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Mothers' knowledge and practices of managing minor illnesses of children under five years

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Abstract

Assessing mothers' knowledge and practices in managing minor illness is very important in order to ensure safe and effective ways of managing minor illnesses and decrease complications and hospitalisation. The aims of this study were to explore mothers' knowledge and practices of managing minor illnesses of children under the age of five and the association between socio-demographic variables of the mothers and their knowledge and practices of managing minor illnesses. This study used a cross-sectional survey design. The survey included true or false knowledge questions related to management of minor illness and related symptoms in children including fever (12 questions), upper respiratory tract infection (seven questions) and diarrhoea (nine questions). Data were analysed by calculating frequencies, distribution, and where appropriate running bivariate correlations and t-tests to determine if significant associations existed between maternal demographic variables and level of knowledge. Findings: A total of 348 mothers who visited the comprehensive health centres in Irbid, Jordan agreed to participate in the study. The mean number of questions answered correctly about fever management was 8.6

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(SD = 1.7). The mean score for management of URTI was 4.9 (SD = 1.4) and for diarrhoea was 6.4 (SD = 1.2). There was a significant positive association between the mother's age, household income, mother's level of education, and number of children, with knowledge and practices of fever and/or upper respiratory tract infection, $p < .05$. Nurses and other health care providers could play a significant role in educating women in how to manage their children's minor illnesses.

Keywords
children, Jordan, knowledge, management, minor illnesses, practices

Introduction

Background and significance

The healthy future of a society depends on the health of children, who are guardians of that future (WHO, 2005). Reduction of the mortality rate in children under the age of five is one of the eight Millennium Developmental Goals of the World Health Organization (WHO, 2011). Since mothers are usually the primary care givers for children especially under five years of age, it is vital to increase their knowledge related to the management of illnesses in their children, since even minor illnesses increase the risk of childhood mortality. The most common minor illnesses which mothers can manage at home are diarrhoea, upper respiratory tract infection (URTI) and fever. The objectives of this study were: 1) to explore Jordanian mothers' knowledge and practices of managing minor illness of children under five years of age, and 2) to determine if there was an association between socio-demographic variables and mothers' knowledge and practices of managing minor illnesses of children under 5 years of age.

Diarrhoea and acute respiratory tract infections are the most common causes of mortality during the childhood period (Parimi et al., 2004). In 2000, about 12% of deaths under the age of five worldwide were attributable to diarrhoea and 20% to acute respiratory tract infection (UNICEF, 2004). In 2005, the percentage of childhood deaths due to diarrhoea increased to 18% (Nelson, 2006). In developing countries, children under five years of age have an average of three episodes of diarrhoea each year, which makes it the second highest cause of mortality in this age group (Fuentes et al., 2006). In addition, three to five episodes of acute respiratory tract infections annually affect children less than five years of age (Simoes, 2006).

Fever is the most common symptom of childhood illnesses (Oshikoya and Senbanjo, 2008). It is estimated that 30% of visits to pediatric clinics are associated with fever (Crocetti et al., 2001). Fever is one of the most common reasons caregivers seek medical help for their children. Fever is considered a serious health issue since it often is the best indicator of underlying disorders that range from mild conditions to life threatening bacterial and viral illnesses (Graneto, 2011).

Actual incidence of diarrhoea in Jordon varies based on place of residence, water consumption, and disinfection practices. In addition, reporting of cases is low and may actually need to be doubled (Al-Sharif and Abu-Ashour, 2007). According to the Jordan Health Family Survey (JHFS) conducted in 2007, among children less than five years of age 16% had experienced diarrhoea in the two weeks prior to responding to the survey. If this was doubled the incidence would approach one third of all children under the age of five

experiencing diarrhoea within a two week period. The survey also provided information on the number of children under five who experienced fever or were diagnosed with a URTI. Fourteen percent of parents reported their child had a fever and 5% were diagnosed with a URTI (Jordan Department of Statistics, 2009). Again, the percentages probably reflect underreporting. Due to the potentially life threatening aspects of fever, diarrhoea and URTI in children under the age of five, even smaller percentages present a potential risk of increased morbidity and mortality if not managed effectively at home.

