

Effect of Coaching Program on Mothers' Awareness Regarding Administration of Over-the-counter Drugs to their Children

Amira Mohamed Saaed¹, Azza Abdalsemia Elewa², Sabah Mohammed El Sayed³

^{1,3}Assistant Professor, Pediatric Nursing, Faculty of Nursing, Tanta University, Egypt

²Assistant Professor, Pediatric Nursing, Faculty of Nursing, Hewan University, Egypt

Abstract

Background: Over-the-counter drugs are a common practice in developing countries including Egypt. Mothers are prone to drugs errors due to their limited knowledge of medication. Efforts to improve mothers awareness towards Over-the-counter drugs are imperative to correct unhealthy practices among mothers. **Aim:** This study aimed to evaluate the effect of a coaching program on mothers' awareness regarding administration of Over-the-counter drugs to their children. **Study design:** A quasi-experimental design was utilized. **Setting:** The study was conducted at Alshamla pediatric outpatient clinic at Tanta University Hospital. **Sampling:** Convenience sample composed of 116 Mothers. **Tools:** **Tool (1):** An interviewing questionnaire, which cover two parts. **Part 1:** Socio-demographic characteristics; and **Part 2:** Mothers' knowledge. **Tool (2):** Mothers' reported practices regarding using of Over-the-counter drugs. **Tool (3):** Mothers' attitudes regarding using of Over-the-counter drugs scale. **Results:** It was Points out that there were highly statistically significance improvements in mothers' knowledge, positive attitude and reported practices immediately post and at follow-up of a coaching program implementation **Conclusion:** Coaching program application improved mothers' awareness about Over-the-counter drugs administration for their children with a statistically significant difference between pre, post and follow up. **Recommendations:** Continuous inservice educational programs should be conducted for the mothers about safe medication administration.

Keywords: Coaching, Program, Mothers' Awareness, Over-the-Counter Drugs, Children

Introduction

In developing countries, children constitute a large percent of the population. Globally, drug utilization for children has received a lot of attention. In the developed and developing countries different studies have been conducted in this issue, and have all shown various problems ranging from misuse to abuse of medications (Shawq et al., 2020). Most drugs in children are used

outside the health settings or hospital with or without medical prescription. Over-the-counter (OTC) drugs are taking of drugs, herbs, or home remedies on one's initiative, or advice of another one, without consultation Al sayed (2019) and (Makeen et al., 2019).

Inappropriate use of medications or over used globally become phenomenon

consider as important health issue. OTC medication behaviors' used for children mainly by their mothers (**Andritsou et al., 2017**) and (**Tarciuc et al., 2020**).

Over-the-counter drugs may be used for many complaints. The chief complaints of children including; Fever, flu, diarrhea, headache and sore throat can be treated at home (**Changa, 2018**) and (**Makeen et al., 2019**). Some minor complaints can be relieved with OTC medications such as paracetamol or with some other traditional or herbal medicines, without seeking for physician consultation. When a child complains, the mothers' concerns are often influenced by their knowledge of the diseases and treatment. Mothers may get advice through social media, family tradition, friends and via other sources, which affect their responses toward the complaints (**Mirdad et al., 2023**).

Studies confirmed the significant contribution of mothers in particular into the education about medicines and the use of medicine for children, and that mothers are the family members responsible for looking after other family members, mainly children (**Xu et al., 2020**).

In many countries, the antipyretic drugs and other OTC drugs are commonly used among mothers to treat their children. Using OTC drugs among mothers may be affected by their knowledge and attitudes towards child illnesses (**Hassan, 2018**).

Society knowledge and attitudes toward OTC is needed to be focus and broad to increase the awareness about OTC drugs, antibiotic reaction, adverse outcomes, and

be judicious consumers (**Mirdad et al., 2023**).

Mothers are prone to errors due to their limited understanding of medication, including dosage timing, preparation, and drug interactions, as well as inadequate knowledge regarding the selection, acquisition, storage, and disposal of medicines. Special attention should be paid to OTC medications with active substances that have age and weight related contraindications. Additionally, scarce knowledge of the toxicity of medications generates a considerable underestimation of the risks (**Rauf et al., 2021**).

Coaching is a form of development in which an experienced person, called a coach, supports a learner or client in achieving a specific personal or professional goal by providing training and guidance (**International Coach Federation, 2018**) and (**Grant & Cavanagh, 2018**).

Healthcare providers including pediatric nurses need to provide current evidence based information to mothers regarding appropriate and safe medication used for their children. Nurses can play a good role in education of mothers about the proper use of OTC (**Ads et al., 2023**).

