

Original Research

Parent's knowledge and management of their children's ailments in Malaysia

Omar T. DAWOOD, Mohamed I. M. IBRAHIM, Subish PALAIAN.

Received (first version): 15-Sep-2009

Accepted: 25-Mar-2010

ABSTRACT*

Minor ailments like sore throat, fever, cough and diarrhea can be relieved with over-the-counter (OTC) medications such as paracetamol or other traditional remedies, without seeking for consultation from general practitioners. Parents usually take the responsibility to come up with some kind of treatment for their children.

Objective: (1) to evaluate the parents' medical knowledge about OTC medicines which are usually used by the parents to treat their children and (2) to evaluate the parents' management in dealing with their children's ailments, and (3) to evaluate the association between medical knowledge and the management of children's ailments related to medicine use among the parents.

Methods: A cross-sectional survey was conducted to measure the parents' knowledge about their children's ailments. Subjects were selected and information was obtained in September 2008. Non-probability convenient sampling method was used. Parents were recruited from the general public to answer the questionnaires.

Results: 197 parents filled in the questionnaires. From the total respondents, 48.2% of them were male. This study showed that most respondents have medium knowledge (6.11 SD=3.6) and a moderate management (4.39 SD=2.7). The results showed that there is a significant difference between the knowledge and the management level of ailments ($P=0.033$). Regarding the education level of the parents and the socioeconomic status, the p-value showed there was a significant difference between parents' knowledge and their education level ($P=0.012$).

Conclusion: This study showed that parents have inadequate knowledge and some misconception about how to go about treating their children when they are unwell. It is hoped that by identifying weak areas in parents' management to their children's ailments, better planned educational and behavioral modification efforts can be made to elevate the knowledge level among the parents when they medically treat their children.

Keywords: Health Knowledge, Attitudes, Practice. Parents. Malaysia.

CONOCIMIENTO Y MANEJO DE LOS PADRES DE LAS DOLENCIAS DE SUS HIJOS EN MALASIA

RESUMEN

Las dolencias menores como irritación de garganta, fiebre, tos y diarrea pueden aliviarse con medicamentos *over-the-counter* (OTC) como el paracetamol u otros remedios tradicionales, sin posterior consulta al médico general. Los padres, generalmente, toman la responsabilidad de identificar algún tipo de tratamiento para sus hijos.

Objetivo: (1) evaluar los conocimientos médicos de los padres sobre los medicamentos OTC que usan habitualmente para tratar a sus hijos; (2) evaluar el manejo de los pares al tratar las dolencias menores de sus hijos; y (3) evaluar la asociación entre los conocimientos médicos y el manejo de las dolencias menores de los niños en relación al uso de medicamentos entre los padres.

Métodos: Se realizó un estudio transversal para medir los conocimientos de los padres sobre las dolencias de sus hijos. Se seleccionó a los individuos y se obtuvo la información en septiembre de 2008. Se utilizó un muestreo no probabilístico de conveniencia. Se reclutó a los padres para responder los cuestionarios entre el público general.

Resultados: 197 padres rellenaron el cuestionario. Del total de respondentes, el 48,2% eran hombres. Este estudio mostró que la mayoría de los respondentes tenían un conocimiento medio (6,11; DE=3,6) y un manejo moderado (4,39; DE=2,7). Los resultados mostraron que hay una diferencia significativa entre nivel de conocimiento y manejo de las dolencias ($P=0,033$). En relación al nivel educativo de los padres y el estado socio-económico, los valores p mostraron que había una diferencia significativa entre el conocimiento de los padres y su nivel educativo ($P=0,012$).

Conclusión: Este estudio mostró que los padres tienen un conocimiento inadecuado y algunos malos entendidos sobre cómo tratar a sus hijos cuando no se encuentran bien. Se espera que identificando los puntos débiles del manejo de los padres de las dolencias de sus hijos, se puedan realizar planes educativos y esfuerzos de modificaciones actitudinales para elevar el nivel de conocimiento entre los padres cuando tratan médicamente a sus hijos.