Key to the prevention of adverse consequences associated with fever, diarrhoea and URTI in children under the age of five is early management by the primary care giver, usually the mother of the child. For example, reducing fever in children using antipyretics is considered the first line of defence. This requires that mothers are knowledgeable on the correct products to use and the appropriate frequency and dosage of the medication (Sarrell et al., 2006). Thus educational programmes are a logical nursing intervention to help prepare mothers to care for their children experiencing minor illnesses.

The first step in the development of an effective educational programme for mothers related to the management of fever, diarrhoea and URTI in children under the age of five is to determine which mothers are in greatest need of an educational programme. The findings from studies done in developed countries related to maternal knowledge and management of minor illness demonstrate that maternal knowledge is needed to manage minor illnesses safely. For example, the National Institute for Health and Clinical Excellence (NICE) does not recommend the prescription of antibiotics at the beginning of URTIs for most affected children, but rather stresses the need for providing good information to the parent about the causes and duration of these illnesses and other interventions they can use (Francis et al., 2009). Yet some mothers give un-prescribed antibiotics at home (Parimi et al., 2004; Oshikoya and Senbanjo, 2008). In the USA and UK, more than 30% of parents expect their children who suffer from URTI to receive antibiotic treatment at the first visit to the physician (Vinker et al., 2003).

Studies conducted in other cultures consistently demonstrated that many factors affect a mother's knowledge and practices related to managing minor childhood illnesses. Some of these factors are socio-economic such as family income (Sreeramareddy et al., 2006), mother's education level (Oshikoya and Senbanjo, 2008), mother's age (Vinker et al., 2003), culture (Tessler et al., 2008), or mother's experience with previous children (Togoobaatar et al., 2010). Few studies were found that focussed on Jordanian mothers' knowledge and practices of managing minor illnesses in their children. Applying findings of studies conducted in other countries has limitations due to variations in culture, specifically the culture surrounding home management of minor childhood illnesses by mothers. The cultural approach to home management in Jordan may vary due to socioeconomic status, experience and presence of social support. Thus, it is important to understand both the level of knowledge among Jordanian mothers and differences between groups based on these demographic and socioeconomic variables. This study specifically addressed the knowledge and practices of Jordanian mothers' management of common minor illnesses, and the potential differences associated with socio-demographic variables.

It is important for health care professionals to provide culturally relevant interventions aimed at improving maternal knowledge related to the home management of childhood minor illnesses such as fever, URTI, and diarrhoea. Furthermore, maternal ability to adequately provide home management of these minor illnesses directly impacts long term health outcomes for their children. This study provides essential information to help guide health professionals in the design of policies and educational interventions designed to

improve home management and thus decrease hospitalisation and health care costs related to mismanagement of minor illness in Jordanian children less than five years of age.

Methodology

Design and setting

This study uses a cross-sectional descriptive survey design. The study was conducted at nine health centres located in the Irbid Governorate, which is the second largest city in Jordan. The Irbid governorate includes 124 governmental health centres. Nine health centres were chosen as the sites for the study because they provide comprehensive healthcare for women and children.

Study sample

Participants for this study were Jordanian mothers of children under five years of age. A convenience sampling procedure was used to recruit participants for this study. The inclusion criteria for participants were: the ability to read and write Arabic, being aged 20 years or more, and being a mother of at least one child less than five years of age with a history of one or more of the minor illnesses (fever, diarrhoea and URTI) between September 2010 and November 2010.

Using an alpha level of .05, and a medium effect size, Cohen (1992) suggested using 64 participants per group to determine the difference between two independent sample means. Two groups were needed in this study; independent sample *t*-tests were used to compare mean scores for employed and not employed mothers as well as for mothers with a secondary or less level of education and those with college or more. Furthermore, for the same alpha level and effect size, Cohen (1992) also suggested a sample size of 85 participants to determine a significant correlation between variables. In this study, the association between scores for each of the three questionnaires and mother's age, household income, and number of children was examined using Pearson product moment-correlation coefficient. However, the sample size was enlarged in case there was missing data or participant refusal to participate.