Significance of the study:

The trend of providing drugs by parents to children on their own, that has been increased in the developing countries as well as in the developed countries in the recent years. This practice is more disastrous in children where dosages vary with weight or

body surface (**Ponnambalam, 2021**). It was evident that twenty five percent of children in the world tend to use medication without medical prescription (**Andritsou, 2017**). Over-the-counter use of medicines among parents for their children is exponentially high. Study done in Palestine revealed that 91.9% of the parents used drugs without a physician's prescription (**Al-Ayed, 2019**). Similarly high for Egypt where OTC medications can be obtained easily from pharmacies. The study mothers knowledge about the types of drugs used, risks, reasons for use, how to improve mothers attitude and practice about OTC drugs are limited in Egypt. Therefore, the current study evaluate the effect of a coaching program on mothers' knowledge, attitudes, and practices about administration of OTC drugs to their children.

Operational definition

Mothers' awareness in this study means knowledge, practices and attitudes of mother regarding administration of OTC drugs.

Aim of the study

This aim of this study was to evaluate the effect of a coaching program on mothers' awareness regarding administration of Over-the-counter drugs to their children.

Research hypothesis

Mothers' knowledge, practices and attitudes are expected to be improved after receiving coaching program.

Subject and Method

Study design: A quasi-experimental design was utilized in this study.

Setting: The study was conducted at Alshamla pediatric outpatient clinic-Tanta University.

Sample: Convenience sample composed of 116 mothers in pediatric outpatient clinic at Tanta University.

Tools for data collection:

Data was gathered using three tools before, immediately after, and three months after the coaching program's implementation.

Tool (1): An Interviewing Questionnaire:

It was created by researchers and written in simple Arabic language on the basis of a review of the scientific literature. It includes the following parts:

Part 1: Socio-demographic characteristics of studied mothers include age, marital status, educational level, economic status, and mothers' occupation.

Part 2: Studied mothers' knowledge about over counter drugs

It was adapted from **Soleimani et al., (2016)** and **Alsuhaibani and Alsuhaibani (2020)**, it featured 20 questions used to assess mothers knowledge about OTC include the type of medications given to treat the children, most frequent medicines used and the most favorite sources of health information, indication for using OTC, causes, the harming of using OTC to children, how to give OTC dose, mothers knowledge about drugs tolerance and antibiotics resistance, and mothers responses in failure of OTC drugs with their children.

Scoring system

Knowledge obtained from the studied mothers was checked with a model key answer. A scoring system was used, with (1) awarded for each correct answer and (0) for each incorrect answer. 20 grades make up the questionnaire total score. The overall of a mother's knowledge categorized into the following based on the sum of their scores, divided by the total, and converted to percentages:

-Good level $75\% \leq 100\%$, score ranged from $15 \leq 20$ grades.

-Average level $50\% < 75\%$, score ranged from $10 < 15$ grades.

- Poor level $< 50\%$, score < 10 grades.

Tool (2): Mothers' Reported Practices Regarding Using of OTC: It was developed by researchers based on **Siddiqui et al., (2014)** and **Alenazi et al. (2021)**, to evaluate mothers' practice regarding using of OTC. It is formed 35 questions used to examine the right medication, right time, right dose, and care before and after oral medications administration, antibiotic administration, and practices concerning antipyretics, cough and cold drugs administration.

Scoring system:

A scoring system was developed based on the feedback provided by the mothers, with each question that was right and completed receiving a score of (1) and each question that was wrong and incomplete receiving a score of (0), for a total practices score of 35 grades. The total reported practices added together and converted to a percentage, and was afterwards divided into:

- Satisfactory $\geq 60\%$ equal $21 \leq 35$ grades.

- Unsatisfactory $< 60\%$ equal $0 < 21$ grades.

Tool (3): Mothers' Attitudes Regarding Using of OTC Scale:

It was developed by researchers based on **Siddiqui et al., (2014)** and **Alenazi et al. (2021)**, used to evaluate mothers attitudes towards using of OTC. Five-point Likert scales ranging from strongly disagree to strongly agree used to determine the attitude and the reasons of using OTC drugs. The mother`s attitude concerning OTC usage include 13 items, including positive and negative attitudes regarding OTC drugs use.

Scoring system:

The attitude score ranged from 5 to 65. The item scores were added up, and the amount was divided by the total number of things. These ratings were turned into percentages. Consequently the total mothers' attitude was categorized into:

- Positive attitude $50\% \leq 100\%$ equal $33 \leq 65$ grades.

