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Mothers' knowledge, attitude and practices tawords non-prescription medications: a cross- sectional study in Nablus city

Haneen Majd Abu-Arrah

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Thesis Approval

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Dedication

To my beloved mother, father, dear sisters and all those who have given me help and support throughout my life

Declaration

I certify that this thesis submitted for the degree of master in Public Health at Al-Quds University, is the result of my reasearch, except where otherwise acknowledged , and that this study has not been previously submitted for a higher degree to any other university or institution.

Haneen Majed Abu-Arrah

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I would like to express my special thanks to Professor. Waleed Sweileh, for his supervision. Without his endless support this work could not be achieved. Also, all my love to my family, their encouragement was my motivation.

Abstract

Background: Over-the-counter (OTC) medications are considered safe and effective for use by the general public without seeking prescription by a health professional. OTC medications are extensively used to manage minor childhood complaints that involve pain and fever.

Objective: This study aims to assess mothers' knowledge, practices, attitude and beliefs about OTC medications commonly used for their children complaints and to investigate the main sources of information related to OTC medications.

Methodology: This is a cross-sectional survey study carried out at 4 governmental primary health care clinics in Nablus, Palestine. Mothers' knowledge, practices, attitude and beliefs about OTC medications were assessed by a set of questions specifically designed for this purpose.

Results: Regarding to purchasing practices of OTC medications, (76.7%) participants reported that they purchased them for their children.

The most common type of OTC medication purchased by participants was analgesics/ antipyretics followed by common cold/ cough preparations. Regarding to sources of information about OTC medications, mothers (57.5%) asked pharmacist for advice. Regarding to participants' believes about OTC medications**,** (74.8%) of participants believed that OTC medications are safe and more than half believed that they were effective.

A significant difference was found between age categories, number of children and participants' beliefs regarding OTC medication ($P < 0.05$) No association was found between educational level, monthly income, occupation, home address and participants' beliefs regarding OTC medication ($P > 0.05$).

Regarding to participants' knowledge about OTC medications**,** (86.3 %) of participants know that there were different strengths for each OTC medications and (27.8%) of them indicated that Antibiotics can be used without physician's consultations.

Regarding to Participants' knowledge about analgesic/ antipyretics, (80.6%) of participants know that high temperature of the body indicates the presence of disease and (79.6%) of them knew how many analgesics doses that the child could take during the day.

When participants were asked about administration of OTC medications, (63.4%) participants reported that they checked the expiration date before medication use, (50.5%) reported that they read the enclosed leaflet before using the drug for the child.
A significant difference was found between age categories, level of education, number of children and participants' knowledge about analgesic/ antipyretic medications and administration practices of OTC medications ($P < 0.05$). No association was found between monthly income, home address, occupation and participants' knowledge about analgesic/ antipyretic medications and administration practices of OTC medications ($P > 0.05$)

Conclusion: Most mothers had used OTC medicine to manage their children complaints. Most mothers had used analgesics/ antipyretics products for their children. This shows the need for raising the awareness of mothers through health professionals in order to decrease the use of OTC medications for children.

تقييم مدى معرفه, ممارسات ومواقف الأمهات من الأدويه بدون وصفه طبيه, نابلس- فلسطين

إعداد: حنين ماجد أبو عرة.

إشراف الدكتور: وليد صويلح

الملخص

خلفية الدراسة: تعتبر الأدويه بدون وصفه طبيه من الأدويه الامنه والفعاله للاستخدام من قبل عامة الناس دون البحث عن علاج من قبل الأطباء وتستخدم هذه الأدوية على نطاق واسع لعلاج أمراض الأطفال البسيطه مثل الألم وارتفاع درجه الحراره .

أهداف الدراسة: تهدف هذه الدراسة الى تقييم معرفة الأمهات والممارسات والمواقف والمعتقدات حول الأدويه بدون وصفه طبيه التي يستخدمونها لأطفالهم .

منهجية الدراسة: أجريت دراسة مقطعية في 4عيادات للرعاية الصحية الأوليه الحكومية في نابلس حيث تم تقييم معرفه وممارسات ومواقف ومعتقدات الأمهات حول الأدويه بدون وصفة طبيه من خلال اجاباتهم على مجوعة من الأسئله التي صممت خصيصا لهذا الغرض.

النتائج الرئيسية: فيما يتعلق بشراء الأدويه بدون وصفة طبيه أفادت (76.7٪) من الأمهات بأنهم يقومون بشرائها لأطفالهم حيث كانت خافضات الحرارة من أكثر أنواع الأدويه بدون وصفه طبية التي تم شراؤها من قبل الأمهات تليها أدوية الرشح والسعال.

فيما يتعلق بمصادر المعلومات عن الأدويه بدون وصفه طبيه أفادت (57.5%) من الأمهات بأنهن يحصلن على المعلومات عن طريق سؤالهم للصيدلاني.

فيما يتعلق بنظرة ومعتقدات المشاركات عن الأدويه بدون وصفه طبيه , أفادت ربع الأمهات بأن هذه الأدويه أمنه وأكتر من نصف الأمهات اعتقدن بأنها فعالة.فيما يتعلق بمعرفه الامهات عن الأدويه بدون الوصفه الطبيه أفادت (86.3%) من الأمهات بعرفتهن بوجود أكثر من تركيز لهذه الأدويه وأفادت (27.8%) منهن بأنه يجوز استخدام المضادات الحيويه دون الرجوع الى الطبيب .

أما فيما يتعلق بمعرفة الأمهات حول المسكنات وخافضات الحراره أفادت 80.6%من الأمهات بمعرفتهن أن ارتفاع درجه الحراره هي ردة فعل طبيعيه لوجود مرض بالجسم و79.6%من الأمهات أفدن بمعرفتهن للعدد الأقصى من جرعات خافضات الحراره التي يجوز اعطاؤها للطفل وعندما سئلت الأمهات عن الممارسات المتعلقه باستخدام الأدويه بدون الوصفه الطبيه افادت 63.4% من الأمهات بأنهن يتحققن من تاريخ انتهاء الصلاحيه قبل استخدام الدواء و أفادت 50.5% من الأمهات بأنهن يقمن بقراءة النشره المرفقه قبل استخدام الدواء للطفل.

تم العثور على ارتباط كبير بين العمر،مستوى التعليم ،عدد الأطفال ومعرفة الأمهات حول المسكنات وخافضات الحراره وممارساتهم للأدويه بدون وصفه طبية.ولم يتم العثور على اي ارتباط بين الدخل الشهري،مكان السكن،الوظيفه ومعرفة الأمهات حول المسكنات وخافضات الحراره وممارساتهم للأدويه بدون وصفه طبية.

الاستنتاج: تقوم معظم الأمهات باستخدام الأدويه بدون وصفة طبية لعلاج شكاوي أطفالها حيث أشارت الدراسه الى استخدام واسع للمسكنات وخافضات الحرارة. لهذا السبب,مقدمي الرعاية

الصحيه بحاجه الى مواصله التثقيف الصحي للأمهات فيما يتعلق باستخدام الأدويه بدون وصفه طبيه للأطفال.

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List of abbreviations

ADHD	**Attention Deficit Hyperactivity Disorder**
FDA	**Food and Drug Administration**
HIV	**Human Immunodeficiency Virus**
IMCI	**Integrated Management Childhood Illnesses**
MOH	**Ministry of Health**
NGOs	**Non-Governmental Organizations**
OTC	**Over the Counter medications**
PCBS	**Palestinian Central Bureau of Statistics**
PMMS	**Palestinian Military Medical Services**
PHC	**Primary Health Care system**
SPSS	**Statistical Package for Social Sciences**
URTIs	**Upper Respiratory Tract Infections**
UNRWA	**United Nations Relief and Works Agency**

Chapter One

Introduction

1.1 Background:

According to Food and Drug Administration (FDA), Over-the-counter (OTC) medications are defined as medications that are safe and effective for use by the general public without seeking treatment by a health professional . Over the counter medications are extensively used to manage childhood complaints that involve pain (Allotey et al., 2004; McIntyre et al., 2003) and fever (Allotey et al., 2004; McIntyre et al., 2003; Walsh et al., 2007c). Recently, many medicines were switched from prescription only into OTC medication status (Francis et al., 2005). This switch is regulated and is based on special criteria and evidence of safety (Soller, 2000). Use of OTC has several advantages such as: increased convenience to patients, greater chance for self-management of minor diseases, shifting the cost from the government or insurance companies to patients (Bond and Hannaford, 2003). On the other hand, OTC medications have disadvantages such as: increased adverse events and poisoning specially in young children because of their immature body systems (Balit et al., 2002; Easton et al., 2004; Sim et al., 2007; Tomassoni and Simone, 2001).

Parental judgment on the use of OTC medication in managing their child's illness is based on convenience and accessibility (Birchley and Conroy, 2002). Upon using OTC medication for their children, parents may not be familiar with indications, doses, contraindications, and drug interactions (Lokker et al., 2009). In fact, studies on parents' knowledge and management of their children showed that their knowledge to be insufficient (Birchley and Conroy, 2002; Cham et al., 2002; Lagerlov et al., 2003; Lokker et al., 2009), especially in case of side-effects of OTC medication. In general, patients receive pharmaceutical information from several sources, such as health care professionals, friends and family (Cutilli, 2010). Even with wide accessibility, patient information leaflets were infrequently read by the patients (Bradley et al., 1994). Negative views of the leaflets included poor design and long lists of side-effects (Hughes et al., 2002a).