* Omar T. DAWOOD. B. Sc. Nursing. Discipline of Social and Administrative Pharmacy, School of Pharmaceutical Sciences. Universiti Sains Malaysia. Penang (Malaysia). Mohamed I. M. IBRAHIM. BPharm, PhD. Professor of Discipline of Social and Administrative Pharmacy. School of Pharmaceutical Sciences. Universiti Sains Malaysia. Penang (Malaysia). Subish PALAIAN. M.Pharm. Discipline of Social and Administrative Pharmacy. School of Pharmaceutical Sciences. Universiti Sains Malaysia. Penang (Malaysia).

Palabras clave: Conocimientos, actitudes, práctica sobre salud. Padres. Malasia.

INTRODUCTION

Suffering from minor ailments is the most frequent episode in childhood experiences. Fever is one of the chief complaints as many as one third of all pediatric consultations in general practice.¹ A study by Crocitti, et al. 2001 indicated that parents still have a problem to care the fever in children. Some parents believe that fever is one of the diseases which may occur among their children, rather than to be a sign or symptom of illness.² In many countries, the antipyretic medicine and other over-the-counter (OTC) medicines are commonly used among parents to treat their children.³ Using (OTC) medicine among parents may be affected by their attitudes towards illnesses. However, it is worth mentioning that some previous studies show that parents' knowledge about fever is still inaccurate. Most parents are confused about which medicine should be given to their children to manage the pain and fever associated with minor ailments.⁴

The common ailments of children including headache, fever, flu, diarrhoea and sore throat can be treated at home. Some minor ailments can be relieved with (OTC) medications such as Paracetamol or other traditional remedies, without seeking for consultation from general practitioners or pediatricians. When a child falls ill, the parents' concerns are often influenced by their knowledge of the ailments. Parents may get advice from the media, through family tradition, from friends and via other sources which affect their management of the ailments.⁴ The concept of self-management in healthcare includes disease prevention, self-diagnosis, self-treatment and appropriate consultation with health care practitioners. Within the context of children's ailments, the decision-maker will usually be the child's care taker.⁵ A care taker must be the parent or guardian of the child. In general, parents with higher level of medical knowledge are expected to have a better management of children's ailments. This study aimed to enhance the parents' knowledge about their children's illnesses and improve their management of treating their children from minor ailments, in addition to recommend that health care professionals should communicate with parents and do not cast aside the latter's beliefs about children's ailments.

METHODS

The study design was a cross-sectional study. Cross-sectional studies analyze data collected on a group of subjects at one time rather than over a period of time. Subjects (parents) were recruited to measure their medical knowledge and management level to treat their children's ailments.

This study was conducted to identify parents' medical knowledge on minor ailments concerning their children. The target population of the study was the 'parents' group regardless of age groups, ethnics, occupations, and social status. The total sample size of this survey was 200 parents.

Non-probability convenient sampling method was used. Parents were recruited from the public to answer our questionnaires. This preliminary survey was carried out in the Penang Island, one of the states of Malaysia. According to the inclusion criteria, the parents who were able to read and write were included. Furthermore, parents who had child under 12 years old and agreed to participate in this survey were included. Regarding to the exclusion criteria, the parents who were declined to participate or didn't able to read and write were excluded. For the researchers' convenience as well as taking into account the availability of respondents to complete the questionnaire, the setting of data collection was from different area; shopping center, bus station and housing area regardless to their gender, economic status or education level.

The questionnaire was designed to evaluate the parents' knowledge about OTC medicines which are usually used to treat the minor ailments. In addition, to explore how the parents are usually manage the minor ailments. Most questions came from the previous studies related to parents' self-medication and parents' knowledge about medicines. The face and content validity were performed with health care professionals before conducting the survey.