- Negative attitude $< 50\%$ equal $5 < 33$ grades.

Operational Design Three phases made up the operational design for this study, namely preparatory phase, pilot study, and fieldwork.

Preparatory Phase during this stage, literature on mothers' awareness regarding using OTC was reviewed. As a result, the data gathering tools for the study were developed.

Content Validity

The study tools were evaluated for validity by a panel of 3 experts from Pediatric Nursing. Modifications requested

were done accordingly to ascertain relevance and completeness.

Reliability of tools:

The Cronbach's alpha value for the reliability (internal consistency) of the knowledge questionnaire was 0.84, the reported practices Alpha Cronbach's reliability test equal 0.86, and the attitude Alpha Cronbach's reliability test equal 0.86

Pilot Study: To assess the applicability of the developed tools and the clarity of the included questions, a pilot research was conducted on 10% (12) of mothers who attend the aforementioned settings.

Ethical Consideration

Before beginning the study, the faculty ethical committee approved the research. Before include the mothers in the study, their consent was obtained; a concise explanation was given based on their knowledge level, physical and mental preparation. They made sure that all collected data was private and solely used for research. The mothers were advised that they could opt to participate in the study or not, and that they might leave the study at anytime

Fieldwork

The fieldwork conducted over a period of 8 months started from beginning of May 2022 to the end December of 2022.

The researchers was available in the aforementioned setting three days per week. To acquire the essential information for the study, each mother underwent an individual interview. The interview with the illiterate mothers takes longer because they require more explanation of tool items. According to the research tools, the mothers were asked to provide their comments. It took roughly

45 minutes to collect information from each mother. The questionnaire took an average of 15 minutes to complete, the attitude scale evaluation took 10 minutes, and the mother reported practices took 20 minutes. The researchers visited the aforementioned locations three days a week (Saturdays, Mondays, and Wednesdays) from 9.00 a.m. to 2.00 p.m.

Coaching program phases

This program was carried out on four consecutive phases; assessing, developing, implementing, and evaluation.

Phase I: An assessment of the pre-coaching program was performed in order to determine the needs of mothers, in this phase researchers assessing knowledge, attitude and practices of mother regarding uses of OTC .

Phase II: Based on existent mothers' need assessment, a coaching program was created. The theoretical content covered the following items: The type of medications given to treat the children, most frequent medicines used and the most favorite sources of health information, indication for using OTC, causes, the harming of using OTC to children, how to give OTC dose, mothers knowledge about drugs tolerance and antibiotics resistance, and mothers responses in failure of Over-the-counter drugs with their children.

Phase III: Implementation of the program :

Implementation of the coaching program was carried out at the previously mentioned settings. At the beginning of the first session, an orientation of the coaching program and its purpose was given. Mothers were divided into groups, and each

group consisted of 8-10 mothers approximately. Each session started with a summary about what had been given through the previous sessions and the objectives of the new topic, taking into consideration the use of simple Arabic language to suit the level of mothers' qualifications. As well, the session ended by a summary of its content and a feedback gained from mothers. The coaching program was delivered over the course of five sessions, with each session lasting between 30 and 45 minutes depending on the requirements of the mothers and the dynamics of the group. The theoretical component of the coaching program was provided over the course of three sessions and then followed by the practical component, which was shown over the course of two sessions using lectures, conversations/ discussions, role playing, a simulator, actual objects, and brainstorming. Power point presentations and posters. After the coaching program was implemented, mothers were given a handout to use as a reference.

Evaluation phase

The evaluation phases was done immediately post implementation of the coaching program and at follow up after three months later by comparing changes in mothers' knowledge, attitudes and practices regarding using OTC using the same assessment tools.

Administrative Design

The directors of the pediatric outpatient clinics in the Alshamla clinics of Tanta University Hospital received approval through a letter issued by the dean of the nursing faculty at Tanta University. The

researchers then met with the directors to discuss the goals and procedures for gathering the data.

Statistical Analysis

The collected data was analyzed by using SPSS (version 22), then analyzed descriptively and Chi-square test was used for categorical variables' associations, Logistic regression used for studying relationships between variables, at P . value ≤ 0.05 . The correlation between variables was examined using the correlation co-efficiency method.

Results

Table (1) presents socio-demographic characteristics of the studied mothers. More than half (54.35%) of the studied mothers age is more than 30 years. Also more than half (52.6%) of them were college graduated. As regards marital status 73.3% were married. As well, 51.7% were moderate income. More than half (54.3%) have from 1-3 children and 37.9 were working at the health field.