Parental attitudes have also direct effect on the medicine use and management for their children's ailment (Bush and Iannotti, 1988). Parents' attitudes toward children's use of

medicine have been studied among parents whose children have some specific illnesses such as asthma (Divertie, 2002; Halterman et al., 2004), Attention Deficit Hyperactivity Disorder (ADHD) (Hansen and Hansen, 2006), Human Immunodeficiency Virus (HIV) (Simoni et al., 2007), or some infectious disease (Palmer and Bauchner, 1997; Watson et al., 1999). These studies have focused on the illness specific attitudes and the conclusions cannot be generalized to the population level or any other situations.

The Palestinian pharmacy practice law stipulates that prescription medications are sold on a prescription only basis (1998). Nevertheless, due to the lack of political and economic stabilization, the law is loosely applied in Palestine. Moreover, there is no well-established medical care system in Palestine which can provide health services at an affordable cost. This circumstance has encouraged self-medication for, sometimes, serious infectious diseases, also selling a wide range of medication products as an OTC medications (Sawalha, 2008; Swalha, 2007; Sweileh, 2004). OTC medications are considered a vital element of health care in Palestine. No studies in Palestine looked at the range of OTC medication use in children or the awareness of parents about using OTC medication and the potential risks for children. To facilitate reduce risks linked with OTC medications use for young children; we must first determine current OTC medications practices of parents.

1.2 Research problem

Self-medication with OTC medications is an economical choice for treatment of common self-limiting illnesses in Palestine. As more medications are made available as OTC medications, mothers can purchase them without doctor consultation and use them for their children. As the population of children continues to increase, a need arises to monitor how mothers use these agents to their children.

1.3 Justification and significance of the Study

Mothers' knowledge about OTC medications should encourage the health policy makers to develop and implement regulations for medication manufacturers regarding package inserts and information included in the medication leaflet. In this study, we attempt to know what is the information that most mothers or high percentage of mothers do not know it so they can include this information in the leaflets and what reasons that prevent mothers from reading the medication leaflet so health policy makers can improve them. There is a need to enhance the public awareness about OTC medications for children to minimize mothers' visits to physicians and to minimize cost burden so mothers can treat their children perfectly at home and there is no need to pay extra money every time for physicians or doctors especially if a child has a minor ailment. Also, this is the first study in Palestine that gives information regarding to knowledge, practices, attitudes and beliefs about OTC medications used for children in Nablus, Palestine. It is important to know how mothers deal with their children when they become sick and to enhance the practice if there is a problem.

1.4 Objectives of the study:

1 To assess mother' practices of OTC medications for children.
2 To assess mothers' attitudes and beliefs about OTC medication commonly used for management of children's minor ailments.
3 To assess mother' knowledge about OTC medications,
4 To investigate the main sources of information related to OTC medications.
5 To assess difference in attitudes, knowledge and practices in relation to different participants characteristics.

1.5 Study conceptual framework:

According to the study objectives, we developed this study conceptual framework. Each group will be discussed later in this thesis.

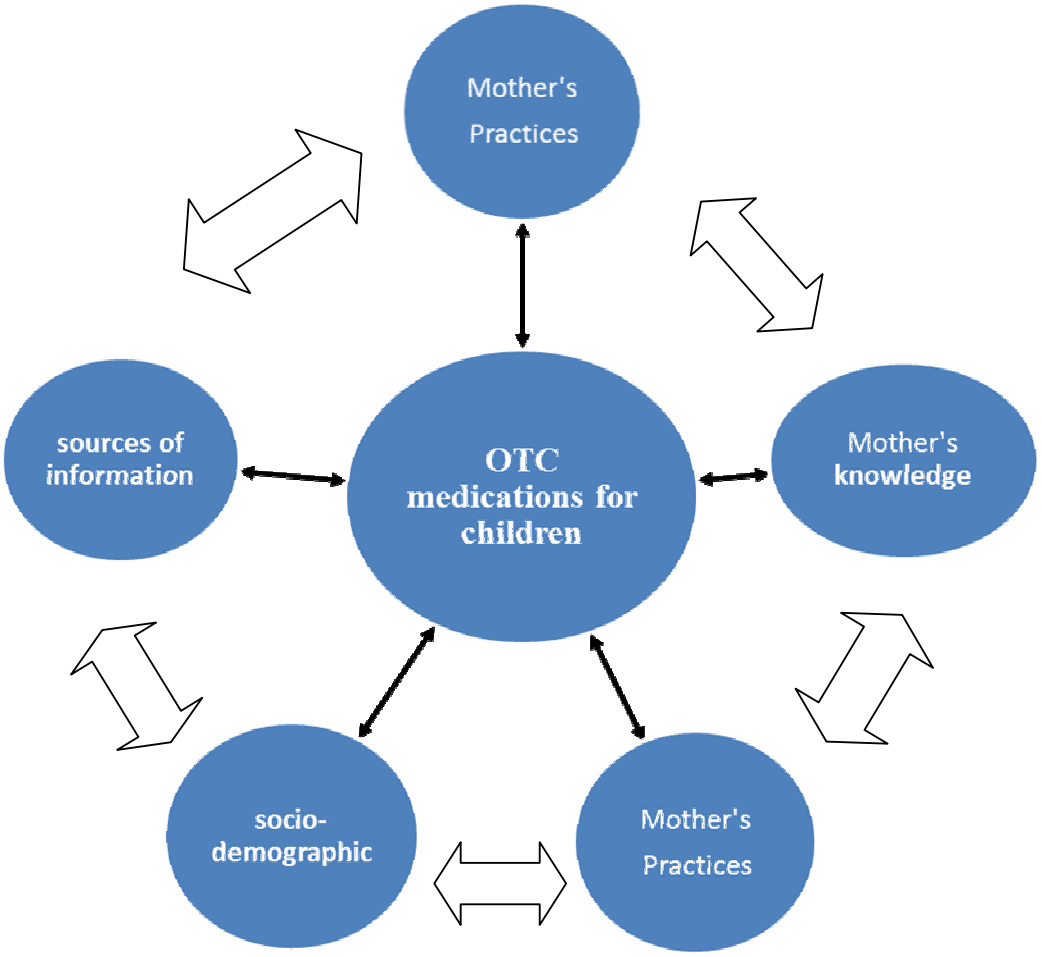

Figure 1: The study conceptual framework

1.6 Thesis chapters' description:

This thesis is presented in 5 chapters, listed as follows:

Chapter one: Introduction

This chapter contains the background, justification and significance of the study, study problem, objectives, and Conceptual frame work.

Chapter two: Literature review

This chapter includes the literature review of previous studies that are related to research topic.

Chapter three: Methodology

In this chapter, the research methodology is presented. The study area, study population, study type, design, tools, the sampling method, statistical analysis, ethical consideration, and variables operational definitions are presented.

Chapter four: Results

In the chapter, results are presented as frequencies for categorical variables, mean and standard deviation for continuous variables such as age. Chi-square test and p values to find the association between attitudes, knowledge, practices with characteristics of the participants

Chapter five: Discussion, Conclusion, Recommendations and Study limitations

In this chapter, the main study findings are interpreted and discussed. In the last part of this chapter, the study's conclusion, recommendations and limitations are presented.

Chapter Two

Literature Review

2.1 Introduction

There has been an increasing constrain to promote self-care in patients. The role of evidence in decision-making in relation to OTC medication has been controversial. There has been some debate as to whether such medicines are effective and supported by objective scientific evidence (Ernst, 2011; Pray, 2006; Smith et al., 2008). This study is about mothers' knowledge, practices, attitudes and beliefs about OTC medications commonly used for children. Most studies include one of these terms not all of these subjects and some studies include one or more terms in a special ailment such as fever and upper respiratory tract infection. In Arab countries two studies were conducted regarding to our study. The first study was in Jordan whose purpose of was to evaluate parents' knowledge, attitudes and common practices about using (OTC) medications for their children. The purpose of the second study, in Kuwait, was to survey mothers about their knowledge concerning fever in children.

Many studies were published about medications' knowledge, attitude and practices. The following studies were some of them:

2.2 Analgesics and antipyretics

Fever is defined as a body temperature above the normal range; a rectal temperature above 38.0 ºC, an oral temperature above 37.8 ºC, and an axillary temperature above 37.2 ºC are all considered as fever. Fever in children is one of the most common symptoms for which parents seek medical advice. Parents frequently perceive fever as a disease rather than as a symptom or sign of illness.

Many articles were published in this field:

In 2007, a survey was conducted in Kuwait by Huda AL-Abdel Jalel et al- to survey mothers about their knowledge concerning fever in children, how they manage it at home, what their fears of fever are and to study the relationship between mother's knowledge and fear with the educational level and number of children. They found that doctors should spend enough time with mothers attending a feverish child, explaining and answering their

queries about fever, and providing adequate information that might allay their fear and promote an appropriate fever management at home.

In Greek 2006, Matziou et al published a paper in which they explored mothers' knowledge related to management of fever in their children. They showed that educational interventions by health care professionals aiming at educating young mothers with a low educational level and those with a child younger than 12 months old, who seek medical attention at hospital, for the first time, were needed to dispel misconceptions about fever and to promote the appropriate management of the febrile child (Matziou et al., 2008).