Self-administered questionnaire was used to collect the data from the parents. Written informed consent form was obtained from the parents who were agreed to participate in the survey. Parents were required to answer and complete the questionnaire on the spot. The questionnaire was designed to consist of 3 parts. Part 1 was the demographic information of the parents, and part 2 for investigating the level of medical knowledge of parents about OTC medications, whilst part 3 was on the parents' ways of handling their children's illnesses. The researchers had explained each question to all respondents before they filled in the questionnaire. For parents with limited command of the English language, the questionnaire was translated into Malay language and Mandarin versions, for ease of understanding.

Data analysis had been done by the aid of statistical software, the Statistical Package for Social Sciences (SPSS) Version 15.0. Frequencies of demographic information of respondents were tabulated. In order to measure the level of medical knowledge of parents and the management of children ailments, the score of each respondent for part 2 and part 3 of the questionnaire was counted and analyzed. To calculate the total marks of different respondents, we used the scoring method for different answers and actions. Chi square test and Spearman rho correlation test were used to find the association between the variables.

Socio-demographic information		N	%
Gender	Male	95	48.2
	Female	102	51.8
Race	Malay	60	30.5
	Chinese	107	54.3
	Indian	25	12.7
	Others	5	2.5
Age	11-20 years old	8	4.1
	21-30 years old	37	18.8
	31-40 years old	66	33.5
	41-50 years old	52	26.4
	51-60 years old	21	10.7
	61 years old and above	13	6.6
Occupation	Private sector	98	49.7
	Unemployed	40	20.3
	Public sector	36	18.3
	Retired	23	11.7
Education	Primary school	26	13.2
	Lower secondary (PMR)	20	10.2
	Higher secondary (SPM/O-level)	44	22.3
	Diploma	24	12.2
	Pre university STPM/A-level/matriculation	39	19.8
	University	42	21.3
	Others	2	1.0
Monthly income	RM5001 and above	15	7.6
	RM3001-RM5000	36	18.3
	RM1001-RM3000	66	33.5
	RM1000 and below	40	20.3
	None	40	20.3

* RM1 = 0.29 USD

RESULTS

Out of the 200 distributed questionnaires, 197 (98.5%) questionnaires were successfully collected.

Socio-demographic characteristics

Table 1 presents the demographic information of 197 participants in Penang Island who had filled in the questionnaires. Multi racial parents had been chosen to be a variable to find if this factor may influence the parents' knowledge about medicines and this factor can be utilized as evidence-based information in the future. There were 95 male and 102 female respondents participating in the survey. The majority of our respondents were 31-40 years old and 41-50 years old.

Parents' knowledge about the treatment of their children

Table 2 showed the general knowledge among parents regarding the OTC medicines. Most of parents weren't familiar with the name of medicines especially in cases of diarrhea and cough therefore, the parents who would know and recognized the medicines for these cases were ticked "yes" and for those parents who wouldn't know and recognized the medicines were ticked "no". Most of the parents were knowledgeable enough about the kinds of medicine that should be given to their children during fever, when they have cold and when they suffer from cough. To add, 114 parents know the medicine for headache for their children but 83 (42.1%) parents do not have that knowledge. It is also a newly-found fact that the medicine for diarrhea is only known by 47.2% of parents, the lowest percentage gathered in the list.

Do you know which medicine should be given for the cases below?	Response	
	Yes	No
Fever	159 (80.7%)	38 (19.3%)
Headache	114 (57.9%)	83 (42.1%)
Diarrhea	93 (47.2%)	104 (52.8%)
Cold and cough	146 (74.1%)	51 (25.9%)
Flu	104 (52.8%)	93 (47.2%)

Parents' beliefs about the form of medicine that works better for their children

Figure 1 referred to the parents' beliefs about medicines forms generally and showed that a large portion of respondents had chosen injection (24.87%) and syrup (22.34%) as the more suitable forms of medicine that they believed can work better on their children. This means there were 49 respondents who chose injection while 44 respondents opted for syrup as the more suitable forms of medicine for their children.