Instrument

A structured self-administered questionnaire was used to collect data related to mothers' knowledge and practices in managing minor illnesses of their children aged less than five years. The survey was developed and modified by the researcher based on an extensive literature review and existing instruments. The questionnaire consisted of a Socio-demographics Data Sheet (SDS), a Management of Fever Questionnaire (Ekiran, 1990), a management of URTI questionnaire, and a management of diarrhoea questionnaire (Shannon, 2002).

During the development of the questionnaire, two subscales were adopted from two previously developed questionnaires; the Management of Fever Questionnaire developed by Ekiran (1990) and the management of diarrhoea questionnaire developed by Shannon (2002). These two questionnaires were modified based on cultural meaning of the words related to Jordanian culture. New items were added related to management of URTI: use of antipyretics and use of antibiotics. One issue was the translation of the survey into Arabic.

In general, inaccuracies in the translation process are common for cross-cultural researchers. According to Su and Parham (2002) generating a valid translation includes back translation and cultural translation which involves translating the meaning instead of the literal words (Su and Parham, 2002). To address this, the survey was first prepared in English, translated into Arabic and then back-translated to English by a person who knows both languages to make sure that the two versions were sufficiently similar.

After the development of the survey, it was tested by a panel of experts to evaluate the questions for content and face validity, comprehensiveness, and readability, before starting the data collection. The internal consistency reliability was acceptable with a Cronbach's alpha coefficient of the developed survey of 0.70.

Socio-demographics data sheet (SDS). The socio-demographics data sheet (SDS) was developed by the researcher to elicit background information about the participants. The socio-demographic data included mother's age, marital status, educational level, occupation, number of children, household income, and reason for visiting the health centre.

Management of fever questionnaire. This part of the questionnaire was designed to measure management of fever and using of antipyretics and included 12 items. Nine items were used to measure the mother's knowledge of disease symptoms and the appropriate methods of managing these illnesses. An example item was: 'A body temperature of 37°c is a normal body temperature: yes, no, or I don't know.' Three items were included to assess maternal practices related to the use of antipyretics. Examples of these items were: 'how long do you leave the mercury thermometer in place when taking a child's temperature?' (The responses included: 'one minute', 'two minutes', 'three minutes', 'I don't use a mercury thermometer'), and 'do you give paracetamol to your child when his/her body temperature is elevated before visiting the physician?' (The responses included: 'yes', 'no', or 'I don't know'). The questionnaire was scored based on the number of correct answers with a possible range of 0 to 9.

Management of upper respiratory tract infection and use of antibiotics. Management of URTI and use of antibiotics consisted of seven items. The item that measures the mother's knowledge about URTI was 'what is the cause of upper respiratory tract infection in young children?' The responses included 'weather change', 'allergies', 'food ingestion', 'bacteria', 'viruses', or 'I don't know'. Six items assessed maternal practices in managing their child's URTI and the use of antibiotics. An example of one item was: 'How do you manage an upper respiratory tract infection in your children?' The responses included: '1) buy a new antibiotic and give it to the child without a physician prescription', '2) use old antibiotics from a previous episode', '3) visit the physician if the child has a fever only', or '4) visit the physician directly when the child experiences upper respiratory tract infection symptoms'. Another question was: 'do you use the same antibiotics for similar symptoms that occurred with your child previously?' (The responses included 'yes', 'no'). The questionnaire was scored based on the number of correct answers with a possible range of 0 to 7.

Management of diarrhoea. Measurement of the management of diarrhoea was done using nine items. Three items in the questionnaire measured mothers' knowledge about diarrhoea. An example item was, 'How could you decide that your child is having diarrhoea?' The responses included: '1) the child defecates more than three times per day', '2) the child's

stool is watery or with mucus', or '3) the defecation is associated with vomiting and fever'. The other six items assessed mothers' practices to manage their child's diarrhoea. An example item was, 'What type of treatment do you give at home to manage your child's diarrhoea?' The responses included '1) increase fluid intake', '2) give Oral Rehydration Solution (ORS)', or '3) give antibiotics'. The questionnaire was scored based on the number of correct answers with a possible range of 0 to 9.

Data collection procedure

All nine comprehensive health centres in the Irbid governorate were selected using information from the Ministry of Health. Data collection occurred over a three-day period when pediatric visits were scheduled in the selected health centres. In each health centre, mothers were recruited using a convenience sampling technique.