In Italy 1998, a questionnaire based study was performed by Impicciatore et al. This study was conducted to evaluate Mothers' Knowledge, Attitudes toward, and Management of Fever in Preschool Children. They found that informing mothers on the definition, consequences, and treatments of fever can significantly improve their confidence in managing fever, as reflected by fewer requests for physicians' visits (Impicciatore et al., 1998b).

In France2011, a cross sectional study was performed by Desnous et al. The study was conducted to investigate the perception and management of fever by parents of children with Dravet syndrome. The result revealed that the level of parental anxiety is high in case of fever. The anxiety seems related to fear of seizure recurrence leading to significant modification of parental behavior (Desnous et al., 2011).

In Israel 2001, another paper was published by Sarrell et al. This study is about physician', nurses', and parents', attitudes to and knowledge about fever in early childhood. The study demonstrated that parental misconceptions might also lead to excessive utilization of health care services and to institution of treatment that might be causing more harm than good (Sarrell et al., 2002).

In 2009, a study was conducted in by Crocetti et al to evaluate Knowledge and Management of Fever among Latino Parents. The investigators found that numerous misconceptions exist regarding fever and its role in illness among an exclusive sample of Spanish-speaking-only Latino parents (Crocetti et al., 2009).

In 1998, a cross sectional study was conducted by Blumenthal. This study aimed to assess knowledge, perception and management of fever by parents. They found out that parents perceive fever as being dangerous. They had poor knowledge and measured it inaccurately. Needless consultations and hospital admissions could be avoided by a change in perception (Blumenthal, 1998).

In Australia 2009, Walsh et al. published a paper to identify the determinants of parents' intentions to reduce childhood fever with medications. The study revealed that there was an urgent need for the education of both parents in the benefits of fever and for doctors to consistently provide parents with evidence-based information (Walsh et al., 2009).

In 2006, a study was conducted by Lagerløv et al. This study aimed to explore how specific predefined characteristics of febrile preschool children affected parents' assessment of the severity of the condition and the perceived need for treatment with paracetamol. The researchers found that parents focused on fever when they evaluated febrile illness and decided whether or not to give paracetamol. Educating parents to focus on their child's level of appetite or activity might improve management, especially when judgment was based on only one or two cues (Lagerløv et al., 2006).

In 2003, another qualitative study was conducted by Lagerløv et al. that aimed to assess parents frequently gave over-the-counter paracetamol during childhood illness and management of common childhood illnesses and the impact on the family. They found out that Paracetamol constituted an important tool for parents in managing different upsets during childhood illnesses. Better knowledge about the significance of fever and how to handle children during common illnesses might need to be presented in a context familiar to parents, for instance, in relation to general information on childcare (Lagerlov et al., 2003).

In 2011, Langer et al. published a paper that evaluated the subjective meaning of fever often varied between doctors and parents. Knowledge of the parents' concept of fever might help tailor counseling to their needs. They found that A Turkish migrant background and a low socio-economic status were associated with the fever concept "fearful". Mothers

with these attributes seemed to require specific and reassuring counseling as they used antipyretic drugs extensively and out-of-hours services frequently (Langer et al., 2011).

In 2004, a study was performed by Taveras et al, to examine childhood fever beliefs and practices in a multiethnic, multiracial, and socioeconomically diverse sample. They found out that parents' beliefs and practices regarding childhood fever vary by race, ethnicity, socio-demographics, and child's insurance coverage. Educating parents about fever, improving access to health insurance and primary care, and ensuring that families had thermometers might enhance appropriate use of health services and improve outcomes for febrile children (Taveras et al., 2004).

In 2010, a cross-sectional survey using structured interviews was conducted by Jensen et al. This study explored Danish parents' use of paracetamol for feverish children and their motives for this use. The study revealed that Danish parents regularly treated feverish children with paracetamol. Although parents' contact their general practitioner for advice on fever treatment, paracetamol is sometimes given to children on vague indications. Clearer information for parents on when to give paracetamol as fever treatment might help regulate its use (Jensen et al., 2010).

In 2010, a study was conducted by Bushby et al. to investigate the knowledge of parents and caregivers with respect to the purchase, use and storage of liquid analgesics purchased over the counter (OTC) from pharmacies. The investigators found out that whilst parents and caregivers chose products based on perceived safety, there was an over estimation in the perception of the protection that a child resistant closure actually offers. The general public needed to continually be vigilant in the use, storage and administration when using medication in the vicinity of children (Bushby et al., 2010).

In 1999, a cross sectional self-reported survey was conducted by Linder et al. to assess parental decision-making with regard to treating fever in children, its effectiveness, and to suggest methods for improving the level of treatment. They found out that a total of 57% of parents treated children with incorrect doses of antipyretic drugs. In 11% of the children treated, the daily dose was at a level that could cause severe toxicity. Parental knowledge of the treatment of fever must be improved (Linder et al., 1999).

In 2008, a survey was conducted by Helgadóttir et al. to explore parents' knowledge and usage of paracetamol for 3- to 6-year-old children. Parents needed information about the advantage of the oral form of paracetamol to children. The results from this study provided useful information for designing educational materials for parents about the use of paracetamol that might improve parents' ability to manage their children's pain and fever (Helgadóttir and Wilson, 2008).

In 2010, a study was conducted by Chang et al. This article aimed to explore caregivers' knowledge of acetaminophen and comprehension of written medication instructions about acetaminophen syrup when administered to febrile children. The results showed that administration of antipyretic medication was the most common approach taken to reduce children's temperature. A significant percentage of primary caregivers appeared to lack a thorough understanding of the instructions provided with antipyrexial medication (Chang et al., 2012).

In 2007, a cross sectional study was conducted by Walsh et al. to report Australian parents' medication (paracetamol, ibuprofen and homeopathic) use in childhood fever management. The results demonstrated that most parents used over-the-counter medications to reduce fever, often below 38.5°C. The belief that these medications were harmful was overridden by fears of harmful outcomes from fever (Walsh et al., 2007b).

In 2010, a study was conducted by Erkek et al. to reveal the perceptions, knowledge and practices of parents regarding children's fever and to discuss the differences between other populations. They found out that parental education about 'fever in childhood' in the population might positively affect parental knowledge and approach to fever. Parental education might not be effective in removing parental fear of fever in the population (Erkek et al., 2010).

In 2008, a survey was conducted by Walsh et al. This paper is a report of a study to explore Australian parents' knowledge, beliefs, practices and information sources about fever management and develop a scale to measure parents' fever management practices. They found out that Parents needed consistent evidence-based information about childhood fever management (Walsh et al., 2008).

In 2004**,** a study was performed by Goldman et al. to document accuracy of parental administration of acetaminophen and to identify if parents who did not give an optimal dose would have decided not to come to the emergency department if the fever had diminished at home. They found out that a significant portion of the population gives an under-dose of acetaminophen, reflecting lack of knowledge or misuse. Based on parental reports, the majority of visits for fever might have been prevented, if parents had been successful in their effort to reduce temperature to below of what they considered as fever, but factors other than under-dosing of acetaminophen probably encourage parents of febrile children to visit the emergency department (Goldman and Scolnik, 2004).

In 2002, a self-administered survey was carried out by Karwowska et al. to assess parental and health care provider understanding of fever, its treatment, and beliefs about its consequences, as well as to identify parental sources of information about fever. They concluded that fever phobia existed among parents and health care providers and were most likely in parents of febrile children and family physicians. Health care providers varied in their knowledge of fever and its treatment. Greater education of health care workers was required in order to provide families with appropriate information (Karwowska et al., 2002).

In 2003, a study was conducted by Kallestrup et al. The purpose of this study was to describe why parents of febrile children used the general practice out-of-hours service, how parents handle children before seeking medical advice, and what their expectations were of a visit to the out-of- hours general practice service. They found out that only if the general practitioner knew the reasons why parents brought their child, and their own ideas and fears about their child's condition, could the examination and explanation address these aspects and ensure the quality of the consultation (Kallestrup and Bro, 2003).

In 2002, a study was conducted by Sarrell et al. to evaluate knowledge of and approach to childhood fever in parents before and after attending a single reinforced educational session on the subject given by the pediatrician during a visit with their sick child. They found out that parental anxiety about fever in children, inappropriate use of antipyretics, and over-utilization of health care services could be improved even by a brief reinforced educational session (Sarrell and Kahan, 2003).

In 2010, Mwambete et al. published an article to explore on mothers' knowledge on fever and its management as well as to assess treatment received by less than 10 year old children having fever prior to being presented in outpatient departments at two municipal hospitals. The result showed that fever was a public health concern among under-tens, which contributed to high rate of self-medication and irrational use of medicines. However, respondents demonstrated adequate knowledge on fever and on its management though fever was associated with underlying causes (Mwambete and Andrew, 2010).

In 2007, a qualitative study was performed by Walsh et al. to identify parents' knowledge, beliefs, management and sources of information about fever management. They found out that Parents' experiences with and information sources about fever and fever management influenced their knowledge, beliefs and practices. Positive experiences reduced concerns, health service usage and sometimes antipyretic usage. Negative experiences increased concerns, monitoring and antipyretic and health service usage (Walsh et al., 2007a).

