period of the study (6 months) and were selected regardless of their age, gender, job, and educational level, and satisfying the sampling criteria that parents are having children with previous or current use of OTC and the prescribed medications.

Tool for data collections:

The data of the study were collected using structured interviewing questionnaire sheet. This questionnaire was developed by the researcher after reviewing the current available related literature to assess the parents' knowledge in using over-the-counter and the prescribed medications for their children. It was written in simple Arabic language to suit the level of parents' understanding and to gather the following data:

Part (I): It was comprised of the following:

A) Characteristics of the studied parents: gender, age, educational level, occupational status, type of work, number of children, residence, type of family, and monthly family income

B) Characteristics of the studied children:

- 1- Age, gender, educational level, child's rank
- 2- Health condition (previously admitted to a hospital, reasons for the child's visiting the hospital, health problem, and allergy from medication)

Part (II): This part was concerned with parent's knowledge regarding OTC and the prescribed medications: the definition of medications, rights, and precautions when administering, considerations, management of side effects, safety storage, and possible reasons for health risks related to use of medications.

Part (III): this part was concerned with parent's knowledge regarding factors affecting their use of OTC and the prescribed medications for their children: previous use of medications, reasons for using OTC or prescribed medications, sources of information, the child's warning signs when administering medications, the most commonly used OTC and prescribed medication, and the effect of using medications on the child's symptoms.

Scoring system of parent's knowledge in using OTC and the prescribed medications for their children

Questions were in the form of Multiple-Choice Questions (MCQ). According to the parent's answers, a scoring system was followed to obtain the outcome of the parent's knowledge, where each question had two grades for a correct and complete answer, one grade for a correct and an incomplete answer, and zero grade for the wrong answer or don't know. The total number of questions was 32, with the total score of the knowledge (64 grades) equal 100%. The studied parents' answers were checked using a model key answer. According to their knowledge, they were classified into either:

- **Satisfactory knowledge:** if the total score was equal to or more than 42 grades $\geq 65\%$.
- **Unsatisfactory knowledge:** if the total score was less than 42 grades $< 65\%$.

Content Validity and Reliability:

The tool of the study was revised for its clarity, relevance, comprehensiveness, understanding, and applicability ascertained by a panel of pediatric nursing experts (2 experts from the Faculty of Nursing, Helwan University) and (1 expert from the Faculty of Nursing, Ain Shams University) to assess the face and content validity of the study tool. The opinion of the experts was elicited regarding the format, layout, consistency, accuracy, and relevancy of the tool, and the necessary modifications were made accordingly.

The reliability of the questionnaire was assessed using Cronbach's alpha reliability coefficient test. Cronbach's alpha reliability coefficient normally ranges between 0 and 1. Higher values of Cronbach's alpha (more than 0.7) denote acceptable reliability.

Ethical Considerations:

The ethical research considerations in this study were included the following:

The study was approved by the Scientific Research Ethical Committee of the Faculty of Nursing, Helwan University, before starting the study. An oral approval was also obtained from the parent prior to data collection. The parents were informed about the purpose of the study and assured that the study is harmless, their participation is voluntary, and have the right to withdraw from the study at any time without any reason. The parents were also assured that all data would be treated with anonymity and confidentiality for research purposes only. Ethics, values, culture, and beliefs were respected.

Pilot Study:

Before starting data collection, a pilot study was carried out, including 20 (10%) of the studied parents accompanying their children in the previously mentioned setting that meet the criteria of the study to assess the applicability, feasibility, relevance, and clarity of the tool used and to determine the needed time to fill out the study tool. Parents who were included in the pilot study were not later excluded from the study, where no major modifications were made after conducting the pilot study.

Field Work:

The actual fieldwork for this study started at the beginning of June 2022 and was completed by the end of November 2022. The data were collected in the previously mentioned setting. The researcher was available two days per week from (9 a.m.) to (2 p.m.) to collect the data using the previously mentioned tool. The actual work started with meeting the hospital manager. Then the researcher went to the outpatient clinic and inpatient unit to introduce herself to parent, explain the aim of the study, and get their verbal approval for data collection. The interviewing questionnaire

sheet was completed by the researcher for each parent, (20-30) minutes to assess their knowledge regarding the use of OTC medication and the prescribed medications for their children.