The researcher approached mothers at the clinic and provided information about the purpose of the study and what participants were expected to do, the significance of the study, and the contact information, anonymity, and confidentiality of the study. Mothers who met inclusion criteria, agreed to participate and completed the informed consent process were given the paper and pencil surveys for completion, and an envelope in which to place the completed questionnaires. They were asked to complete the survey and return it to the researcher. All of the participants who agreed to participate returned the questionnaire. The whole package was in Arabic. The time for completing the survey took 15 to 20 minutes**.** The researcher was available onsite for any questions.

Protection of human rights

Approval of the study was obtained from the Institutional Review Board (IRB) at Jordan University of Science and Technology, Ministry of Health (MOH) and the clinics. Participation in this study was voluntary. Participants were informed that they have the right to withdraw from this study at any time without penalty. Data collection was a completely confidential process. No personal identifiers were included in the survey to maintain anonymity. The data were kept in locked files separately from any subjects' names or identifiable information.

Data management and analysis

Data were entered into an electronic file using the Statistical Package for Social Sciences (SPSS) version 17. Data analysis included computing frequencies, distribution and computation of Pearson correlations, and independent sample *t*-tests, to examine the relationship between demographic variables and mothers' knowledge and practices of managing fever, diarrhoea and URTI.

Findings

Sample description

Of the 350 mothers who were asked to participate and met the inclusion criteria, 348 agreed to participate (99% response rate). Ages of participants ranged from 20 to 48 years old with a mean age of 30.8 (SD = 6.05). Household incomes of participants

ranged from 100 to 1000 Jordanian Dinar (1 JD = $ 1.4) with a mean income of 371.5 JD (SD = 200.0) per month. The number of children of participants ranged from 1 to 11 children with a mean number of 3.3 (SD = 1.8). The majority of participating mothers (59.5%, $n = 207$) reported they had completed secondary education or less. Only 17.8% ($n = 62$) of participants were employed.

A little less than half (46.6%) of participating mothers reported that their children had experienced URTI three times or less during the past year; and 19.5 % of their children had been admitted to the hospital due to diarrhoea, slightly higher than reported national incidence rates. In addition, 8.9% of the participating mothers reported that they checked their child's temperature during the minor illnesses by using touch, only 12.9% of the participant mothers used a digital thermometer to check their child's temperature, while 78.2% of them used a mercury thermometer (31% auxiliary, 30.1% orally, and 17.1% rectally).

Mothers' knowledge about management of minor illnesses

In relation to mothers' knowledge about fever and its management, most of the participating mothers provided correct answers related to management of a fever. For example, 90.8% ($n = 316$) answered correctly that 'A body temperature of 37°c is a normal body temperature', and 92.2% of them ($n = 321$) also answered correctly that 'a cool sponge bath is used to control fever in children'. In contrast, some of them were not knowledgeable about other items. For example, 57.5% of the participating mothers ($n = 200$) answered incorrectly about the item 'Lowering the room temperature assists in lowering the child's fever', and 45.1% of them ($n = 157$) answered incorrectly to the item 'A common harmful effect of excessive fever for children less than five years is convulsion' (Table 1).

Mothers were knowledgeable about diarrhoea and its management. Almost all of the mothers (92.2%, $n = 321$) answered correctly to the question 'Do you consider diarrhoea as a serious illness'. Regarding the item 'do you know any signs that tell you that your child is dehydrated', 76.4% of the participants ($n = 266$) correctly listed the basic signs of dehydration which were increased thirst and dry mouth and tongue. In addition, 71% ($n = 247$) of mothers provided the correct answer to the question 'How could you decide that your child is having diarrhoea' by choosing the alternative 'the child defecates more than three times per day' or 'child stool is watery or with mucus' (Table 1).

In relation to mothers' knowledge about URTI and its management, the vast majority of the participants (92.8%, $n = 323$) were knowledgeable about the cause of URTI. They answered correctly that the cause of upper respiratory tract infection in young children could be weather changes and allergies, and bacteria or viruses (Table 1).