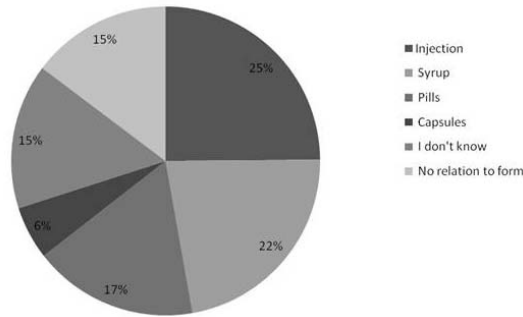


Figure 1: Which form of medicine do you believe work better for your children?

Parents' knowledge about over the counter medicines

From table 3 below, all questions was about medicines in general which are usually used to treat the minor ailments at home. There was a large percentage of respondents who hold the principle that medicine is important for their children. The Malay race and high education level (university) showed significant difference; the p-value were (p=0.042) and (p=0.012) respectively. In addition, 37.6% of parents think that medicine cannot do harm for their children while, 16.8% do not even know about any harmful effects of medicines. The older parents and those with higher education level and high monthly income were more knowledgeable. The significant differences were found with age (p=0.028), highest education level (p=0.001) and the high monthly income (p=0.009). Regarding the side effects of medicines, only 41.1% parents know about the side effects of their children's medicines. Parents with high level of education and high monthly income showed statistically significant differences and the p-value were (p=0.000) and (p=0.016).

Parent's management of over the counter medicines

Table 4 shows that 57.4% of respondents agreed that the financial status may affect the decision of seeking medical assistance for their children. Furthermore, parents with the high education level and the monthly income showed statistically significant (p=0.004) and (p=0.001). In addition, 96 of respondents (48.7%) agreed to give supplements such as multi vitamin to their children. The age of parents and the highest education level showed significant differences p-value were (p=0.038) and the age group of 41-50 years old (p=0.000). Regarding the label of medicines, 83.3% of parents said they usually read the labels before giving the medicines to their children. Also, the age of parents and the highest education level showed significant differences (p=0.005) and (p=0.015) respectively. Most parents (67.5%) said they take note of the number of times the medicine should be taken by their children and the Chinese race showed significant difference (p=0.005).

Parents' knowledge level and their management level of over the counter medicines

Table 5 presents that most of respondents were with moderate knowledge level and moderate management level. There was significant association between the knowledge levels and also the levels of management (Chi-square test p-value was 0.033).

DISCUSSION

This study has highlighted the parents' medical knowledge on illnesses of their children as well as their methods of managing their children's ailments. A quantitative approach was used to produce statistically representative results. In our study, Chi-square test showed there was no significant difference between the gender and their knowledge about medicines. Most of the respondents agree that medicine is important for their children. They know which medicines should be given to their

Question	Responses			Chi-square test p-values					
	Yes	No	I don't know	Gender	Race	Age	Occupation	Highest education level	Average monthly income
1. Do you think that medicine is important for your children?	180 (91.4%)	17 (8.6%)	-	0.684	0.042*	0.511	0.128	0.012*	0.606
2. Do you think that medicine can do harm for your children	90 (45.7%)	74 (37.6%)	33 (16.8%)	0.276	0.100	0.028*	0.051	0.001*	0.009*
3. Do you know the side effects of your children's medicine?	81 (41.1%)	116 (58.9%)	-	0.254	0.088	0.056	0.082	0.000*	0.016*
4. Do you think that non-prescribed medicine can treat your children?	101 (51.3%)	96 (48.7%)	-	0.933	0.176	0.009*	0.058	0.000*	0.000*
5. Do you think that the effectiveness of medicine for the children is related to their price?	150 (76.1%)	47 (23.9%)	-	0.905	0.027*	0.122	0.430	0.019*	0.000*