III) Administrative Design:

The necessary approval was obtained to carry out this study through an issued letter from the Dean of Faculty of Nursing, Helwan University, to the medical and nursing directors of the study setting. Explaining the purpose of the study and its expected out-comes to obtain the approval for conducting this study.

IV) Statistical Design:

Numerical data were presented as mean (\bar{x}) and standard deviation (SD) values. Qualitative data were presented as frequencies (n) and percentages (%). Mann-Whitney U test with Bonferroni's adjustment was used for pair-wise comparisons when the Kruskal-Wallis test was significant. The significance level was set at $P \leq 0.05$. Statistical analysis was performed with IBM SPSS Statistics Version 26 for Windows.

Results:

Table (1) It was evident that all (100%) of the studied parents were mothers. More than one-third (37%) of them were in the age group $25 < 30$ years old ($\bar{x} \pm SD$ was 32.25 ± 3.24 years). More than one half (59%) of them were university-educated, and (57%) of them were employed respectively. Also around two thirds (65%) of them were working in non-professional work, and 70% of them were working full-time.

Table (2) It was evident that less than half (47%) of the studied parents had two children, and more than half (55%) of them did not had enough monthly income. Additionally, three-fifths (61%) of them belong to the nuclear family, and more than three-quarters (78%) of them live in an urban areas.

Figures (1), (2) illustrated reasons and sources of information regarding the use of OTC and the prescribed medication for their children, two-thirds (66%) of them reported using the prescribed medication for its efficacy, while most (82%) of them used OTC medication because of the high medical consultation fees. Regarding parental sources of information about medications, most (89%) of them reported that the physician was the main source when using the prescribed medications, while 80% of them reported previous experience of using the OTC medications.

Table, and figure (3) represented the percentage distribution of the studied parents' total level of knowledge regarding OTC and the prescribed medications for their children. It was clear that more than one-third (37.5%) and three-quarters (75%) of them had satisfactory total level of knowledge regarding OTC and the prescribed medications, respectively. Also, there was a highly statistically significant difference regarding the studied parents' total level of knowledge regarding OTC and the prescribed medications for their children with p-value (0.000*).

Table (4) presented that, there was a highly statistically significant relation between the total level of parents' knowledge regarding OTC medications and their age, educational level, occupation, number of children, residence, and family monthly income with p-value (0.004, 0.000, 0.02, 0.05, and 0.004, 0.003 respectively). While there was no statistically significant relation between the total level of parental knowledge and their type of work with p-value (0.333, respectively).

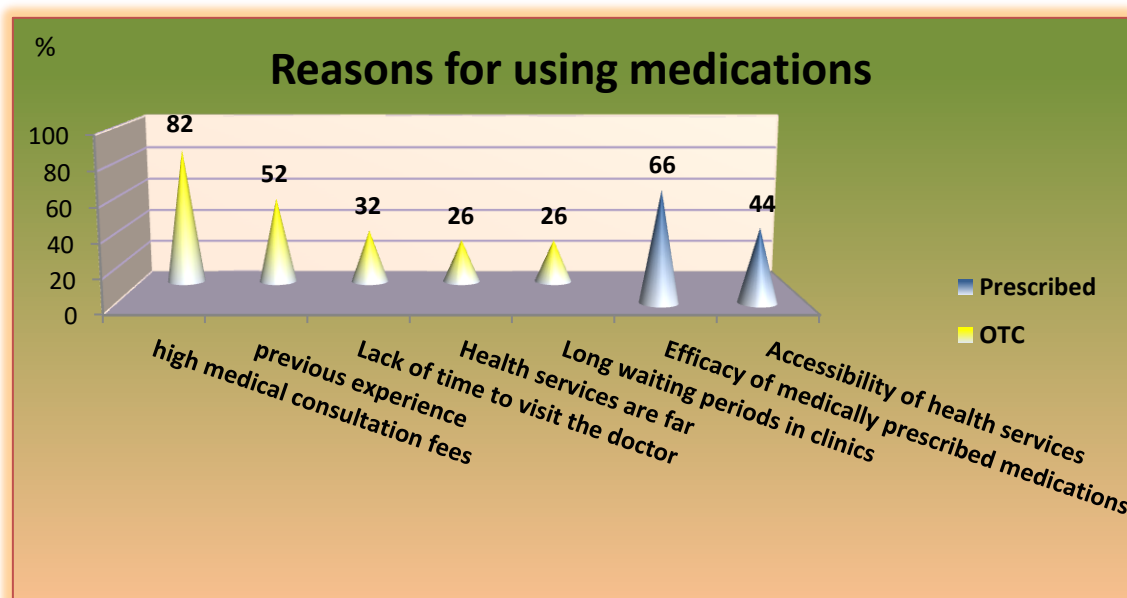
Table (5) represented that, there was a highly statistically significant relation between the total level of parents' knowledge regarding the prescribed medications and their age, educational level, number of children, residence, and family monthly income with p-value (0.02, 0.002, 0.000, 0.04, and 0.004 respectively). While was no statistically significant relation between the total level of parental knowledge and their occupation and type of work with p-value (0.644, and 0.303, respectively).