Table (2) demonstrates that, the most common diseases for which mothers used OTC drugs were cough, fever, flu, diarrhea, itching, and vomiting, colic with percent 57.7%, 80.1%, 51.7%, 25.8%, 19.8%, 19.8%, and 35.3% respectively. The table also indicate that the most common drugs used by mothers' were antibiotics, antipyretics, cough syrup, anti-diarrheal, vitamins, aspirin, traditional drugs, and others with percent 35.3%, 94.8%, 59.4%, 22.4%, 64.6%, 12.9%, 62.9%, and 18.9% respectively.

Figure (1) reflects that, more than two third (33.6%) of studied mothers' information from the pharmacist followed by 32.8% from relatives and 13.8% from internet..

Table (3) portrays that, there are highly statistically significance improvements of studied mothers' knowledge immediately post and at follow-up coaching program implementation as regards all knowledge items about using of OTC drugs.

Figure (2) indicates that, three quarter (75%) of studied mothers have poor knowledge before the implementation of the coaching program, which improved to 90% immediately post and 85% at the following-up phase of the coaching program implementation have good knowledge.

Table (4): Points out that, there are highly statistically significance improvements in mothers reported practices immediately post and at follow-up coaching program implementation as regards all practices items.

Figure (3) illustrates the studied mothers' total reported practices score, most of the studied mothers (90%) had unsatisfactory level before the coaching program implementation, which improved to most of them (90%) and the majority (85) have satisfactory practices immediately post and follow up coaching program respectively.

Table (5) reveals that, there is an improvement in studied mothers' total attitude immediately after, and at follow up phase of coaching program, with a highly statistically significant difference ($P < 0.001$).

Table (6) indicates that there was a statistically significant positive correlation between total knowledge, attitudes and practices scores of studied mothers at pre, post and follow up implementation of coaching program.

Table (7) shows a significant association between studied mothers' attitudes regarding administration OTC drugs to their children and all socio-demographic data.

Table 1: Distribution Socio-demographic Characteristics of the Studied Mother (n= 116)

Characteristics items	No (%)
Age in Years	
<30	53 (45.7)
≥ 30	63(54.3)
Education level	
Primary school	5 (4.3)
Secondary school	13(11.2)
High school	22 (19)
College Graduated	61(52.6)
Post graduated	15(19.2)
Marital status	
Married	85(73.3)
Divorced	15 (21.7)
Income status	
Enough	31(26.7)
Moderate	60(51.7)
Not enough	25(21.6)
Number of children	
1-3	64(54.3)
4-5	12(10.3)
> 5	41(35.3)
Occupation	
Work in health field	44(37.9)
Work in non-health field	26(22.4)
House wife	46(39.7)

Table 2: Distribution of studied Mothers regarding to Most Common Diseases and Over-the-counter Drug Used (n= 116)

Items	No (%)
The most common diseases mother use OTC	
Cough	67 (57.7)
Fever	93 (80.1)
Flu	60 (51.7)
Diarrhea	30 (25.8)
Itching	23 (19.8)
Vomiting	23 (19.8)
Colic	41(35.3)
The most common OTC drugs mother use	
Antibiotics	41(35.3)
antipyretics	110 (94.8)
Cough syrup	69 (59.4)
Anti-diarrheal	26 (22.4)
Vitamins	75 (64.6)
Aspirin	15 (12.9)
Traditional drugs	73 (62.9)
Others	22 (18.9)

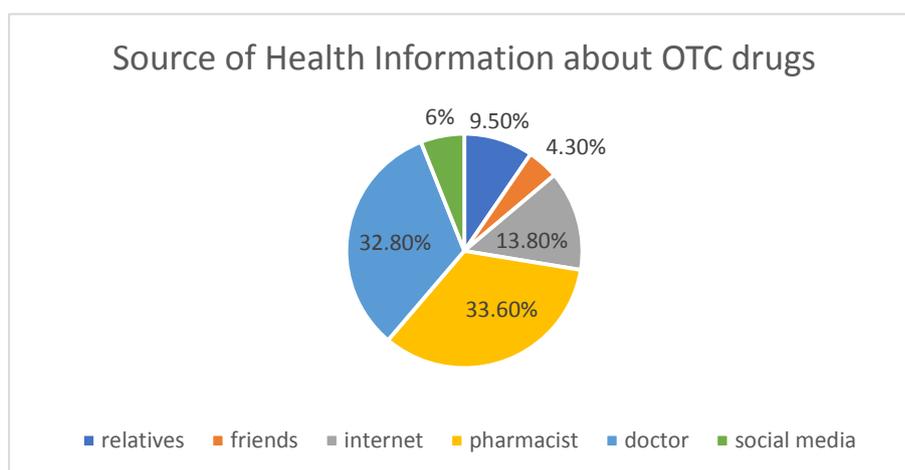


Figure 1: Percentage Distribution of Mothers Sources of Health Information about Over-the-Counter Drugs

