



An audit on parental attitudes towards medicines used in children



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ABSTRACT

Introduction: There is growing concerns regarding the use of medicines in children. Therefore, many strategies were implemented to improve such use and make safe and effective medicines more available for children. Enhancing interaction between parents and health care providers plays an important role in insuring the proper use of medicines. In order to optimize such interaction, the attitudes, beliefs and practices of parents toward medicine use in children need to be explored.

Methods: A validated questionnaire was administered via face to face interviews to 1000 parents attending pediatric outpatient clinics with their children in order to investigate their attitudes toward children's medicines.

Results: The majority of respondents (83.2%) were mothers. The majority participants (84.4%) agreed that medicines are necessary in treating illnesses, 80% of the parents had worries about the side effects and interactions of medicines, and 60% of the parents said they try to avoid giving medicines to their children. Moreover, parents in this study varied considerably in their views toward prescription and over-the-counter medicines. More than half of the participants (55.2%) declared that doctors in Jordan prescribe antibiotics to children too easily.

Conclusion: Participants had positive attitudes toward the necessity of medicines for ill children. However, a considerable proportion of the parents had negative attitudes toward children's medicines with respect to their side effects and interactions, their capability of disturbing the body's own capability of healing illnesses, their unnatural characteristic and other aspects related to medicines.

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1. Introduction

The child population represents a special group, whose distinctive growth and development patterns contribute largely to different safety and efficacy profiles of medicines as opposed to adults (Olsson et al., 2011). This makes the practice of using medications in pediatrics outside the specifications described in the product license, in terms of age of the child, dose or route of administration,

which is referred to as “off-label use” (Mukattash et al., 2008), a major problem in pediatrics. Off-label drug use in pediatric population may reach up to 90% in neonates (Choonara and Conroy, 2002; Choonara et al., 2003) and could lead to life-threatening adverse reactions (Horen et al., 2002; Turner et al., 1999).

Being a vulnerable group, pediatrics are highly prone to various diseases, thus receiving different medications and being exposed to their potential harms. These medications include: as anti-infective drugs, respiratory drugs, over the counter medications, complementary and alternative medicines and dermatological formulations (Rimsza and Newberry, 2008; Simpson and Roman, 2001; Sturkenboom et al., 2008).

Several global regulatory agencies are taking the responsibility to promote safe and effective use of medicines in pediatric patients. The Pediatric Pharmacology Advisory Committee, and the Office of Pediatric Therapeutics and the 'Medicines for Children' formulary are examples (Holdsworth, 2003; Sutcliffe,

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1999). Despite the aforementioned endeavors, the contribution of research into the examination of parental attitudes toward medicine use in pediatrics is not maximized. The beliefs and attitudes people have toward medicines are known to influence medicine use and adherence (Horne and Weinman, 1999). Parents are responsible for making decisions concerning the health of their children (Conn et al., 2007). Therefore, parental attitudes toward children's use of medicine directly impact their children's actual medicine use (Hämeen-Anttila et al., 2011), as well as the way children perceive the issues related to the use of their medicines as they grow up (Hämeen-Anttila et al., 2011).

According to studies, favorable attitudes of parents were linked to better adherence (Conn et al., 2007), and fears and worries about medications have been associated with poor adherence (Chan and DeBruyne, 2000; Conn et al., 2005). The parents' information about their child medication largely affects their attitude. For example, knowledge of the off-label nature of prescribed drugs and the possible adverse events is reflected positively on parents' willingness to volunteer their children for participation in clinical trials, ultimately reducing the incidence of off-label medicines' prescription and use in pediatrics (Lenk et al., 2009). Limited studies highlighted parental attitudes regarding the use of medicines in children. In fact, such studies are completely lacking in Jordan, although children between 0 and 14 years old constitute 34.7% of the Jordanian population (CIA, 2017). Therefore, carrying out this project would be a priority in Jordan. The objective of this article is to explore parental attitudes towards use of medicines in children.

2. Methods

2.1. Study design, setting and subjects

A cross-sectional population survey was conducted in Jordan in the summer of 2013, in order to investigate the views and attitudes and of Jordanian parents toward medicine use in children. The study took place in public and private pediatric outpatient clinics in various areas in Jordan. The target sample was parents of children attending pediatric outpatient clinics. The research aimed to achieve a sample size of 1000 respondents. This sample size has shown to yield statistically significant results in previous studies conducted in Jordan (Mukattash et al., 2012). During the study period, 1026 parents were approached while they were waiting their appointments in the clinic, and they were informed about the nature of the study. Once they agreed to participate in the study, signed consent forms were obtained from all respondents.