Table (1): Distribution of the studied parents regarding their characteristics (n=200)

Items	Studied parents	
	No.	%
Gender		
Female	200	100
Age		
20 - < 25	46	23
25 - < 30	74	37
30 - < 35	62	31
≥ 35	18	9
$\bar{x} \pm SD$	32.25±3.24	
Educational level		
Uneducated	8	4
Read and write	10	5
Primary education	20	10
Secondary education	44	22
University education	118	59
Occupation status		
Work	114	57
Not-work	86	43
Type of work (n=114)		
Professional	40	35
Non-professional	74	65
Working time period (n=114)		
Full-time (8 hours)	80	70
Part-time	22	19.5
Special program (work from home)	12	10.5

Table (2): Distribution of the studied parents according to their family characteristics (n=200)

Items	Studied parents	
	No.	%
Number of children		
One	44	22
Two	94	47
Three	38	19
Four	12	6
Five	10	5
Six	2	1
Monthly family income		
Enough	12	6
Moderate	78	39
Not enough	110	55
Type of family		
Nuclear family	122	61
Extended family	78	39
Residence		
Urban	156	78
Rural	44	22


Figure (1): Percentage distribution of the studied parents according to reasons of using OTC and the prescribed medications for their children (n=200)

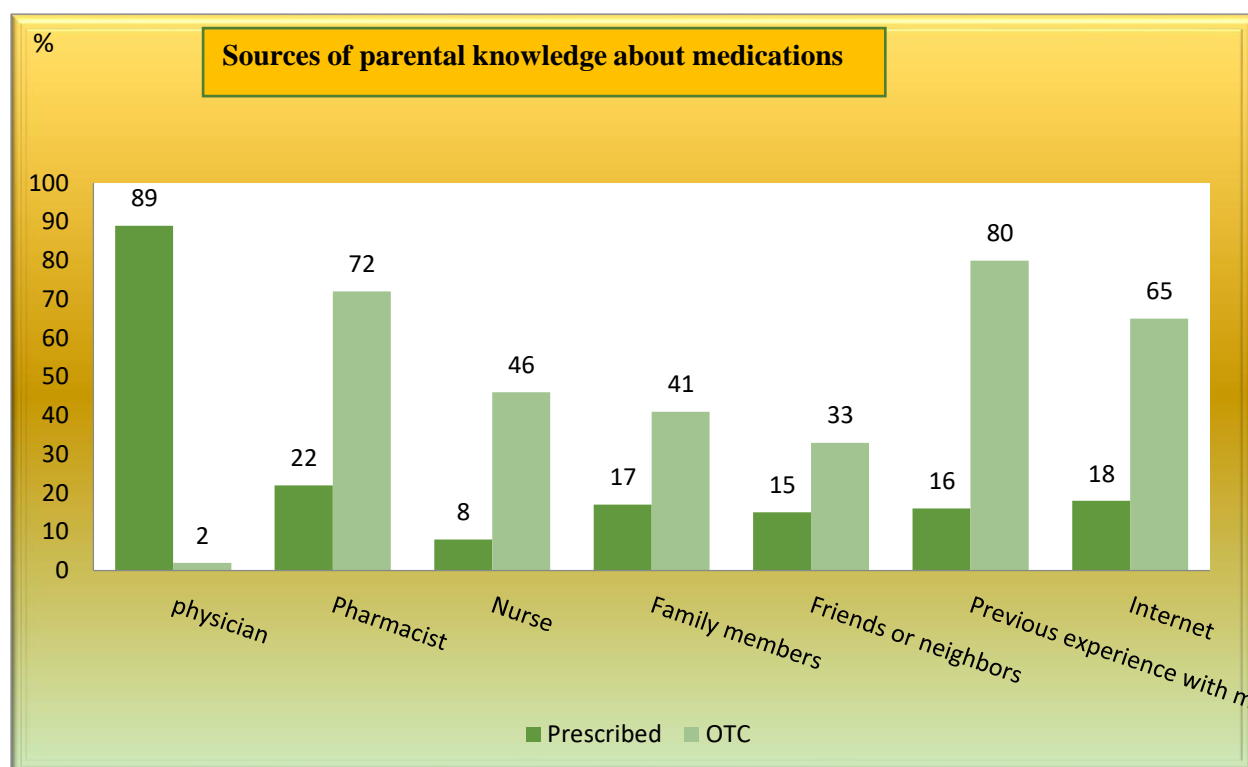


Figure (2): Percentage distribution of the studied parents according to sources of information regarding OTC and the prescribed medication (n=200)

Table (3) Distribution of the studied parents according to their total level of knowledge regarding OTC and the prescribed medications for their children (n=200)

Items	Studied Parents				X ²	P-value
	OTC		Prescribed medication			
	No.	%	No.	%		
Total Level of Knowledge						
Satisfactory	75	37.5	150	75	17.298	0.000*
Unsatisfactory	125	62.5	50	25		

*: Significant at $P \leq 0.05$

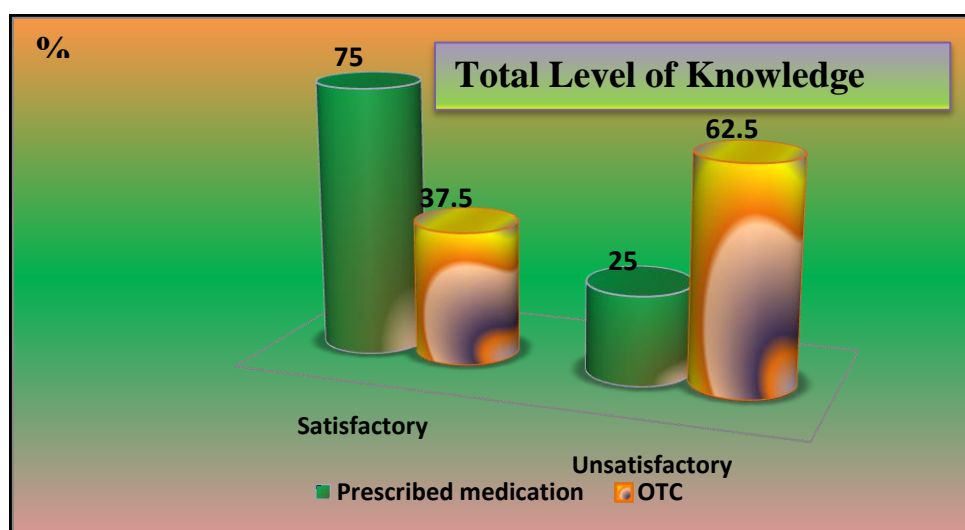


Figure (3): Percentage distribution of the studied parents according to their total level of knowledge regarding OTC and the prescribed medications (n=200)

Table (4): Relation between the studied parents' level of knowledge regarding the use of OTC medication for their children and their characteristics (n=200)