Table (3): Percentage Distribution of the Studied Mothers According to their Knowledge about Over-the-Counter Drugs pre, post and the follow up Coaching Program Implementation (n = 116).

Mothers' Knowledge	Pre- coaching program			Post- coaching program			Follow up		
	Poor	Average	Good	Poor	Average	Good	Poor	Average	Good
	%	%	%	%	%	%	%	%	%
Definition of OTC drugs	5.0	45.0	50.0	0.0	5.0	95.0	0.0	7.0	93.0
Indication of OTC drugs	65.0	35.0	0.0	5.0	12.0	83.0	6.0	10.0	84.0
The common OTC drugs	60.0	20.0	10.0	0.0	5.0	95.0	5.0	10.0	85.0
The harming of using OTC	75.0	20.0	5.0	5.0	10.0	85.0	6.0	8.0	86.0
How to give OTC dose	25.0	35.0	40.0	0.0	7.0	93.0	0.0	10.0	90.0
Drugs tolerance	45.0	40.0	15.0	0.0	7.0	93.0	0.0	10.0	90.0
Antibiotics resistance	70.0	20.0	10.0	4.0	12.0	84.0	7.0	9.0	84.0
Mothers responses in failure of Over-the-counter drugs with their children.	62.0	38.0	0.0	5.0	11.0	84.0	5.0	10.0	85.0
Chi -square P- value	$X^2_1 = 16.8$ pre and post coaching program							P-value <0.001**	
	$X^2_2 = 21.9$ pre and follow -up coaching program								
	$X^2_3 = 14.4$ post and follow -up coaching program								

0.001** highly statistically significant

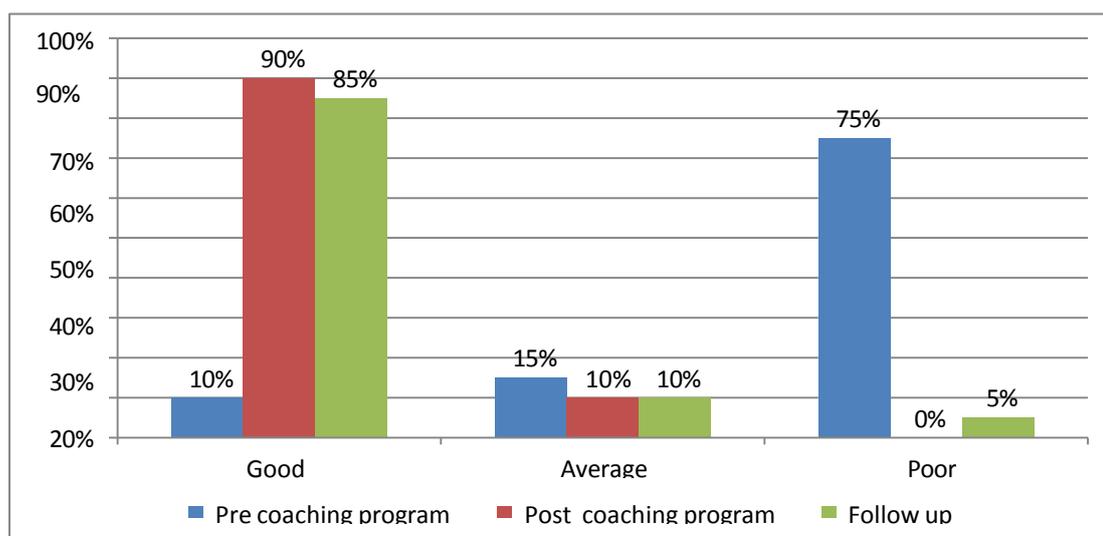


Figure (2): Percentage Distribution of Studied Mothers Total Knowledge about Over-the-Counter Drugs pre, post and the follow up Coaching Program Implementation (n= 116).

Table (4): Percentage Distribution of Studied Mothers According to their Reported Practices about Over-the-Counter Drugs Pre, Post and the Follow up Coaching Program Implementation (n = 116).