*p-value < 0.05

children when they are having fever, cough, flu or headache. This is probably due to the fact that these are really the kinds of ailments which parents often encounter. For diarrhea, nonetheless, only 47.2% of parents are aware of its medicine. This is because diarrhea is not common among children as the parents may tend to be overly sensitive of their children's hygiene.⁷

Most of the parents believe that injection and syrup work better for children. This is because medicines in the injection form works faster than others as it directly inserts medicine into the bloodstream. For

about medicine taken by their children. Parents also referred they used medicines information leaflets as a source of information.²² There was a strong desire to share responsibility for assessment of their sick child with a professional, but parents are often worried or tend to feel guilty that they might be bothering the doctor unnecessarily. Although parents seek more information from their doctors, they may feel uncomfortable or may not have the confidence in making their real concerns clear to the doctor.⁸ Parents choose non prescribed medicines or (OTC) medicine to treat their children. This is probably because they can simply give (OTC)

Table 4: Respondent's management and actions on their children's ailments

Question	Responses		Chi-square test p-values					
	Yes	No	Gender	Race	Age	Occupation	Highest education level	Average monthly income
1. Do your financial status affect your decision of seeking medical assistant for your children	113 (57.4%)	84 (42.6%)	0.195	0.020*	0.205	0.558	0.004*	0.001*
2. Do you give any supplements such as multi vitamin to your child/children	149 (75.6%)	48 (24.4%)	0.505	0.292	0.038*	0.377	0.000*	0.116
3. Do you read the label of medicine before giving it to your child/children	168 (85.3%)	29 (14.7%)	0.131	0.957	0.005*	0.101	0.015*	0.326
4. Do you record the time of the medicines taken by your child/children	133 (67.5%)	64 (32.5%)	0.809	0.005*	0.099	0.099	0.965	0.000*

*p-value < 0.05

medicine in syrup form, it works better for children because of parents consideration that syrup can be easily swallowed by children¹⁸, and this automatically sheds light on the fact that medicine in tablets or capsules is harder to swallow.^{19,20}

Table 5: Relationship between knowledge and management of minor ailment

	Management			p-value
	Poor (19.3%)	Moderate (42.6%)	Good (38.1%)	
Knowledge Low	7	13	3	0.033*
Moderate	22	36	41	
High	9	35	31	
Total	38	84	75	

*p-value < 0.05

The data showed that most of the respondents prefer modern or pharmaceutical medicine to treat their children. Nonetheless, there were less than half of the respondents who felt that medicine can do harm to their children. This is probably because medicine prescribed by doctors and those sold in pharmacy stores are mostly modern medicine. Since most of the parents consult the doctor when their children are ill, the prescribed medicine will be the preferable choice for parents. They think that modern medicine is more efficient and reliable than traditional or herbal medicines.¹⁰ Although most of the parents think that medicine can be harmful, not all of them were aware of potential side effects of their children's medicine. This is because parents tend to face difficulties in obtaining information

medicine to their children. Despite the lack of evidence for the effectiveness of many (OTC) medications¹¹⁻¹³ and the possible risks associated with their improper use among young children,^{14,15} they remain widely used.¹⁶ In addition most respondents said that the price or sources of the medicine affect the efficacy of the medicine for the children. They believe that cheap medicines are non-efficacious like expensive medicines or because the expensive medicines are not always available in drug shops.²¹

From the data collected, it was shown that there was a higher percentage of respondents whose decision of seeking medical assistance for their children was influenced by their financial status. Since free medicine can be obtained from public hospitals, most of the parents prefer to bring their children to consult a doctor in public hospitals. This is probably because they cannot afford the payment for their visit and medicines in private hospitals. Compared to private hospitals, charges for visits to the public hospital is significantly low. Hence, it becomes the preferred place for parents, especially parents with low and moderate monthly income to bring their sick children for treatment. However, most other parents prefer to seek treatment and medicine in private hospitals probably because of a few factors like better services, short waiting period and less crowded room. In other words, parents think that the efficiency of medicine for children is affected by the prices or sources of those medicines. They are willing to spend more money to