Practices used by Jordanian mothers to manage minor illnesses

In regard to mothers' practices in managing fever, most of the participating mothers (97.1%, $n = 338$) reported that they 'shake the mercury thermometer down before using it'; but more than half (62.4%, $n = 217$) didn't recognise that two minutes is the appropriate time to leave the mercury thermometer in place when taking a child's temperature. In addition, 90.5%

Table 1. Frequencies and percentages of the correct and incorrect answers regarding mothers' knowledge about minor illnesses in children less than five years.

	Correct answer		Incorrect answer	
Items	*n*	%	*n*	%
Mothers' knowledge about fever				
1. A body temperature of 37°c is normal.	316	90.8	32	9.2
2. A child with a body temperature of 38°c is generally considered as having low grade fever.	194	55.7	154	44.3
3. Shivering during fever indicates that body temperature will go higher.	298	85.6	50	14.4
4. The home remedy way of treating fever is preferred to the scientific way.	269	77.3	79	22.7
5. A common harmful effect of excessive fever for children less than five years is convulsion.	191	54.9	157	45.1
6. A cool sponge bath is used to control fever in children.	321	92.2	27	7.8
7. Covering a shivering child is considered appropriate for fever management.	255	73.3	93	26.7
8. Lowering the room temperature assists in lowering the child's fever.	148	42.5	200	57.5
9. For a child less than five years, the most accurate route for checking temperature is rectally.	207	59.5	141	40.5
Mothers' knowledge about URTI				
10. What is the cause of upper respiratory tract infection in young children?	323	92.8	25	7.2
Mothers' knowledge about diarrhoea				
11. Do you consider diarrhoea to be a serious illness?	321	92.2	27	7.8
12. Do you know any signs that tell you that your child may be dehydrated?	266	76.4	82	23.6
13. What would make you decide that your child is having diarrhoea?	247	71	101	29

URTI: upper respiratory tract infection.

($n = 315$) of the participants reported giving paracetamol to their children when their body temperature was elevated before visiting the physician (Table 2).

In relation to managing URTI, about two thirds of the participating mothers (74.1%, $n = 258$) reported that they visited the physician when the child complained of URTI symptoms, and around half of them (41.1%, $n = 143$) answered that they think that using antibiotics when their children complain of URTI is necessary even if not prescribed by a physician. Furthermore, less than one fifth of the participants (17.0%, $n = 59$) reported that they may buy the antibiotics for their children without visiting the physician, and 30.2% of them ($n = 105$) reported that they may use the same antibiotics for similar symptoms that occurred with their child previously. Moreover, 33.3% ($n = 116$) reported that they may stop giving antibiotics to their children even if the recommended course of treatment was

Table 2. Frequencies and percentages of correct and incorrect answers regarding mothers' practices during minor illnesses in children less than five years.

	Correct answer		Incorrect answer	
Item	*n*	%	*n*	%
Mothers' practices and use of antipyretics during fever				
1. How long do you leave the mercury thermometer in place when taking a child's temperature?	131	37.6	217	62.4
2. Do you shake the mercury thermometer down before using it?	338	97.1	10	2.9
3. Do you give paracetamol to your child when his body temperature is elevated before visiting the Physician?	315	90.5	33	9.5
Mothers' practices and use of antibiotics during URTI				
4. How do you manage upper respiratory tract infection in your children?	258	74.1	90	25.9
5. When do you think that using antibiotics is necessary if your child experiences upper respiratory tract infection?	205	58.9	143	41.1
6. Do you ask for antibiotics if not recommended by a physician?	167	48	181	52
7. Do you use the same antibiotics for symptoms similar to those which have occurred to your child previously?	243	69.8	105	30.2
8. Do you buy antibiotics for your children without visiting the physician?	289	83	59	17
9. When do you stop giving antibiotics to your child?	232	66.7	116	33.3
Mothers' practices during diarrhoea				
10. During the episode of diarrhoea, how much fluid did you give your child?	268	77	80	23
11. What do you do if your child experiences diarrhoea?	272	78.2	76	21.8
12. What type of treatment do you give at home to manage your child's diarrhoea?	289	83	59	17
13. For which conditions do you give ORS?	280	80.5	68	19.5
14. When do you use ORS?	35	10.1	313	89.9
15. If your child has diarrhoea, do you choose to wait until he/she is getting well alone?	276	79.3	72	20.7

URTI: upper respiratory tract infection; ORS: oral rehydration solution.

not finished. Furthermore, 52.0% ($n = 181$) of the mothers asked for antibiotics even if it was not recommended by the physician (Table 2).