2.2. Questionnaire

The questionnaire used in this study was adapted from a tool developed by Hämeen-Anttila et al. (2011). The questionnaire was examined for face and content validity, and adjusted to meet the cultural aspects of the Jordanian population. Moreover, the questionnaire was examined for fitness of purpose in a focus group composed of six parents. The questions in the original questionnaire were translated from English to Arabic, and back-translated from Arabic to English, yielding two identical English versions. The Arabic version of the questionnaire was used to gather the data from parents as Arabic is the official language in Jordan.

The questionnaire comprises two sections; the first section explored parents' attitudes when caring for their children's health. It includes 21 items, among them 6 items cover positive attitudes of parents and 15 items cover negative attitudes of parents. The participants were asked to rate their opinion regarding the statements on a five-point Likert scale (I agree completely, I agree, I don't agree or disagree, I disagree, I disagree completely, no opin-

ion). The second section collected parents' and children's demographic information.

2.3. Data collection

Throughout the research, questionnaires were administered to parents accompanying their children to pediatric outpatient clinics using a structured interview technique (face to face) by one trained interviewer. Parents were approached by the interviewer and invited to participate in the study. Each interview required approximately 10 min to complete.

2.4. Ethical consideration

The study received ethical approval from the Institutional Review Board at King Abdulla University Hospital, Jordan University of Science and Technology (REF: 20130109). The study was conducted following the ethical standards outlined in the World Medical Association Declaration of Helsinki guideline (World Medical, 2013). Participants' confidentiality was preserved by using anonymous questionnaires.

2.5. Statistical analysis

Responses were coded and entered into a customized database in Statistical Package for Social Science (SPSS) version 21 (SPSS Inc., Chicago, IL, USA). The descriptive analysis was done using mean and SD for continuous variables and percentage for qualitative variables.

3. Results

3.1. Demographics

Of all respondents approached only 26 refused to take part in the study (response rate 98.4%). Of the 1000 questionnaires completed, 832 (83.2%) were answered by mothers, 152 (15.2%) by fathers, and only 16 (1.6%) by other caregivers. The majority of respondents were 30–39 years old and had either a college or a university degree. Almost half the respondents (46.8%) reported that they stay at home with children, and a similar proportion of parents were working (46.4%). The majority of respondents (77.2%) had health insurance. Complete demographic characteristics of respondents are presented in Table 1.

3.2. Parental attitudes

Parental responses to the positive statements within the questionnaire are present in Table 2. The majority of respondents (84.4%) agreed that medicines are necessary in treating illnesses. In this study, parents varied considerably in their views toward prescription and OTC medicines. While the majority of parents considered prescription medicines safe (74.8%) and effective (78%), only 28.4% of them considered OTC medicines to be safe and 35.6% considered OTC medicines to be effective.

The majority of respondents had negative attitudes, where 80% of parents had worries about the adverse events and interactions of medicines, 40.4% indicated that medicines can disturb the body's own capability of healing illnesses, and 66% deemed medicines unnatural. Around 73% believed that the more they needed to use analgesics the less effective they would be for pain, and 64.8% thought that the long-term use of analgesics reduces the child's pain threshold. More than half of the participants (55.2%) declared that doctors in Jordan prescribe antibiotics to children

Table 1
Demographic characteristics of the study population (N = 1000).

Characteristic	No. (% of the responses)
Relationship to the child	
Mother	832 (83.2)
Father	152 (15.2)
Other	16 (1.6)
Age (years)	
20-29	360 (36)
30-39	500 (50)
40-49	104 (10.4)
50 years and older	36 (3.6)
Number of children	
One	344 (34.4)
Two	324 (32.4)
Three	200 (20)
Four	116 (11.6)
Five children or more	16 (1.6)
Education	
College or university	812 (81.2)
High school	172 (17.2)
Primary school	16 (1.6)
Literate	0
Illiterate	0
Current working status	
Working	464 (46.4)
Studying	12 (1.2)
Staying at home with children	468 (46.8)
Not working currently (including persons on sick leave, retired, or unemployed)	56 (5.6)
Household monthly income (JDs ^a)	
≤ 300	32 (3.2)
300-600	200 (20)
600-1000	420 (42)
> 1000	348 (34.8)
Health insurance	
Insured	772 (77.2)
Not insured	228 (22.8)

^a 1 JD = 0.71 US\$.

too easily. Parental responses to the negative statements of the parental attitudes' questionnaire are present in Table 3.