buy medicine and multivitamins for their children. They usually think that high qualities come along with high prices. Most of them do give supplements or multivitamin to their children. They are concerned and care for their children's health so they do their best to prevent and protect their children from any ailments. Parents generally manage their children well when they are sick. Most parents had read the labels of medicine before giving it to their children and record the number of times the medicines are taken by their children. This is because the care of sick children is undeniably a moral issue and parents are judged by their actions.⁶ As parents, they have responsibility to take good care of their children and hence, they must be very careful so that the medicines that had been given to their children are at the right amount and time. Two factors that appeared fundamental in shaping parents' responses to children's ailments are parents' sense of personal control when faced with their children's illness and the perceived threat imposed by an illness. Germane to personal control was parents' experience of comparative ignorance and difficulty in establishing the severity of illness.⁶ Parents' concerns were expressed within the context of keenly felt pressure to protect their child from harm. The perceived threat could be seen as a continuous process corresponding to the effects a problem was believed or observed to cause and regulated by a parent's personal control. This scheme has resonance with the folk model of illness beliefs proposed by Helman.¹⁷

Based on our study, there was a significant difference between the knowledge levels and also the level of the parents' management when tending to their ill children. Parents with higher knowledge of children's ailments have better management, or 'solutions' to the ailments. Their knowledge and information of the children's ailments may be obtained from doctors, pediatrics, pharmacists, friends, books, magazines, newspaper or the internet.⁶ The information sought by parents may diminish the ignorance and feelings of impotence from the parents' experience, enhance their sense of control, and modify their perceptions of threat posed by an illness.⁷ Parents usually seek more than simple advice about managing the common symptoms. Information should be developed according to parents' perceived needs and incorporate parents' skills and experiences.⁸ Since the level of parents' knowledge influences the health care choices and decisions made for their children, useful information of children illnesses should be given to parents by general practitioners or health care professionals. Education and advice must also be recognized and parents' commonly held beliefs about viruses, self limiting illness, and antibiotics and their key concerns about fever, cough, and other illnesses should also be addressed. Professionals could do more to

empower parents and it seems to be a good case for targeting parents who have particular difficulties in managing sick children.⁹

This study had limited budget and manpower, therefore a research with bigger sample size may prove to be difficult. As our target sample was parents, we would want to collect data from the representatives of the public. There were some difficulties to obtain responses from the public as some of them have refused to respond due to several reasons such as time-constraint, the area of study is not of interest, to name a few. Therefore, the results cannot be generalized to represent the whole population of the Penang state.

CONCLUSIONS

This study shows that parents often have inadequate knowledge and misconception for treating their children. From this study, we found that parents with better and higher medical knowledge have better means of managing their children's ailments when they deal with OTC medicines. The results of this study have successfully rejected the statement that there is no correlation between parents' level of medical knowledge and the management of children's ailments. However, by comparing the means of data collected, the fathers have slightly better medical knowledge than the mothers but the mothers have slightly better management in their children's ailment as compared to the fathers. This study has simply been placed in the larger social-cultural context as an illustration of the potential influence of it on health behavior and the medicine use. It is hoped that by identifying weak areas in parents' knowledge, better planned educational and behavioral modification efforts can be made to elevate the knowledge level among the parents when it comes to managing or handling the ailments. One means would be the parental educational interventions, which ensure that children will receive the best quality of care.

ACKNOWLEDGEMENTS

This study has been supported by the Postgraduate Research Grant (1001/PFARMASI/832056), Universiti Sains Malaysia. The authors acknowledge HS Chin, HS Min, KC Chiang, KM Pei, KK Siean, KS Hui, M Daim, MA Bakar, M Ishak, MA Muhamad, the pharmacy undergraduates from the School of Pharmaceutical Sciences, Universiti Sains Malaysia, Penang, Malaysia, for helping them to carry out the data collection.