In regard to mothers practices of diarrhoea management, a little less than a quarter of the participating mothers (23.0%, $n = 80$) reported that they gave their child the same amount of fluid or lower during the diarrhoeal episode, and 21.8% ($n = 76$) of mothers treated their children's diarrhoeal episodes at home and may not do anything for them. The vast majority of the mothers 89.9% ($n = 313$) didn't know how to use the oral rehydration solution (ORS) during the diarrhoeal episode. Less than a fifth (17.0%, $n = 59$) of the mothers reported that they used antibiotics to manage their children's diarrhoeal episodes (Table 2).

The relationship between mothers' socio-demographic variables and their knowledge and practices of minor illness

Total scores were computed for questions answered correctly about knowledge and practices related to fever (range 0-12), URTI (range 0-7), and diarrhoea (range 0-9). The mean score of questions answered correctly about knowledge and practices of fever management was 8.6 (SD = 1.7); of URTI was 4.9 (SD = 1.4), and of diarrhoea 6.4 (SD = 1.2). The association between scores for each of the three questionnaires and mother's age, household income, and number of children was examined using Pearson product moment-correlation coefficient. Independent sample t-tests were used to compare mean scores for employed and not employed mothers as well as for mothers with secondary or less level of education and those with college or more.

Mother's age. There was a significant positive correlation between mother's age and the fever management score ($r = .180$, $p = .001$) as well as URTI score ($r = .133$, $p = .013$) .There was no significant correlation between mother's age and diarrhoea score ($r = .044$, $p = .413$).

Household income. There was a significant positive correlation between mother's household income and the URTI management score ($r = .232$, $p = .000$). There was no significant correlation between household income and the fever score ($r = -.044$, $p = .415$) or diarrhoea score ($r = .022$, $p = .975$).

Number of children. There was a significant positive correlation between the number of children and the fever management score ($r = .197$, $p = .000$). In addition, the number of children had no significant correlation with the mother's score of URTI score ($r = .079$, $p = .141$) or diarrhoea score ($r = .039$, $p = .472$).

Mother's education level. There was a significant difference between mothers who had an education level of college or more ($Mean = 8.9$, $SD = 1.7$) and those who had secondary or less ($Mean = 8.4$, $SD = 1.7$) in terms of their knowledge and practices of fever management; $t\ (348) = -2.61$, $p = .010$. Furthermore, there was a significant difference between mothers who had college or more education level ($Mean = 5.2$, $SD = 1.4$) and those who had secondary or less ($Mean = 4.8$, $SD = 1.4$) in terms of their knowledge and practices of URTI management; $t\ (348) = -2.5(348)$, $p = .012$. However, there was no significant difference between them in terms of their knowledge and practices of diarrhoea management; $t\ (348) = -.78$, $p = .435$ (two tailed).

Mother's occupation. There was no significant difference between mothers who were employed and those who were not employed in terms of their knowledge and practices regarding fever; $t\ (348) = -.45$, $p = .651$, URTI $t\ (348) = -1.82$, $p = .070$, and diarrhoea management; $t\ (348) = .68$, $p = .499$ (two tailed) (Table 3).

Discussion

Mothers' knowledge and practices regarding management of minor illness

The score of correct answers among study participants reflects adequate knowledge and practices about management of their children regarding fever, URTI, and diarrhoea. This result could be related to the outreach of health facilities which might increase the

Table 3. Correlations between mothers' socio-demographic variables and their knowledge and practices regarding minor illnesses of children less than five years.