Parents' characteristics		Total level of knowledge				X ²	P-value
		Satisfactory		Unsatisfactory			
		No	%	No	%		
Age	20 - < 25	20	26.7	26	20.8	7.254	0.004*
	25 - < 30	26	24.7	48	32		
	30 - < 40	16	21.3	46	36.8		
	≥ 35	13	17.3	5	4		
Educational level	Uneducated	4	5.3	4	3.2	5.214	0.000*
	Can read and write	5	6.7	5	4		
	Primary education	5	6.7	15	12		
	Secondary education	11	14.7	33	26.4		
	University education	50	66.6	8	6.4		
Occupation	Work	45	60	69	55.2	7.412	0.02*
	Housewife	30	40	56	44.8		
Type of work	Professional	26	57.7	24	34.8	7.105	0.333
	Non-professional	19	42.3	45	65.2		
Number of children	One child	15	20	28	22.4	5.245	0.05*
	Two children	37	49.3	57	45.6		
	Three	16	21.3	22	17.6		
	Four	5	6.7	7	5.6		
	Five	2	2.7	8	6.4		

Residence	Urban	63	84	93	74.4	6.214	0.004*
	Rural	12	16	32	25.6		
Family monthly income	Enough	5	6.6	7	5.6	1.245	0.003*
	Moderate	35	46.7	43	34.4		
	Not enough	35	46.7	75	60		

*: Significant at $P \leq 0.05$

Table (5): Relation between the studied parents' level of knowledge regarding the use of the prescribed medication for their children and their characteristics (n=200)

Parents' characteristics		Total level of knowledge				X ²	P-value
		Satisfactory		Unsatisfactory			
		No	%	No	%		
Age	20 - < 25	33	22	13	26	8.154	0.02*
	25 - < 30	55	36.7	19	38		
	30 - < 40	50	33.3	12	24		
	≥ 35	12	8	6	12		
Educational level	Uneducated	2	1.3	6	12	13.254	0.002*
	Can read and write	2	1.3	8	16		
	Primary education	8	5.4	12	24		
	Secondary education	28	18.7	16	32		
	University education	110	73.3	8	16		
Occupation	Work	86	57.3	28	56	0.847	0.644
	Housewife	62	42.7	22	44		
Type of work	Professional	42	56	80	64	8.245	0.303
	Non-professional	33	44	45	36		
Number of children	One child	32	21.4	12	24	14.356	0.000*
	Two children	80	53.3	14	28		
	Three	20	13.4	18	36		
	Four	8	5.3	4	8		
	Five	8	5.3	2	4		
Residence	Urban	112	74.7	44	80	6.151	0.04*
	Rural	38	25.3	6	12		
Family monthly income	Enough	8	5.3	4	8	1.251	0.004*
	Moderate	58	38.7	20	40		
	Not enough	84	56	26	52		

*: Significant at $P \leq 0.05$

Discussion:

Regarding the characteristics of the studied parents, the findings of the current study revealed that all of the studied parents were mothers. More than one-third of them were in the age group of 25-<30 years old ($\bar{x} \pm SD$ was 32.25 ± 3.24 years). These findings were supported with **Mirdad et al., (2023)**, study entitled “Over-the-counter medication use among parents in Saudi Arabia” who revealed that 54.5% of the participants in the study were females. This could emphasize the fact that mothers are commonly the main family care provider for their children.

The findings of the current study showed that more than half of the studied parents reported that using OTC medications because of a previous use of the same medication, while about one-third of them because lack of time to visit health provider. The current findings were agreed to some extent with **AlGhofaili, (2021)**, study entitled “Patterns of self-medication in Qassim Province, Saudi Arabia: A cross-sectional study” who found that 30.3% were buying OTC medicines because repetition of a previous drug prescription by a healthcare provider, while 19.3% because the shortness of time to attend health services.

According to parental sources of information regarding the prescribed medication administration, the current study revealed that most of the studied parents reported that the physician was the major source of information. This finding was in the same stream of a study by **Hämeen-Anttila et al., (2010)**, who reported the major source of information about prescribed medications was physician.