4. Discussion

This study was conducted to identify Jordanian parents' attitudes towards medicine use in their children. Among the parents approached, mothers comprising 83.2% of all caregivers interviewed, and only 15.2% of the caregivers whose attitudes were examined were fathers and the remaining 1.6% were not parents. It is not surprising that caregivers who attended with children pediatric outpatient clinics and interviewed in this study were mostly mothers, as previous research confirmed the significant contribution of mothers in particular into the education about

medicines and the use of medicine in children (Chambers et al., 1997), the more time mothers afford for children compared to fathers and that mothers are the family members responsible for looking after other family members, mainly children (Du and Knopf, 2009; Hämeen-Anttila et al., 2011).

Our results indicate that the majority of parents in this study consider medicines necessary in treating illnesses and that medicines which doctors had prescribed for children are also necessary. However, a comparable proportion of parents had negative attitudes toward children's medicines, particularly toward the adverse events and interactions. The influence of the negative attitudes toward medicines may have a stronger effect on parents' behaviors than that of the necessity attitudes. This assumption is based on the large number of parents who adopted certain negative practices regarding the use of medicines in their children such as avoiding the use of medicines or keeping them as the last resort. Taking into account the considerable proportion of parents who feel worried regarding the adverse events and interactions of medicines (80%) which might have led them to the avoidance of using medicines, highlights the need for educating parents about these issues. Similar safety worries have been raised by healthcare professional dealing with children (Mukattash et al., 2011a,b)

Parental education would prove beneficial here, especially because it has been demonstrated in previous studies that patients wish to know about their medications' adverse events (Lyons et al., 1996; Smith et al., 2000), and that parents in particular, are willing to be provided with information about the treatment process of their children (Fisher, 2001; Jackson et al., 2008). Unfortunately, healthcare professionals reported low rates of communication with parents while treating their children (Mukattash et al., 2011a,b), a situation that needs further investigation. Parental satisfaction is very important when their children are being treated which would influence adherence and treatment outcomes.

Pharmacists can act as effective parents' educators since they are more easily accessed compared to doctors and have the opportunity to counsel parents regarding adverse events and interactions of medicines as well as other medical problems (Aoyama et al., 2012). Because pharmacists rarely address medication adverse events when counseling patients and the majority of them do not realize the public's desire to be informed about adverse events and interactions and the importance of providing this knowledge (Vainio, 2004), it becomes important to bring to the mind of pharmacists the need for this type of counseling and encourage them to engage with patients and parents in discussions about these issues.

In addition to parental and pharmacists' education, the education process should target physicians in order to improve their prescribing patterns of antibiotics, as 55.2% of the participants in this survey had complained that doctors in Jordan prescribe antibiotics too easily. High levels of off-label antibiotic prescription was reported in Jordan raising concerns regarding increasing antibiotic

Table 2
Parental responses to the positive statements about the use of medicine in children.

Statement	No (% of the responses)			
	Agreed	Neutral	Disagreed	No opinion
Medicines are necessary in treating illnesses	844 (84.4)	132 (13.2)	16 (1.6)	8 (0.8)
Over-the-counter (OTC) medicines are safe	284 (28.4)	292 (29.2)	416 (41.6)	8 (0.8)
Prescription medicines are effective	780 (78)	200 (20)	12 (1.2)	8 (0.8)
Prescription medicines are safe	748 (74.8)	208 (20.8)	24 (2.4)	20 (2)
OTC medicines are effective	356 (35.6)	328 (32.8)	312 (31.2)	4 (0.4)
Medicines that a doctor has prescribed for the child are necessary	820 (82)	148 (14.8)	28 (2.8)	4 (0.4)

Participants who said they agreed completely or only agreed to the statements were considered to be agreed. Similarly, those who said that they disagreed completely or only disagreed were considered to be disagreed. Those participants who said "I don't agree or disagree" were deemed to have a neutral response. Participants who said to have no opinion about the statement were listed in the no opinion column.

Table 3
Parental attitudes to the negative statements about the use of medicine in children.