2.3 Antibiotics

In spite of the efficiency of antibiotics in the treatment of various bacterial infections, it is often used incorrectly. This misuse of antibiotics is currently one of the major public health issues worldwide. Antibiotic misuse was found to be significantly frequent in children, especially when presenting with viral upper respiratory tract infections (URTIs).

Over the past decade, the emergence of antibiotic resistance has been recognized as an important public health problem because the discovery of new antibiotics is no longer keeping pace with the spread of highly resistant bacteria pathogens.
Many articles were published in this field:
In 2003, Vinker et al. published a paper in which they assessed current diseases, reasons for attending and expectations from the physician visit, knowledge about upper respiratory tract infection (URTI). The result showed that a quarter of the parents expected to get antibiotics. Predictors were lower education, older parental age, receiving antibiotics in the past and the belief that antibiotics help in URTI (Shlomo et al., 2003).

In 2011, a questionnaire based study was conducted by Panagakou et al. In this study, knowledge, attitude, and practice about antibiotic used for URTI in Greece were evaluated. They found out that Greek parents had a trusted relation with their physician and rarely gave antibiotics without medical counsel, indicating that parents contribute less than expected to antibiotic misuse. Parents also appreciated the benign course of most URTIs and the fact that unnecessary antibiotic use was harmful (Panagakou et al., 2011).

In 2011, a cross- sectional study was conducted by Chan et al. in order to report the parental knowledge, attitudes and antibiotic use for childhood (URTI). The investigators found out that parents often had inadequate knowledge and misconceptions on antibiotic use for acute URTI in children. Enhanced parental education might reduce unnecessary antibiotic prescription and antimicrobial resistance in the society (Chan and Tang, 2006).

In 2001, Trepka et al performed a baseline survey to assess parental changes in knowledge and awareness regarding antibiotic resistance and appropriate antibiotic use. They found out that parental knowledge and awareness about antibiotic indications and antibiotic resistance could be changed with educational interventions directed at parents and clinicians (Trepka et al., 2001).

Rouusounides et al (2011) conducted a cross sectional study to assess parents' and pediatricians' knowledge, attitudes and practices concerning the role of antibiotics in children with (URTIs). They found out that low parental education was the most important risk factor positively linked to antibiotic misuse. Although it appears that antibiotic misuse is not driven by parental pressure, the pediatricians' view differs (Rouusounides et al., 2011).

2.4 OTC in general

Many articles were published in this field:

In 2011, a population based study was conducted in Finland by Ha¨meen-Anttila et al. The study aim was to describe parental attitudes towards medicine use in children, and the factors associated with them. They found out that parental attitudes toward prescription medicines and toward OTC medicines are different: many parents considered prescription medicines as safe and effective less think so of OTC medicines. A considerable proportion

of parents had worries about side effects and interactions. This stressed the need to address these topics in encounters with parents (Hameen-Anttila et al., 2011).

In 2011, a cross-sectional prospective descriptive study was conducted in Jordan by Albsoul et al. The purpose of this study was to evaluate parents' knowledge, attitudes and common practices about using (OTC) medications for their children. They found out that many factors could play a role in decision making process in using OTC medications. The trend towards increased self-care and self-medication with even more powerful medications seemed unstoppable. Specific guidelines for OTC medications appropriate use should be provided to prescribing physicians, dispensing pharmacists, and the children care giver (the parents) about proper OTC medications use (Albsoul et al., 2011).

In Malaysia, a cross-sectional survey was conducted to measure the parents' knowledge about their children's ailments by Dawood et al (2010). They found out that parents had inadequate knowledge and misconception about how to go about treating their children when they were unwell. It was hoped that by identifying weak areas in parents' management to their children's ailments, better planned educational and behavioral modification efforts could be made to elevate the knowledge level among the parents when they medically treated their children (Dawood et al., 2010).

In Australia 2009, a cross-sectional survey was conducted by Trajanovska et al. to describe over-the-counter (OTC) medicine use by Australian parents for children aged from birth to 24 months; types of medicines used and indications for use. They found out that most parents had used at least one OTC medicine to manage childhood symptoms. Of concern is that over 40% of parents had used cough and cold products for their young child, despite a lack of evidence surrounding their efficacy. In order to minimize risks associated with OTC medicine use, particularly cough and cold products, health-care providers need to continue the provision of current evidence-based information to parents regarding safe and appropriate use of medicines for their child (Trajanovska et al. ,2009).

In Australia 2009, a cross-sectional survey was conducted by Trajanovska et al. to explore parental management of childhood complaints with respect to factors associated with the purchase of (OTC) medications and sources of information accessed by parents. They found out the impact of healthcare provider recommendations on parental purchase of

(OTC) medications. Parents mainly sought information and advice from doctors, followed by maternal and child health nurses and family or friends, which appeared to be dependent on the type of childhood complaint (Trajanovska et al., 2010a).

In 2011, a cross sectional study was conducted by Hanna et al to explore factors which might influence consumers when making decisions in relation to over-the-counter (OTC) medication. They found out that there was an ambivalence regarding need for evidence of effectiveness when choosing an OTC medicine, with individual autonomy and safety taking precedence over evidence (Hanna and Hughes, 2011).

In 2002, a study was conducted by Hughes et al; this study was performed to investigate the knowledge of patients with regard to the side-effects of over the counter medicines. They found out that patients generally had poor knowledge of the potential side-effects of their medication. Accurate information and advice from health care professionals could serve to reassure patients and to ensure they were well informed about the medicines they took (Hughes et al., 2002b).

Chapter Three

Study Methodology

3.1 Introduction

This study describes mothers' knowledge, practices, attitudes and beliefs about OTC medications commonly used for their children complaints and to investigate the main sources of information related to OTC medications. In this chapter, the research methodology will be presented. The study area, study population, study design, study tools and the sampling method are described.

3.2 Study Design and Settings

A cross-sectional descriptive study of mothers with at least one child aged more than 1 year old was undertaken. This is because new mothers have no previous practices about OTC medications for children. The study targeted mothers attending governmental primary health care clinics in Nablus city – north Palestine.

Primary health care system (PHC) is a major component of Palestinian health care system. PHC clinics provide health care to the majority of Palestinian people especially for children and other people. Primary health care centers in Palestine provide primary and secondary health care services as well as tertiary services.

There are five main healthcare providers of health services in Palestine: Ministry of health, the United Nations Relief and Works Agency (UNRWA), non-governmental organizations (NGOs), Palestinian Military Medical Services (PMMS) and private for profit. Ministry of health (MOH) bears the heaviest burden, as it has the major responsibility.

The MOH works with other health sectors in providing the PHC services mainly with UNRWA, and NGOs sector. At the end of 2011, there were 654 PHC centers in Palestine; (134 centers in Gaza and 572 centers in West Bank) (PCBS, 2012).

Nablus Governorate has 356,129 inhabitants, including four refugee camps and nearby villages. The estimated population of the city in 2012 was 196,577 (PCBS, 2012). Out of the 532 PHC in the West Bank, 46 of them are in Nablus Governorate.

There are 7 PHC centers in Nablus city: Balata Clinic, Almakhfeyah, Ras al Een and 4 clinics in Nablus downtown (the Central clinic, the Central Clinic for Maternal and Child Care, Habs al Dam Clinic and the Western clinic).
Four clinics providing care for children and one of them has the integrated management childhood illnesses IMCI (program) were targeted. These clinics were the Central Clinic, the Central Clinic for Maternal and Child Care, Balata Clinic and Almakhfeyah Clinic.

3.3 Sampling Method:

A convenience sample of 430 mothers that have at least one child more than one year were asked to participate; 13 mothers reported that they had no time for the interview and they refused to participate. The response rate was 96.9%. We asked the mothers that reported buying OTC medications about Knowledge, attitudes and practices. The mothers that did not buy OTC medications were asked about Knowledge and attitudes only .The next chart describes the sampling method.