Mothers' Reported Practices	Pre- coaching program		Post- coaching program		Follow up program	
	Satisfactory	Unsatisfactory	Satisfactory	Unsatisfactory	Satisfactory	Unsatisfactory
	%	%	%	%	%	%
Right drug	10.0	90.0	85.0	15.0	82.0	18.0
Right time	5.0	95.0	90.0	10.0	85.0	15.0
Right dose	65.0	35.0	95.0	5.0	90.0	10.0
Care before and after oral medications administration,	70.0	30.0	96.0	4.0	95.0	5.0
Antibiotic administration,	75.0	25.0	93.0	7.0	90.0	10.0
Practice concerning antipyretics, cough and cold medications administration	45.0	55.0	92.0	8.0	90.0	10.0
Chi square	$X^2_1 = 26.6$ pre and post coaching program					P-value <0.001**
P - value	$X^2_2 = 44.2$ pre and follow-up coaching program					
	$X^2_3 = 20.6$ post and follow- up coaching program					

<0.001** highly statistically significant

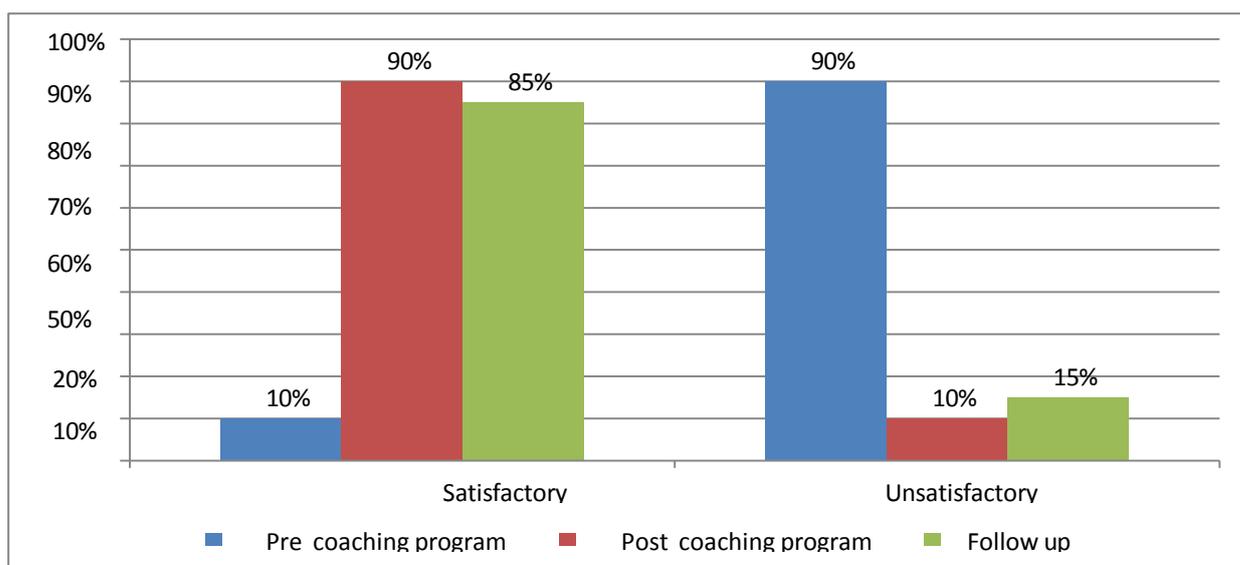


Figure (3): Percentage Distribution of Mothers' Total Practice Regarding Using Over-the-Counter Drugs pre, post and follow up Coaching Program Implementation (n = 116).

Table (5): Distribution of Total Studied Mothers' Attitude Regarding Using Over-the-Counter Drugs pre, post and follow up Coaching Program Implementation (n=116).