According to parental sources of information regarding the OTC medication administration, the present study showed that most of the studied parents reported that the previous experiences were the major source of information about OTC. About three-quarters of them reported that the pharmacist. These findings were similar to study by **El Nimr et al., (2015)** entitled “Self-medication with drugs and complementary and alternatives medicines in Alexandria, Egypt: prevalence, patterns and determinates” who reported that the main source of information about OTC medication in Alexandria was a previous medical recommendation. The second source was pharmacists.

The researcher believes that it is a routine practice of parental use of medications to their children according to previous use or advice by pharmacist.

The present findings were in contradiction with **Ortiz et al., (2019)** study entitled “Self-medication in Mexican pediatric patients” who showed that 65.4% of the participants reported that the commonest source about the information of the OTC medication was by grandparents or relatives.

In relation to the total level of parents’ knowledge regarding OTC, the findings of this study clarified that two-thirds of the studied parents had an unsatisfactory knowledge level regarding OTC medication. These findings were in parallel with **Ponnambalam et al., (2021)**, study entitled “Assessment of knowledge, attitude and practice of over-the-counter drugs administration by parents to children in a selected community area with a view to develop an information module” who showed that most of the mothers had moderately adequate knowledge level about the use of OTC medications.

The present findings came in line with the study by **Daifallah et al., (2021)**, study entitled “An assessment of parents’ knowledge and awareness regarding paracetamol use in children: a cross-sectional study from Palestine” who reported that indicates that most of the studied parents had insufficient knowledge regarding OTC drug (paracetamol).

The present study showed that more than one-third of the studied parent had a satisfactory total knowledge level regarding OTC medications. These results were supported with **Ismael & Al-Thabhwawi, (2021)** study entitled “Mother's knowledge, attitudes, and practices of antibiotics use for children with upper respiratory tract infections in Babylon governorate” who reported that small percentage of mothers had adequate knowledge about OTC drug.

The researcher believes that this may be related to a lack of knowledge and educational courses about parental use of medications for their children that affect the level of parents' knowledge.

In relation to the total level of parents' knowledge regarding the prescribed medications, the findings of this study showed that three-quarters of the studied parents had a satisfactory knowledge level. This finding was unsupported by **Al-Ayed et al., (2019)**, study entitled “Parents' knowledge, attitudes and practices on antibiotic use by children” who reported the study found that parents' knowledge on antibiotic-prescribed use as being inadequate.

As regard the relation between the studied parents' characteristics and their total level of knowledge about using OTC and the prescribed medication for their children, there was highly statistically significant relation between their characteristics (age, educational level, and occupation, number of children, residence, and family monthly income) and their total level of knowledge regarding OTC medications.

These results were resemble a study carried out by **Ahmed et al., (2021)** entitled “Prevalence of self-medication in children under-five years by their mothers in Yogyakarta city Indonesia” who showed a highly statistical positive significant relation between educational level of the mother and administered OTC medication.

The findings of the present study were came in the same line by **Shehade et al., (2020)** study entitled “Self-medication practice among Amman's householders: prevalence and factors” who clarified there was a statistically significant difference between the use of OTC drugs and education level of the respondents as the level of knowledge increased, the use of OTC drug prevalence had increased.

This could be due to parents' satisfactory knowledge about medication administration for their children are linked to their age, educational level and family monthly income.

Conclusion:

In the light of results of the current study it could be concluded that;

Based on the findings of this study, it can be concluded that more than one-third of the studied parents were having a satisfactory knowledge level regarding OTC medication, while three-quarters of them were having a satisfactory knowledge level regarding the prescribed medication. It was also reported that factors affecting parental use of OTC and the prescribed medications were previous, frequency, reasons for use medications, and sources for their information.

Recommendations:

Based on the findings of the study, the following important recommendations are suggested:

- Educate and motivate parents to apply the principles of medication use to their children for both health and economic benefits.

- Raising awareness among parents about the hazards of using OTC medications for their children through educational programs, audio-visual media, and web information technology.
- Nurses should provide health education and counseling for parents regarding their children's safe medication use.

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