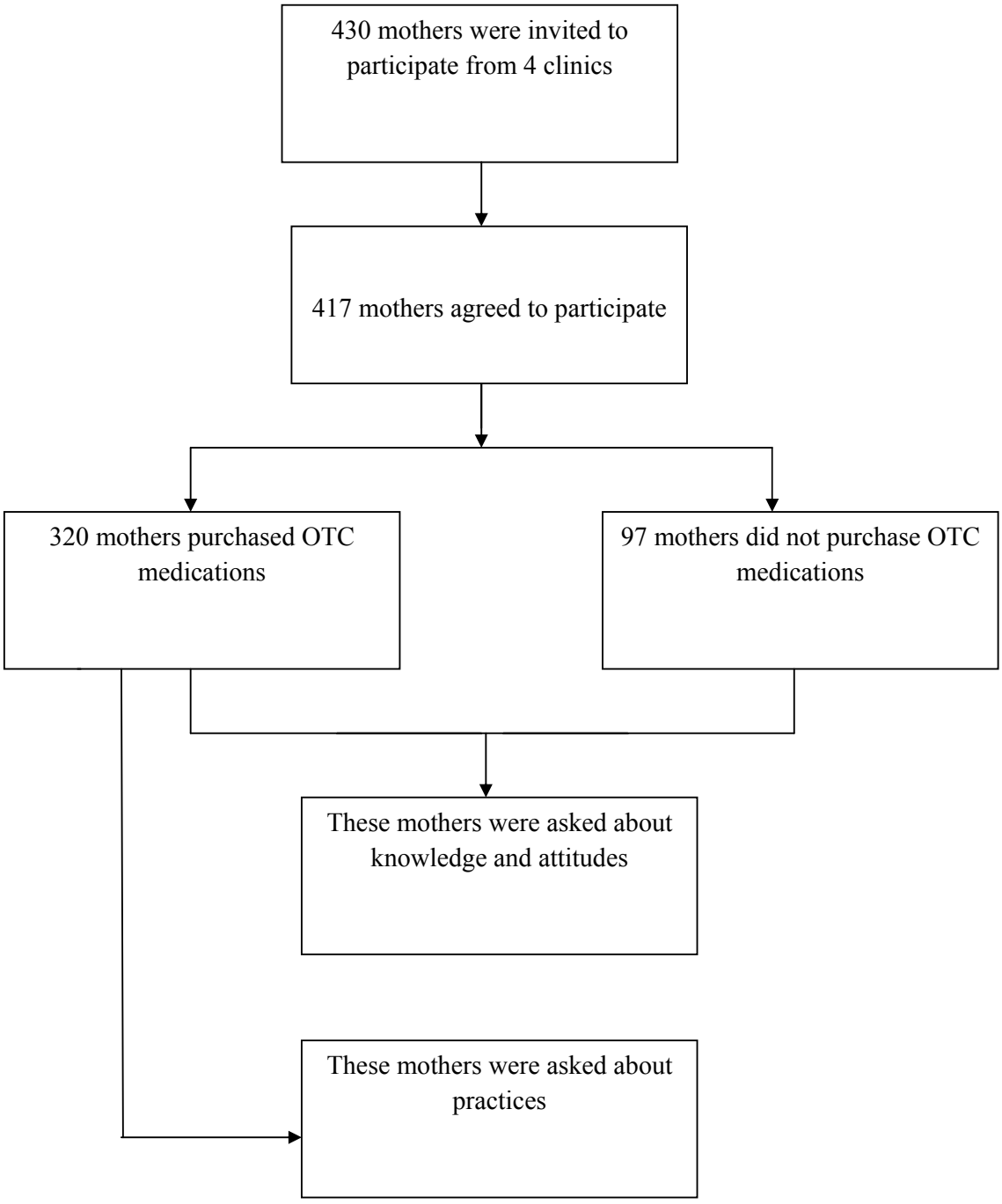

Figure 2: Sampling method

3.4 Study Tool

A structured questionnaire was used to investigate knowledge, attitudes and practices of mothers towards their children's OTC medications. (Appendixes 1)

The questionnaire used consists of eight parts. The first part contains demographic questions like age, educational level, employment, monthly income, number of children and home address. The second part is about purchasing practices of OTC medications as reported by the study participant. The third part is about sources of information about OTC medications. The fourth part in the tool is about mothers' beliefs and attitudes regarding to OTC medications. The fifth part is about mothers' knowledge about OTC medications. The sixth part is about mothers' knowledge about analgesic/ antipyretic medications. The seventh part is about mothers' knowledge about the name of OTC medications can be given to children when certain medical conditions and availability of them at home. The eighth part is about mothers' practices about OTC medications. All parts contain yes/no questions in addition to some open questions.

The questionnaire was reviewed by experts in pharmacy education and practice. The questionnaire was developed based on previously published studies in other countries (Al-Abdel Jalil et al., 2007; Albsoul et al., 2011; Dawood et al., 2010; Hameen-Anttila et al., 2011; Matziou et al., 2008)

Table1: Studied utilized for questionnaire preparation:

Objective	No of question	reference
Demographics	1,2,3,5,6	(Al-Abdel Jalil et al., 2007; Albsoul et al., 2011; Dawood et al., 2010)
Purchasing practices of children OTC medications	7,8	(Dawood et al., 2010)
Reasons for buying OTC medications	9	(Albsoul et al., 2011)
To assess sources of information	10	(Al-Abdel Jalil et al., 2007)

To assess beliefs and attitudes	11	(Albsoul et al., 2011; Hameen-Anttila et al., 2011)
To assess knowledge about OTC medications	12	(Albsoul et al., 2011)
To assess knowledge about analgesic/ antipyretic medications	13	(Al-Abdel Jalil et al., 2007; Matziou et al., 2008)
To assess knowledge of the name of OTC medications	14	(Dawood et al., 2010)
To assess practice of OTC medications	15	(Albsoul et al., 2011; Dawood et al., 2010)

3.5 Pilot Testing

Prior to administration of the questionnaire in the actual study, pilot study was done on conveniently selected sample of 30 participants in order to predict the appropriateness of the tool and necessary modifications were made to enhance clarity. It was conducted in PHC clinics in Nablus. The researcher made some modifications on the questionnaire after the pilot testing. These 30 participants were not included in the study.

3.6 Ethical Consideration

The Faculty of Public Health committee accepted to do the research; and the approval to carry out the study was obtained from the Graduate Studies Committee at Al-Quds University. Moreover, we obtained permission to conduct this study from the Ministry of health. (Appendix 2) .Mothers were provided with consent form and informed them about the goal, the objectives and the methodology of the study. Confidentiality and privacy were assured in the form.

3.7 Data Analysis

Data obtained were filled in, filtered and analyzed by using the Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, USA 16). We used frequency for categorical variables, mean and standard deviation for continuous variables such as age. Chi-square

test and p values to find the association between attitudes, knowledge, practices with characteristics of the participants.
Data were entered in the SPSS as the following:

We categorized the age in to 4 groups 15 -<25 (coded as 1 in SPSS), 25 -<35 (coded as 2 in SPSS), 35 -<45 (coded as 3 in SPSS) and 45 -<55 (coded as 4 in SPSS). The level of education was categorized in to 3 groups, illiterate participants (coded as 1 in SPSS), School education (coded as 2 in SPSS) and college education (coded as 3 in SPSS) .The occupation was categorized in to 2 groups, housewife (coded as 1 in SPSS), employee (coded as 2 in SPSS). The home address was categorized in to 3 groups, city (coded as 1 in SPSS), village (coded as 2 in SPSS) and refugee camp (coded as 3 in SPSS). Monthly income was categorized in to 3 groups, high (coded as 1 in SPSS) ,moderate (coded as 2 in SPSS) and low (coded as 3 in SPSS). The number of children was categorized in to 3 groups, participants with 1 child (coded as 1 in SPSS), participants with 2-3 children (coded as 2 in SPSS) and participants with 4 and more than 4 children (coded as 3 in SPSS).

3.8 Operational definition of the study variables

Knowledge: is a familiarity, awareness or understanding of someone or something, such as facts, information, descriptions, or skills, which is acquired through experience or education by perceiving, discovering, or learning. Knowledge can refer to a theoretical or practical understanding of a subject (Wikipedia, 2014b).

Attitudes and beliefs: is an expression of favor or disfavor toward a person, place, thing, . Attitude can be considered the sum of (Wikipedia, 2014a)or event (the attitude object) beliefs. A person can have many beliefs about a phenomenon (positive and negative). This person will have an attitude toward that phenomenon based on the overall evaluation of her beliefs. (Refer to Ajzen, I., 1991. "The theory of planned behavior," Organizational Behavior and Human Decision Processes, Elsevier, vol. 50(2), pages 179-211, December.)

profession or field used in a particular rule, or process, procedure, method**Practices:** A .(businessdictionary, 2014)

Age: The age of participants, composed of three categories,

-<30

-30-40

- □ 40

Educational level: divided into four categories **(**illiterate, school education, college education (diploma and university)).

Occupation: composed of two categories (housewife and employee)

Home address: Place in which participants live (city, village and camp).

Monthly income: composed of three categories (high, moderate and low).

Number of children: how many children that participants have (one child, 2 or 3 children and more than 4 children).

3.9 Summary

This chapter presents an overview of the methodology that was used in this research. It provides study design. Moreover, it provides description of the study setting and sample, and the pilot testing of the data. The study tool and instruments that were used in the data collection were explained. Descriptive statistics was used in data analysis and Chi-square test and p values to compare the relationship between the dependent and independent variables.

Chapter four

Study results

4.1 Introduction

This study is one of the few studies that evaluate mothers' knowledge, practices, attitude and beliefs about OTC medications commonly used for children .During the study period, 417 mothers was interviewed .We asked the mothers that reported buying OTC medications about Knowledge, attitudes and practices. The mothers that did not buy OTC medications were asked about Knowledge and attitudes only.