	Fever		URTI		Diarrhoea	
Variables	*r*	*p*	*r*	*p*	*r*	*p*
Mother's age	*.180*	*.001*	.133	.013	.044	.413
Number of children	.197	.000	.079	.141	.039	.472
Household income	.044	.415	.232	.000	.022	.975

URTI: upper respiratory tract infection.

accessibility to health centres for care and knowledge about childhood illnesses that may impact mothers' knowledge, experiences and practices regarding management of minor illnesses. Also, a new policy applied in Jordan in 2005 stated all children under six years of age are treated free of charge and covered by health insurance. This policy encouraged mothers to seek health care for their children even when they had a minor illness.

In addition, the support system in Jordanian families is strong where young mothers still receive advice and help in child care from their mothers and mothers-in-law as vital members of their extended family. From a cultural perspective, the findings of the current study highlight the importance of family support during child illness. This kind of support comes from the strong Muslim belief in the Wisdom Man, saying that the most beloved child is 'the sick until recovers, the young until growing up and the absent until comes back' (Gharaibeh and Gharaibeh, 2012).

The results of this study are consistent with the previous studies by Oshikoya et al. in Nigeria (2008) who showed that mothers were quite knowledgeable of the definition of fever, causes and associated symptoms. Also Chan and Tang (2006) in Malaysia found that more than two thirds of the participants believed that changing weather and germs are the causes of URTI. In addition, Usfar et al. (2010) found that most Indonesian mothers (63%) recognised that their children had diarrhoea based on stool consistency.

On the other hand, some mothers had inadequate knowledge about certain items related to fever management. For example, more than half of the participating mothers did not realise that lowering the room temperature assists in lowering the child's fever, and around half of them did not recognise that convulsion is a common harmful effect of excessive fever for children aged less than five years. This indicates that the sources of their knowledge are not quite enough or the quality of knowledge is not comprehensive enough. However, the current study revealed that mothers had adequate practices for management of their children regarding fever and using of antipyretics. For example, few mothers check their children's temperatures by using touch, most of them stated that using a cool sponge bath is appropriate with fever and reported giving their children antipyretics to manage and decrease fever.

In contrast, the Saudi study of Al-Eissa et al. (2000) found that only 13% of parents stated they would bath or sponge their child if their temperature reached 38.0°c.On the other hand, Al-Abdel Jalil et al., (2007) conducted a study in Kuwait and found that two thirds of mothers assess fever in their children by observing the child's general look or touching him.

Adequate practices of fever management in the current study may reflect that Jordanian mothers have a good support system and large extended families which encourage mothers to seek health information from them based on their experience, in addition to the information obtained from personnel in the health care centres.

With regard to management of URTI, one third of the participants use antibiotics for symptoms similar to those which have occurred previously to their child, some of them bought the antibiotics without visiting the physician, and about half of them didn't complete the antibiotics course. These practices indicate that some mothers had inadequate knowledge and practices in using antibiotics which might have adverse side effects on the child's health and safety. The results of the current study are congruent with the results of the previous study of Chan and Tang (2006) in Malaysia which found that some parents gave their child antibiotics prescribed previously, bought antibiotics without seeing the physician, or did not finish the entire course of antibiotics given.

With regard to diarrhoea management, the current study found that some mothers had improper practices regarding management of diarrhoea among their children. One third of mothers did not increase the fluid intake for their children during the diarrhoeal episode. Also, the majority did not know when to give oral rehydration solution to manage their children's diarrhoeal episode at home. Such findings are consistence with the findings of Berisha et al. (2009) who found that 62.6% of the mothers in their study decreased the fluid amount which was given to the child.

Mothers' socio-demographic characteristics and knowledge and practices of managing minor illnesses

In the current study, older participant mothers had more adequate knowledge and practices than the younger ones in managing fever and URTI. These results explained the role of experience that the older mother had in managing their children's illnesses. Furthermore, mothers who had higher education levels were more knowledgeable than those who had lower educational levels regarding management of fever. Such findings may be due to the effect of the mass media on our community in increasing the mothers' knowledge about many health problems such as these minor illnesses. The findings of this study are congruent with the previous study findings of Matziou et al. (2008) in Greece and by Oshikoya and Senbanjo (2008) in Nigeria who found that the educational level of the mother had positive outcomes on mothers' knowledge and practice of managing minor illness especially fever management.