Statement	No (% of the responses)			
	Agreed	Neutral	Disagreed	No opinion
Side-effects of children's medicines worry me	800 (80)	140 (14)	52 (5.2)	8 (0.8)
I try to avoid giving medicines to my child	660 (60)	176 (17.6)	160 (16)	4 (0.4)
Fever, a natural means of defense of the child's body, should not be lowered artificially with medicines	168 (16.8)	156 (15.6)	660 (66)	16 (1.6)
The child needs to learn how to bear pain	252 (25.2)	248 (24.8)	488 (48.8)	12 (1.2)
I usually give less analgesic to the child than is recommended in the instructions	192 (19.2)	92 (9.2)	704 (70.4)	12 (1.2)
Medicines can disturb the body's own capability to heal illnesses	404 (40.4)	212 (21.2)	248 (24.8)	136 (13.6)
Medicines are unnatural to the human body	660 (66)	96 (9.6)	160 (16)	84 (8.4)
I try to take care of my child's ailments by some other means than using medicines	436 (43.6)	320 (32)	240 (24)	4 (0.4)
The more you need to use analgesics the less effective they are for pain	732 (73.2)	92 (9.2)	112 (11.2)	64 (6.4)
I take care of my child's minor ailments by using OTC medicines	392 (39.2)	176 (17.6)	432 (43.2)	0 (0)
Medicines are dangerous, even when used according to the instructions	268 (26.8)	240 (24)	476 (47.6)	16 (1.6)
I take my child to see a doctor only when other ways of treatment do not help	392 (39.2)	136 (13.6)	464 (46.4)	8 (0.8)
Long-term use of analgesics reduces the pain threshold	648 (64.8)	60 (6)	124 (12.4)	168 (16.8)
Doctors prescribe antibiotics to children too easily	552 (55.2)	160 (16)	228 (22.8)	60 (6)
Interactions of medicines worry me	800 (80)	80 (8)	96 (9.6)	24 (2.4)

Participants who said they agreed completely or only agreed to the statements were considered to be agreed. Similarly, those who said that they disagreed completely or only disagreed were considered to be disagreed. Those participants who said "I don't agree or disagree" were deemed to have a neutral response. Participants who said to have no opinion about the statement were listed in the no opinion column.

resistance in the future (Mukattash et al., 2016), parents are partners when it comes to treating their children and healthcare professionals should take extra care when prescribing and dispensing antibiotics for children.

Regarding prescription and OTC medicines, parents considered prescription medicines more safe and effective (74.8% and 78% respectively) compared to OTC medicines (28.4% of parents considered OTC medicines safe and 35.6% considered them effective). As the name implies, prescription medicines cannot be obtained by parents without a prescription from a licensed physician after visiting him/her accompanying the ill child, unlike OTC medicines which can be easily bought from pharmacies without the need for the parent to bring the child along. The requirement of a prescription to get prescription medicines imparts the effectiveness feature to prescription medicines more than OTC medicines. Moreover, obtaining OTC medicines without restrictions may point them out by parents as not being dangerous, and hence, being safer (Hämeen-Anttila et al., 2011).

Parents may consider effective medicines to be also safe, as the percentage of parents who deemed prescription medicines safe was very similar to the percentage of parents who considered them effective, and the same consideration applied to OTC medicines. The finding that parents consider prescription medicines more safe and effective was also observed in two studies conducted in Finland (Hämeen-Anttila et al., 2011).

Limitations

This study collected information from parents at pediatric clinics, responses could have been influenced by their child's condition and his/her need for treatment. Further studies should explore the attitudes of parents towards medicine use in children in different settings; ie public areas.

5. Conclusions

The great majority of the participants had positive attitudes toward the necessity of medicines and considered the medicines which doctors had prescribed for children are necessary, which reflects the level of trust parents place in their doctors. On the other hand, a considerable proportion of the parents had negative attitudes toward children's medicines with respect to their adverse events and interactions, their capability of disturbing the body's own capability of healing, their unnatural characteristic and other aspects related to medicines. Parental negative attitudes toward

medicines should be taken into consideration because they are translated into real practices of avoiding giving medicines to children or keeping medicines the last resort. Consequently, education should be provided to all parents in order to correct their misconceptions and malpractice in relation to the use of medicines in their children, also adequate knowledge of both pharmacists and pediatricians should be insured so they can act as effective counselors for parents who trust them.

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