4.2 Characteristics of the participants

The mean age of the participants was 33.2 ±8.6 years with the majority (162; 38.8%) were between 30 - 40 years of age. Two hundred fifty nine (259; 62%) had school education only. Three hundred forty seven (347; 83.2%) were housewives and the majority (232; 55.6%) was living in Nablus city. Most participants (378; 90.6%) reported that they have moderate monthly income .Two hundred and nine (50, 1%) participants had 2 or 3 children. (Table 2)

Table 2: Demographic characteristics of the participants (N = 417)

Variable	Frequency (%)
Age:	
<30	153 (36.7)
30-40	162 (38.8)
40	102(24.5)
Level of Education:	
-Illiterate	8 (2.0)
-School education	259 (62.0)
-College education	150 (36.0)
Occupation:	
-Housewife	347 (83.2)
-Employee	70 (16.7)
Home address:	
-City	232 (55.6)
-Village	106 (25.4)

-Camp	79 (19)
Monthly income: -High -moderate -Low	 2 (0.5) 378 (90.6) 37 (8.9)
Number of children: 1 2-3 ≥ 4	 33 (7.9) 209 (50.1) 175 (42)

4.3 purchasing practices of OTC medications by participants

A total of 320 (76.7%) participants reported that they purchase OTC medications for their children's ailments. Other mothers are not purchasing OTC medications because they think that OTC medication are not safe for children and they prefer to seek medical advice from health care professionals as doctors. The most common type of OTC medication that purchased by participants was analgesics/ antipyretics (313; 75.1%) followed by common cold/ cough preparations (135; 39.6%).Allergy medications was the least medication that purchased by the mothers (44; 10.6%). (Table 3).

Table 3: Purchasing practices of children OTC medications as reported by the participants

Drug Class	Frequency (%)
Analgesics/antipyretics	313 (75.1)
Common cold/cough	165 (39.6)
Soothing creams/ointments for diaper rash	95 (22.8)
Colic and diarrhea medications	94 (22.5)
Medications for constipations	73 (17.5)
Antibiotics	131 (31.4)
Allergy medications	44 (10.6)

4.4 Reasons for buying OTC medications

We asked the mothers that purchase OTC medications about why they purchase OTC medications without consulting a physician; one hundred and ninety three (60.3%) reported that their child suffered from the same disease before and therefore they know how to treat the illness, ninety five (29.7%) reported that their child's ailment was not serious, eighteen (5.6%) reported that there was no available physician close to their residence and Fourteen (4.4%) reported that they purchase OTC medications without consulting the physician to save money (table 4)

Table 4: Reasons for buying OTC medications

Reasons for buying OTC medications	Frequency (%)
the child suffered from the same disease before	193 (60.3)
the child's ailment was not serious	95 (29.7)
no available physician close to their residence	18 (5.6)
to save money	14 (4.4)

4.5 Associations between number of children of the participant and their reasons for buying OTC medications

Mothers have more than 4 children are buying OTC medication because of the child suffered from the same disease before. This reason represents high percent of mothers that have more than 4 children (59.6%) when we compare it with other reasons (see table 5).This means that experience is important reason for buying OTC medications .This reason is not found in mothers than have one child. High percent of mothers that have 2 or 3 children (64.5%) bye OTC medications because the child's ailment was not serious and (55.6) of them bye OTC medications because of there is no available physician close to their residence.

A significant difference was found between number of children of the participant, number of children and Reasons for buying OTC medications ($P < 0.05$, see table 5).

Table 5: Associations between number of children of the participant and their Reasons for buying OTC medications

Number of children	the child suffered from the same disease before	the child's ailment was not serious	no available physician close to their residence	to save money	P.value
	%	%	%	%	
1	0.0	14.6	33.3	7.5	<0.01
2-3	40.4	64.5	55.6	38.5	
≥4	59.6	21.9	11.1	53.8	

4.6 Sources of information about OTC medications

Regarding sources of information about OTC medications, one hundred eighty four (57.5%) of mothers ask pharmacists for advice. In addition to the pharmacists, the main source of information about OTC medications was drug label or leaflet 75 (23.4%).Forty one (12.8%) participants reported that that they purchase OTC medications based on their previous experience while 20 (6.2 %) participants reported that they purchase OTC medication based on a recommendation from other family members or friends.

Table 6: Sources of information about OTC medications

The source of information	**Frequency (%)**
pharmacists	184 (57.5)
drug label or leaflet	75 (23.4)
previous experience	41 (12.8)
family members or friends	20 (6.2)

4.7 Participants' beliefs and attitudes regarding OTC medications

A total of 313 (74.8%) participants' believed that OTC medications are safe; 239 (57.3%) believed that that they are effective; and 120 (28.8) believed that the effectiveness of the OTC medication is related to its price (this means that when the price of the medication rises, the medication is more effective). Three hundred and fifty (83.9%) participants believed that OTC medications may cause side effects, 340 (81.5%) believed that OTC medications can interact with other medications, and 340 (81.5) believed that OTC medications can interact with other medications.

Table 7: Participants' beliefs and attitudes regarding OTC medications

Statement	Agree N (%)
OTC medications are safe.	313 (74.8)
OTC medications are effective.	251 (60.2)
The effectiveness of the drug is related to its price.	120 (28.8)
Use of OTC medications may cause side effects.	350 (83.9)
OTC medications can interact with other medications.	340 (81.5)

4.8 Associations between participant's characteristics and their beliefs regarding OTC medications

Mothers are more than 40 years old believed that OTC medications are safe more than mothers with less age (84.3%).They are also believed that OTC medications are effective (80.4%) and believed that the effectiveness of the drug is related to its price (89.2%) and believed that Use of OTC medications may cause side effects (99.0%) more than mothers with less age. This means that a significant difference was found between age categories and participants' beliefs regarding OTC medication ($P < 0.05$, see table 8).

Regarding to the level of education of mothers, (72.6%) of mothers that have a school education and (78.7%) of mothers that have college education believed that OTC medications are safe. (60.2%) of mothers that have a school education and (58.7%) of

mothers that have college education believed that OTC medications are effective. 83.8% of mothers that have a school education and (84.8 %) of mothers that have college education believed use of OTC medications may cause side effects. No significant difference was found between level of education and participants' beliefs regarding OTC medication (P >0.05).

When we talk about the home address, (73.2%) of house wife mothers and (84.3%) of employed mothers believed that OTC medications are safe. (60.8%) of house wife mothers and (57.1%) of employed mothers believed that OTC medications are effective. (82.7%) of house wife mothers and (75.7%) of employed mothers believed that OTC medications can interact with other medications. No significant difference was found between occupation and participants' beliefs regarding OTC medication (P >0.05).

Regarding to the home address of mothers, (70.3%) of mothers that live in Nablus city and (85.8%) of mothers that live in the village and (74.7%) mothers that live in the Nablus camps believed that OTC medications are safe. (57.8%) of mothers that live in Nablus city and (64.2%) of mothers that live in the village and (62.0%) mothers that live in the Nablus camps believed that OTC medications are effective. (83.2%) of mothers that live in Nablus city and (83.0%) of mothers that live in the village and (87.3%) mothers that live in the Nablus camps believed that use of OTC medications may cause side effects. No significant difference was found between home address and participants' beliefs regarding OTC medication (P >0.05).

No significant difference was found between monthly income and participants' beliefs regarding OTC medication (P >0.05), (50.0%) of mothers with high monthly income and (75.1%) of mothers with moderate monthly income and (76.3%) mothers with low monthly income believed that OTC medications are safe. (50.0%) of mothers with high monthly income and (61.0%) of mothers with moderate monthly income and (52.6%) mothers with low monthly income believed that OTC medications are effective.

Mothers with more than 4 children believed that OTC medications are safe more than mothers with less than 4 children (82.9%).They are also believed that OTC medications are effective (71.4%) and believed that the effectiveness of the drug is related to its price

(83.7%) and believed that use of OTC medications may cause side effects (90.3%) more than mothers with less number of children. This means that a significant difference was found between number of children and participants' beliefs regarding OTC medication (P <0.05, see table 8).

Table 8: Associations between participant's characteristics and their beliefs regarding OTC medications (% percent of agreement)

	OTC medications are safe	OTC medications are effective	The effectiveness of the drug is related to its price	Use of OTC medications may cause side effects	OTC medications can interact with other medications
age					
<30 years	68.0	53.6	51.3	77.8	71.2
30-40 years	75.9	53.7	73.4	80.2	80.2
>40 years	84.3	80.4	89.2	99.0	99.0
P.value	0.012	<0.01	0.001	<0.01	<0.01
Level of education					
Illiterate	87.5	87.5	79.3	87.5	87.5
School education	72.6	60.2	84.3	83.8	79.9
College education	78.7	58.7	75.7	84.8	84.0
P.value	0.279	0.268	0.173	0.961	0.538
Occupation					
Housewife	73.2	60.8	75.6	85.3	82.7
Employee	84.3	57.1	83.4	77.1	75.7
P.value	0.061	0.568	0.231	0.090	0.169
Home address					
City	70.3	57.8	75.7	83.2	80.2

Village	85.8	64.2	61.0	83.0	80.2
Camp	74.7	62.0	70.3	87.3	87.3
P.value	0.009	0.502	0.311	0.657	0.336
Monthly income					
High	50.0	50.0	89.4	100.0	100.0
Moderate	75.1	61.0	72.7	83.8	81.2
Low	76.3	52.6	81.2	84.2	84.2
P.value	0.704	0.578	0.615	.823	0.716
Number of children					
1	57.6	48.5	62.3	72.7	57.6
2-3	71.3	52.6	77.5	80.4	78.0
≥4	82.9	71.4	83.7	90.3	90.3
P.value	0.002	<0.01	<0.01	0.006	<0.01

4.9 Participants' Knowledge about OTC medications

A total of 360 (86.3 %) of participants know that there are different strengths for each OTC medications and 116 (27.8%) of them indicated that Antibiotics can be used without physician's consultations. One hundred twenty one (29%) indicated that Acamol and Ibuprofen have the same efficacy.