In this study, mothers with higher household incomes had more adequate knowledge and practices than the mothers with lower income in managing URTI. This is congruent with the Caribbean study of Parimi et al. (2004) who found higher socio-economic status was significantly associated with higher knowledge scores. Although all children who are less than five years old are covered by public health insurance, those with higher income levels may find it more convenient to access the private sector where they get more time for discussing their child's case and receive more detailed health education. Furthermore, the study revealed that mothers who had more children had more adequate knowledge and practices regarding fever management. This could be explained by the fact that fever is a very common minor illness so having more children indicates experiencing more cases of child fever, mastering more skills of management, as well as receiving more health education either from the support system or from health care providers.

Implications of the study

One implication of this study is to stress the importance of increasing mothers' knowledge regarding definitions and causes of minor illnesses and how to provide care for children who suffer from these illnesses. Collaboration between health personnel and families should be enhanced to overcome minor illnesses through identifying cases and providing care for children. In addition, health personnel have a role in teaching and training parents in how to deal with cases of minor illnesses among their children.

Policy makers should provide health personnel with the materials needed for accurate and efficient health education such as ready pamphlets and prompt systematic protocol for dealing with children complaining of minor illness.

Nursing courses and programmes should be designed to prepare nurses to play a role in health care for mothers and children everywhere. Furthermore, content may include a discussion of nursing intervention and health education strategies that could be implemented to empower mothers with knowledge about reducing health problems in children.

Based on a literature review about management of childhood fever by parents, Walsh and Edwards (2006) showed that controlled educational interventions have effectively enhanced parents' knowledge and fever management practices, reduced fever-related anxiety, fever-related clinic visits and telephone calls to doctors.

Nursing interventions have been implemented in the previous studies. For example, O'Neill-Murphy et al. (2001) conducted a quasi-experimental study to examine the effect of educational interventions in emergency departments. The results revealed that both the standard written fever pamphlet and interactive educational intervention were equally effective. Another study was conducted in the US by Broome et al. (2003) to test an intervention based on the Theory of Planned Behavior. The authors revealed that increasing parents' knowledge about assessing childhood fever, communicating with health care professionals and implementing prescribed fever management therapies would change parents' attitudes and knowledge regarding fever management.

Study limitations

This study has some limitations, particularly in its use of a cross-sectional approach, convenience sampling in recruiting participants, which involved selection bias, and cultural translation of the instrument, which might affect the validity of the questionnaire. One possible limitation when using a convenience sample is selection bias, which might affect the generalisability of the study results (Freedman, 2004). However, the response rate was 99%. In addition, response bias was minimised since the questionnaire was self-administered and was not filled by an interviewer. Additionally, the population sample of this study was small and limited to mothers in the comprehensive health centres in Irbid city, which are not representative or generalisable of the entire corps of Jordanian mothers. The data were self-reported and actual practices in caring for children under five with these minor illnesses were not observed.

Recommendations for future research

Further research studies are needed to adopt a longitudinal design and use a heterogeneous population from different settings to explore the mothers' knowledge and practices of

minor illnesses. Further research is needed to understand the causes associated with knowledge and practice deficit regarding managing children with minor illnesses. Intervention studies are also needed to compare the difference between mothers exposed to a health education programme versus mothers who were not.

Conclusion

Mothers' knowledge and practices are important in managing children with minor illnesses. The findings support the importance of assessment and providing mothers with health education about treatment of their children with minor illnesses. It suggests that there was some deficit in mothers' knowledge and practices among young mothers of low socio-economic status. Therefore, health care providers in Jordan need to play a role in increasing accurate and comprehensive caregivers' knowledge and practice to reduce the suffering of children with minor illnesses.

Key points for policy, practice and/or research

- In the current study, the mean score of questions answered correctly about knowledge and practices of fever management was 8.6 out of 12; of URTI was 4.9 out of 7, and diarrhoea was 6.4 out of 9. Therefore, it is necessary to provide Jordanian women with advanced detailed health education about management of minor illnesses using reliable sources.
- In this study, young women with low education, low income and fewer children should be targeted by health care providers to enhance their knowledge and practices of managing minor illnesses. Health care providers should be qualified and trained on how to assess, intervene with, and evaluate mothers' skills of managing minor illnesses.

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