Items	Total Attitude					
	Pre coaching program		Post coaching program		Follow up	
	No	%	No	%	No	%
Positive	12	10.3	109	94	91	78.4
Negative	104	89.7	7	6	25	21.6
Mean ±SD	0.768±0.64		246±1.42		2.12±0.82	
Chi-square P- value	$X^2_1 = 15.05$ pre and post coaching program $X^2_2 = 21.66$ pre implementation and follow up $X^2_3 = 12.88$ post implementation and follow up				P-value < 0.001**	

<0.001 highly statistically significant**

Table (6): Correlation Between Total Scores of Knowledge, Attitudes and the Practices at the Pre, Post and Follow up Coaching Program

Items	r	p
Pre- immediately post coaching program		
Correlation between scores of knowledge and attitudes.	0.437	<0.001**
Correlation between scores of knowledge and practices.	0.885	<0.001**
Correlation between scores of attitudes and practices.	0.207	<0.001**
Pre-follow up post coaching program		
Correlation between scores of knowledge and attitudes.	0.218	<0.001**
Correlation between scores of knowledge and practices.	0.287	<0.001**
Correlation between scores of attitudes and practices.	0.289	<0.001**

<0.001** highly statistically significant

Table (7): Relation Between Attitude of Studied Mothers and their Socio-demographic Data

Characteristics of the studied mothers	B	SE	p-value	95 %CI EXP(B)	
				Lower	Upper
Age in Years	1.786	0.654	0.026	0.107	3.434
Education level	3.425	1.231	0.013	0.654	6.723
Marital status	1.432	1.652	0.00	0.567	5.678
Income status	43.23	1.23	0.03	17.23	76.34
Number of children	2.345	0.5678	0.041	1.045	4.45
Occupation	1.632	11.23	0.021	0.864	2.567
Reasons for using Over-the-counter drugs	8.345	4.323	0.0321	0.182	15.72
Sources of information about Over-the-counter drugs	2.456	0.654	0.025	0.181	15.478

P ≤0.05 statistically significant

Discussion

Child safety is the highest priority for healthcare professionals and caregivers. Errors in medication usage rank among the most common threats to child safety. In addition to the burden of medical costs, medication errors cause appreciable morbidity and mortality in children. The

misuses of medications are a significant global concern in the pediatric population because young children, who usually have their medication administered by their parents (Silva, 2017).

The present study aimed to determine the effect of a coaching program on

mothers' awareness regarding administration of OTC drugs to their children.

Concerning to most common diseases and drugs used by mothers. The current study results indicated that, the most common diseases mothers used OTC drugs were as follow; from the highest percent to the lowest percent, fever, cough, common cold, and colic, diarrhea, itching, and vomiting. As well, the present study result revealed that the most common OTC drugs used by the mothers were antipyretics drugs. This result congruent with **Alenazi et al. (2021)** study entitled "Parents' attitude and practices regarding the use of OTC medicines to their children in Riyadh, Kingdom of Saudi Arabia" reported that, 70% of participants mothers gave OTC antipyretics to their children without seeking medical advice. Moreover the current study result consistent with **Abdul Hadi et al. (2022)** who study "Malaysian Parental Attitudes Toward Medicine Use in Children" in Malaysia and reported that antipyretics were the most commonly medicines used by parents. This may be related to the fact that fever is the common symptoms of illness among children. Moreover, antipyretics such as paracetamol are readily available at the pharmacies and mothers usually have antipyretics stocked at home. As well, These findings could be attributed to the fact that, paracetamol is considered safe to be used for children if administered at the proper dosage.

Regarding mothers' source of information about OTC drugs the main source of information were pharmacist followed by relatives then internet, and the least sources were from doctors, social

media, and friends. This result in agreement with **Shawq et al., (2020)** who studied "Attitudes of Mothers Towards OTC Antibiotics for their Children in Baghdad city" and found that the highest percent for mothers information were from pharmacist.

As well, this result nearly was in the same line with **Mirdad et al., (2023)** study entitled "Over-the-counter Medication Use among Parents in Saudi Arabia" who stated that family physicians were the most common source (37.4%) of information about OTC medications, followed by community pharmacists (32%), the internet/social media (15.5%), and friends/family (15.1%). This result may be related to a failure of mass media in medical and nursing fields so; there are medical ignorance and lack of awareness about OTC drugs and its harm.

As regards mothers' knowledge about OTC drugs, the current study portrayed that the majority of mothers had poor knowledge before coaching program. As well, there was a highly statistically significant improvement in all items of mothers' knowledge at immediately post and follow up implementation of coaching program. From the researchers' point of view this might be due to the mothers' lack of knowledge about the nature of this issue, the media's inadequate portrayal of the effects of OTC drugs, and the inadequate counseling programs at pediatric outpatient clinic. Also the highly educated mothers had the ability to read pamphlets and understand the instruction from the health team regarding oral drugs administration. Moreover, the were younger age and new mothers concentrate more than old mothers

and they less occupied with problems and life stressors. This result in line with **Hassan et al., (2018)** conducted in Assiut University, Egypt, to assess "Impact of an Educational Program for Mothers about Preventing Oral Medications Misuse for Children Under Five Years", and found that the majority of the mothers (88%) had a poor score of knowledge before the program while 94% of them had a good score after the program.