Table 9: participants' knowledge about OTC medications:

Statement	Agree N (%)
There are different strengths for each OTC medications.	360 (86.3)
Antibiotics can be used without physician's consultations.	116 (27.8)
Acamol and Ibuprofen have the same efficacy.	121 (29)

4.10 Associations between participant's characteristics and their knowledge about OTC medications

Mothers are more than 40 years old know that there are different strengths for each OTC medications more than mothers with less age (92.5%).They said that antibiotics can be used without physician's consultations (50.5%) and they said that the Acamol and Ibuprofen have the same efficacy (21.6%) more than mothers with less age. This means that a significant difference was found between age categories and participants' knowledge about OTC medication ($P < 0.05$, see table 10).

Regarding to the level of education of mothers, Mothers that have college education know that there are different strengths for each OTC medications more than mothers with less level of education (99.3%).They said that antibiotics can be used without physician's consultations (39.3%) and they said that the Acamol and Ibuprofen have the same efficacy (20.05%) more than mothers with less age. This means that a significant difference was found between level of education and participants' knowledge about OTC medication ($P < 0.05$).

When we talk about the occupation, (85.6%) of house wife mothers and (90.0%) of employed mothers know that there are different strengths for each OTC medications. (30.5%) of house wife mothers and (35.7%) of employed mothers said that antibiotics can be used without physician's consultations. (29.4%) of house wife mothers and (15.7%) of employed mothers said that the Acamol and Ibuprofen have the same efficacy. No significant difference was found between occupation and participants' knowledge about OTC medication ($P > 0.05$).

Regarding to the home address of mothers, (83.6%) of mothers that live in Nablus city and (88.7%) of mothers that live in the village and (91.1%) mothers that live in the Nablus camps know that there are different strengths for each OTC medications. (28.9%) of mothers that live in Nablus city and (31.1%) of mothers that live in the village and (38.0%) mothers that live in the Nablus camps said that antibiotics can be used without physician's consultations. (30.2%) of mothers that live in Nablus city and (21.7%) of mothers that live in the village and (25.3%) mothers that live in the Nablus camps said that the Acamol and

Ibuprofen have the same efficacy. No significant difference was found between home address and participants' knowledge about OTC medication (P >0.05).

No significant difference was found between monthly income and participants' knowledge about OTC medication (P >0.05), (100%) of mothers with high monthly income and (85.4%) of mothers with moderate monthly income and (94.7%) mothers with low monthly income know that there are different strengths for each OTC medications. (50.0%) of mothers with high monthly income and (31.0%) of mothers with moderate monthly income and (34.2%) mothers with low monthly income said that antibiotics can be used without physician's consultations. (50.0%) of mothers with high monthly income and (27.1%) of mothers with moderate monthly income and (26.3%) mothers with low monthly income said that the Acamol and Ibuprofen have the same efficacy.

Mothers with more than 4 children know that there are different strengths for each OTC medications more than mothers with less than 4 children (94.9%).They also said that antibiotics can be used without physician's consultations (49.1%) and said that the Acamol and Ibuprofen have the same efficacy (19.4%) more than mothers with less number of children. This means that a significant difference was found between number of children and participants' knowledge about OTC medication (P <0.05, see table 10).

Table 10: Associations between participant's characteristics and their knowledge about OTC medications (% percent of agreement)

	There are different strengths for each OTC medications.	Antibiotics can be used without physician's consultations.	Acamol and Ibuprofen have the same efficacy.
age			
<30 years	76.5	10.5	36.6
30-40 years	92.0	45.8	21.6
>40 years	92.5	50.5	21.6
P.value	<0.01	<0.01	0.004

Level of education			
Illiterate	0	50.0	87.5
Scool education	81.5	26.3	29.3
College education	99.3	39.3	20.0
P.value	<0.01	0.012	<0.01
Occupation			
Housewife	85.6	30.5	29.4
Employee	90.0	35.7	15.7
P.value	0.327	0.369	0.521
Home address			
City	83.6	28.9	30.2
Village	88.7	31.1	21.7
Camp	91.1	38.0	25.3
P.value	0.175	0.318	0.246
Monthly income			
High	100	50.0	50.0
Moderate	85.4	31.0	27.1
Low	94.7	34.2	26.3
P.value	0.239	0.785	0.762
Number of children			
1	30.3	3.0	81.8
2-3	88.0	21.1	24.9
≥4	94.9	49.1	19.4
P.value	<0.01	<0.01	<0.01

4.11 Participants' Knowledge about analgesic/ antipyretic medications

A total of 336 (80.6) of participants know that high temperature of the body indicates the presence of disease. And 332 (79.6%) of them Know how many analgesics doses that the child can take it during the day. Three hundred nighty six (95%) know that there is adverse effect if analgesics dose not given for child.

When we asked mothers about what are the complications that can happen if an analgesics dose not given to the child when his temperature rises (an open question),one hundred thirty six136 (32.6%) reported that high temperature might cause brain damage .

Table 11: Participant' knowledge about analgesic/ antipyretic medications

Statement	**Agree Frequency (%)**
High temperature of the body indicates the presence of disease.	336 (80.6)
Know how many analgesics doses that the child can take it during the day.	332 (79.6)
Complications can happen if analgesics dose not given for child.	396 (95)

4.12 Associations between participant's characteristics and their knowledge about OTC medications

Mothers are more than 40 years old know that high temperature of the body indicates the presence of disease more than mothers with less age (92.2%).They know how many analgesics doses that the child can take it during the day (95.0%) and they know that complications can happen if analgesics dose not given for child (92.2%) more than mothers with less age. This means that a significant difference was found between age categories and participants' knowledge about analgesic/ antipyretic medications ($P < 0.05$, see table 12).

Regarding to the level of education of mothers, Mothers that have college education know high temperature of the body indicates the presence of disease more than mothers with less level of education (92.0%).They know how many analgesics doses that the child can take it

during the day (92.0%) and they know that complications can happen if analgesics dose not given for child (98.7%) more than mothers with less age. This means that a significant difference was found between level of education and participants' knowledge about analgesic/ antipyretic medications (P <0.05).

When we talk about the occupation, (79.8 %) of house wife mothers and (84.3%) of employed mothers know that high temperature of the body indicates the presence of disease. (78.7%) of house wife mothers and (84.3%) of employed mothers know how many analgesics doses that the child can take it during the day. (94.8%) of house wife mothers and (95.7%) of employed mothers know that complications can happen if analgesics dose not given for child. No significant difference was found between occupation and participants' knowledge about analgesic/ antipyretic medications (P >0.05).

Regarding to the home address of mothers, (77.6%) of mothers that live in Nablus city and (80.2%) of mothers that live in the village and (89.9%) mothers that live in the Nablus camps know that high temperature of the body indicates the presence of disease. (77.2%) of mothers that live in Nablus city and (78.3%) of mothers that live in the village and (88.6%) mothers that live in the Nablus camps know how many analgesics doses that the child can take it during the day. (95.3%) of mothers that live in Nablus city and (93.4%) of mothers that live in the village and (96.2%) mothers that live in the Nablus camps know that complications can happen if analgesics dose not given for child. No significant difference was found between home address and participants' knowledge about analgesic/ antipyretic medications (P >0.05).

No significant difference was found between monthly income and participants' knowledge about analgesic/ antipyretic medications (P >0.05), (100%) of mothers with high monthly income and (79.3%) of mothers with moderate monthly income and (92.1%) mothers with low monthly income know how many analgesics doses that the child can take it during the day. (100%) of mothers with high monthly income and (79.0%) of mothers with moderate monthly income and (84.2%) mothers with low monthly income know that complications can happen if analgesics dose not given for child. (100%) of mothers with high monthly income and (94.7%) of mothers with moderate monthly income and (97.4%) mothers with

low monthly income know that complications can happen if analgesics dose not given for child.

Mothers with more than 4 children know that high temperature of the body indicates the presence of disease more than mothers with less than 4 children (94.3%).They also know how many analgesics doses that the child can take it during the day. (94.3%) and know that complications can happen if analgesics dose not given for child (46.0%) more than mothers with less number of children. This means that a significant difference was found between number of children and participants' knowledge about analgesic/ antipyretic medications (P <0.05, see table 12).

Table 12: Associations between participant's characteristics and their knowledge about OTC medications (% percent of agreement)

	High temperature of the body indicates the presence of disease.	Know how many analgesics doses that the child can take it during the day.	Complications can happen if analgesics dose not given for child.
age			
<30 years	60.8	58.2	92.8
30-40 years	92.0	93.3	98.8
>40 years	92.2	95.0	92.2
P.value	<0.01	<0.01	0.18
Level of education			
Illiterate	0	0	0
Scool education	76.4	74.9	95.8
College education	92	92.0	98.7
P.value	<0.01	<0.01	<0.01
Occupation			
Housewife	79.8	78.7	94.8
Employee	84.3	84.3	95.7

P.value	0.390	0.288	0.753
Home address			
City	77.6	77.2	95.3
Village	80.2	78.3	93.4
Camp	89.9	88.6	96.2
P.value	0.06	0.086	0.657
Monthly income			
High	100	100	100
Moderate	79.3	79.0	94.7
Low	92.1	84.2	97.4
P.value	0.129	0.582	0.733
Number of children			
1	15.2	12.1	84.8
2-3	79.7	78.0	95.7
≥4	94.3	94.3	46.0
P.value	<0.01	<0.01	0.021

4.13 Participants' knowledge about the name of OTC medications for children

Mothers were asked about the name of any analgesic/ antipyretic OTC medication in the market, a total of 279 (87.1%) participants were able to give a correct answer and 252 (78.7%) indicated that they have analgesic/ antipyretic medication at home, 78 (24.3%) participants were able to give a correct answer about anti-diarrhea medications and 65 (20.3%) indicated that they have it at home, 71 (22.1%) give a name of anti-constipation medication and 56 (17.5%) indicated that they have it at home. One hundred fifty three 153 (47.8%) of mothers know a name of common cold/ cough preparation in the market and 140 (43.7%) indicated that they have it at home. A total of 153 (47.8%) participants give a name of diaper rash medication and 132 (41.2%) indicated that they have it at home.