CONFLICT OF INTEREST

None declared.

References

1. Eskerud JR, Lærum E, Fagerthun H, Lunde PKM, Næss A. Fever in general practice I. Frequency and diagnoses. *Fam Pract.* 1992;9:263-269.

2. Crocetti M, Moghbeli N, Serwint J. Fever phobia revisited: have parental misconceptions about fever changed in 20 years? *Pediatrics*. 2001;107(8):1241-1246.
3. Maison P, Guillemot D, Vauzelle-Kervroedan F. Trends in aspirin, paracetamol and non-steroidal anti-inflammatory drug use in children between 1981 and 1992 in France. *Eur J Clin Pharmacol*. 1998;54:659-664.
4. Kai J. Parents and their child's fever: do as I say, not as I do? *Fam Pract*. 1998;15:505-506.
5. Cantrill JA, Johannesson B, Nicolson M, Noyce PR. Management minor ailments in primary schoolchildren in rural and urban areas. *Child Care Health Dev*. 1996;22(3):167-174.
6. Chiara P, Piero I, Maurizio B. Parents on the web: Risks for quality management of cough in children. *Pediatrics*. 2000;105:e1
7. Kai J. What worries parents when their preschool children are acutely ill, and why: a qualitative study. *BMJ*. 1996; 313:983-986.
8. Kai J. Parents' difficulties and information needs in coping with acute illness in preschool children: a qualitative study. *BMJ*. 1996;313:987-990.
9. Morrison JM, Gilmour H, Sullivan F. Children seen frequently out of hours in one general practice. *BMJ*. 1991; 303:1111-1114.
10. Alan DW. Herbal remedies and children: Do they work? Are they harmful? *Pediatrics* 2003;112;240-246.
11. Schroeder K, Fahey T. Systematic review of randomized controlled trials of over the counter cough medicines for acute cough in adults. *BMJ*. 2002;324:329-331.
12. Smith MB, Feldman W. Over-the-counter cold medications: a critical review of clinical trials between 1950 and 1991. *JAMA*. 1993;269:2258-2263.
13. Russell FM, Shann F, Curtis N, Mulholland K. Evidence on the use of paracetamol in febrile children. *Bull World Health Organ*. 2003;81:367-372.
14. Gadamski A. Rational use of OTC medications in young children. *JAMA*. 1994;272:1063-1064.
15. Gunn VL, Taha SH, Liebelt EL, Serwint JR. Toxicity of over-the-counter cough and cold medications. *Pediatrics*. 2001;108(3).
16. Australian Bureau of Statistics. Safety In the Home Survey. Melbourne, Australia: Australia Bureau of Statistics;1992.
17. Helman C. Feed a cold, starve a fever. In: Curren C, Stacey M, eds. *Concepts of health, illness and disease: a comparative perspective*. Leamington Spa: Berg, 1986.
18. Allen LV, Popovich NG, Ansel HC. *Ansel's pharmaceutical dosage forms and drug delivery systems*. 8th ed. Baltimore: Lippincott Williams & Wilkins; 2005.
19. Beck MH, Cataldo M, Slifer KJ, Pulbrook V, Guhman JK. Teaching children with attention deficit hyperactivity disorder (ADHD) and autistic disorder (AD) how to swallow pills. *Clin Pediatr (Phil)*. 2005;44:515-526.
20. Ghuman JK, Cataldo MD, Beck MH, Slifer KJ. Behavioral training for pill-swallowing difficulties in young children with autistic disorder. *J Child Adolesc Psychopharmacol*. 2004;14:601-611.
21. Medicines for Malaria Venture, Ministry of Health (Uganda), HEPS, WHO: *Understanding the Antimalarials Market: Uganda 007 – an overview of the supply side*. Medicines for Malaria Venture; 2008.
22. Birchley N, Conroy S. Parental management of over-the-counter medicines. *Paediatr Nurs*. 2002;14(9):24-28.