Concerning mothers reported practices about OTC drugs the result of the present study revealed that, there was highly statistically significance improvements in mothers reported practices immediately post and at follow-up implementation of a coaching program as regards all practice items. Also regarding to studied mothers' total reported practices score, the current study result demonstrated that, most of the studied mothers had unsatisfactory level of practice before the coaching program implementation, which improved to the most of them had satisfactory practices immediately post and the majority at follow up of coaching program implementation. In the same line, the study done by **Hassan, et al., (2018)**, they found that the majority of the mothers (88%) had a poor score of practice before the program while 94% of them had a good score after the program. Moreover, the present study consistent with the study carried out by **Ads et al., (2023)** entitled "Mothers' Perceived Risks and Practices for Over-the-counter Medications of Children Under Five Years" and Found that more than half of the participating mothers had unsatisfactory practice regarding to OTC medication. This may be due to that the

effect of coach program on improving the studied mothers' practices.

Regarding studied mothers' total attitude, there was an improvement in studied mothers' total attitude, as the most of them had positive attitude towards not using OTC drugs at immediate post and follow up coaching program, while, at the pre-program, the majority behaved negatively. The result of present study before coaching program was in agreement with **Shawq et al., (2020)** study entitled "Attitudes of mothers towards Over-the-counter antibiotics for their children in Baghdad" reported that the mean score reflects agreement of mothers about the acceptance practice of OTC antibiotics in Iraqi country, it was observed that many persons used this action, mother used medication for their sick child without physician consultation and their child get better. In Iraqi society generally, the behavior of OTC medicine was accepted and ongoing. As well, the result of the current study nearly in the same line with **Abdul Hadi et al. (2022)** who recommended that efforts to improve the attitude of parents towards medication use are imperative such as providing education to them particularly regarding the importance of medicines as well as its efficacy and safety. This may be related to effect of a coaching program on the mothers' attitude about using of OTC drugs and its adverse outcomes.

Hence, the research hypothesis which stated that, mothers' knowledge, reported practice and attitudes are expected to be improved after receiving coaching program was accepted.

Concerning to correlation between total scores of knowledge, attitudes and the practices of studied mothers at the pre, post and follow up coaching program. The results of the current study indicated that there was a statistically significant positive correlation between total scores of knowledge, attitudes and practices at pre, post and follow up implementation of coaching program. This result nearly in the same line with that of the study conducted by **Ads et al., (2023)** reported that, A highly positive significant correlation was found between mothers' perception and reported practice. From the researchers' point of view, this may be due to increase mothers knowledge about OTC drugs will lead to a sense of self-responsibility of mothers, which affect on their practice and attitude. As well. The mothers who have good knowledge and positive attitude towards OTC are more likely to engage in better practices on OTC. Moreover this study result was inconsistent with the study conducted by **Abd Hamid et al., (2023)** entitled "Knowledge, Attitude and Practice of Over-the-counter Drugs among Undergraduate Students of International Islamic University Malaysia (Iium) Kuantan, Pahang" indicated that, there was no statistical significant correlation between the knowledge and attitude, and also no statistical significant correlation between knowledge and practice regarding OTC drugs among undergraduate students at IUM Kuantan ($p > 0.05$). From the researchers' point of view this contradiction may be attributed to different targets of the study sample.

The current study result revealed that, there was a significant association between

mothers' attitudes and all mothers socio-demographic data. This result consistent with **Shawq et al., (2020)** who found that a significant association between mothers' attitudes about use OTC antibiotics to their children and all study variables including mothers age, education level, job, sources of information about self medication, use self medication reasons for self medication & monthly income).

Conclusion

The coaching program improved the mothers' awareness regarding OTC medications administration for their children and decreased drug misuse. There was a statistically significant difference between pre, immediately posttest and follow up of studied mothers total scores of knowledge, attitudes and practices. As well, there was a significant association between mothers' attitudes and all mothers socio-demographic data

Recommendations

- Pediatric hospitals should offer the mothers with handouts, brochures, pamphlets, posters or videotapes about medication administration.
- Continued educational programs should be conducted for the mothers in pediatric outpatient clinics about medication administration.
- Teaching the mothers about the appropriate measuring devices to measure the dose of oral medications for their young children.
- The Ministry of Health should set regulations to restrict non-prescribed drugs sales from pharmacies especially antibiotics

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