Table 13: participants' knowledge of the name of OTC medications when certain medical conditions and availability of them at home:

A medical condition	knowledge of the name of OTC medications	Availability at home
	Correct Frequency (%)	Yes Frequency (%)
Fever/ Pain	279 (87.1)	252 (78.7)
Diarrhea	78 (24.3)	65 (20.3)
Constipation	71 (22.1)	56 (17.5)
Common cold and cough preparation	153 (47.8)	140 (43.7)
Diaper rash	153 (47.8)	132 (41.2)

4.14 Participants' administration practices about OTC medications

Participants were asked about administration of OTC medications, 203 (63.4%) participants reported that they check the expiration date before medication use, 160 (50.0%) reported that they read the enclosed leaflet before using the drug for the child, 182 (56.8%) participants reported that they observe the administration time carefully and 178 (55.6 %) participants use complementary therapies such as herbs along with the OTC medication for their children.

A total of 210 (65.6%) participants reported that they measure their child's temperature before using antipyretics while others estimate temperature of the child by touch. Two hundred thirty three 233 (72.8) use water compresses before using antipyretics.

Table 14: Mothers' administration practices of OTC medications

Statement	Frequency (%)
Check expiration date before use.	203 (63.4)
Record/ Memorize medication administration time	182 (56.8)
Increase the dose when the illness becomes worse.	20 (6.2)
Give dietary supplements/ herbs for the child	178 (55.6)
Read the enclosed leaflet before using the medication	160 (50.0)
Measure child's temperature before using analgesics/antipyretics.	210 (65.6)
Use water compresses before/ or with antipyretics.	233 (72.8)

4.15 Associations between participant's characteristics and their administration practices of OTC medications

Mothers are more than 40 years old Check expiration date before use more than mothers with less age (59.8%).They Record/ Memorize drug administration time (60.3%) and they measure child's temperature before using analgesics/antipyretics (38.2%) more than mothers with less age. This means that a significant difference was found between age categories and participants' administration practices of OTC ($P < 0.05$, see table 15).

Regarding to the level of education of mothers, Mothers that have college education Read the enclosed leaflet before using the medication more than mothers with less level of education (80.9%).They measure child's temperature before using analgesics/antipyretics. (75.3%) and they use cold water compresses before use an antipyretics (79.3%) more than mothers with less age. This means that a significant difference was found between level of education and participants' administration practices of OTC ($P < 0.05$).

When we talk about the occupation, (42.9 %) of house wife mothers and (45.7%) of employed mothers Record/ Memorize drug administration time. (40.9%) of house wife

mothers and (51.4%) of employed mothers give dietary supplements for the child. (48.4%) of house wife mothers and (58.6%) of employed mothers Measure child's temperature before using analgesics/antipyretics. No significant difference was found between occupation and participants' administration practices of OTC (P >0.05).

Regarding to the home address of mothers, (47.0%) of mothers that live in Nablus city and (54.7%) of mothers that live in the village and (94.3%) mothers that live in the Nablus camps check expiration date before medication use. (4.3%) of mothers that live in Nablus city and (7.4%) of mothers that live in the village and (6.3%) mothers that live in the Nablus camps increase the dose when the illness becomes worse. (38.4%) of mothers that live in Nablus city and (41.5%) of mothers that live in the village and (34.2%) mothers that live in the Nablus camps Read the enclosed leaflet before using the medication. No significant difference was found between home address and participants' administration practices of OTC (P >0.05).

No significant difference was found between monthly income and participants' administration practices of OTC (P >0.05), (2.0%) of mothers with high monthly income and (48.5%) of mothers with moderate monthly income and (50.0%) mothers with low monthly income check expiration date before use. (0%) of mothers with high monthly income and (6.9%) of mothers with moderate monthly income and (36.8%) mothers with low monthly income Give dietary supplements for the child. (50.0%) of mothers with high monthly income and (55.2%) of mothers with moderate monthly income and (63.2%) mothers with low monthly income use water compresses before use an antipyretics.

Mothers with more than 4 children Record/ Memorize drug administration time than mothers with less than 4 children (49.7%).They also give dietary supplements for the child. (38.3%) and Use water compresses before use an antipyretics. (42.9%) more than mothers with less number of children. This means that a significant difference was found between number of children and participants' administration practices of OTC (P <0.05, see table 15)

Table 15: Associations between participant's characteristics and their administration practices of OTC medications (% percent of agreement)

	Check expiration date before use	Record/ Memorize drug administration time	Increase the dose when the illness becomes worse	Give dietary supplements for the child	Read the enclosed leaflet before using the medication	Measure child's temperature before using analgesics/antipyretics.	Use water compresses before use an antipyretics.
age							
<30 years	50.3	36.6	2.0	48.4	37.4	58.8	49.7
30-40 years	39.5	39.5	3.0	4.1	40.1	49.4	58.6
>40 years	59.8	60.3	14.7	38.2	44.2	38.2	60.8
P.value	0.004	0.04	<0.01	0.006	0.002	<0.01	<0.01
Level of education							
Illiterate	12.5	10.5	75.0	0	0	0	0
Scool education	32.4	24.3	6.0	23.2	16.2	35.1	44.0
College education	78.0	64.2	0	78.7	80.9	75.3	79.3
P.value	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Occupation							
Housewife	48.1	42.9	6.1	40.9	36.4	48.4	54.8
Employee	50.0	45.7	2.9	51.4	46.2	58.6	61.4
P.value	0.205	0.240	0.113	0.165	0.198	0.194	0.261
Home address							
City	47.0	44.0	4.3	41.8	38.4	49.6	53.0
Village	54.7	46.2	7.4	49.1	41.5	55.7	54.4

Camp	94.3	38.0	6.3	36.7	34.2	44.3	59.5
P.value	0.06	0.07	0.06	0.08	0.06	0.06	0.07
Monthly income							
High	2.0	0	50.0	0	0	0	50.0
Moderate	48.5	43.5	5.6	46.9	39.3	50.9	55.2
Low	50.0	44.7	2.6	36.8	31.6	44.7	63.2
P.value	0.736	0.789	0.431	0.670	0.654	0.607	0.614
Number of children							
1	42.4	12.1	3.0	36.4	13.2	48.5	42.4
2-3	48.3	43.1	2.9	47.4	42.6	56.5	53.1
≥4	49.7	49.7	4.1	38.3	38.3	42.9	61.7
P.value	0.09	0.001	0.01	0.003	0.001	<0.01	<0.01

Chapter Five

Discussion

5.1 Introduction:

This study is one of the few studies that evaluate mothers' knowledge, practices, attitudes and beliefs about OTC medications commonly used for children. According to our knowledge, it is the first study conducted in Palestine about this subject.

The mechanisms by which individuals can obtain medicines include not only their traditional prescribing by doctors, but also the ability to purchase medicines directly. The most obvious example of this is the community or retail pharmacy, where the metonymic term over-the-counter (OTC) originates and is used to describe such medicines. Such availability has been argued to offer benefits in terms of convenient access to, and choice of, medicines as well as involving individuals as active participants in their own health and the treatment of illness (Bond & Bradley, 1996; Nettleton, 2006). The range of medicines available is often more restrictive compared to prescribed medicines, and there are often limitations to indications and doses, although there has been a trend towards increasing deregulation of medicines from prescription to OTC supply and most recently availability from Internet pharmacies (Bessell et al., 2003). There has been a tendency for the public to perceive OTC medicines to be safer than prescription medicines (Bissell et al., 2001; Hughes et al., 2002;Raynor et al., 2007), but it has been recognized that OTC medicines have the potential for harm as well as benefit (Lessenger & Feinberg, 2008).

Mothers of children with acute minor conditions like fever, cold, cough and upper respiratory tract infections are likely to use an OTC medication for their child's management (Albsoul et al., 2011). This is especially true if the child is not insured. I conducted this study at primary health care clinics so mothers indicated that their children were insured.

The main reason for using OTC medications is that the children suffered from the same disease before; therefore, mothers know how to treat it. The second reason for using OTC medications in this study is that the disease was simple and there is no need to visit the doctor. Some of the mothers indicated that the cost of medical care was a reason for using

OTC medication; so obtaining OTC medications is much cheaper and easier than seeing doctor. In Jordan study, Cost of medical care (22.3%) and lack of time (30.0%) were reported by parents as the most important reasons for the use of OTC medications to manage their children's aliments. The cost of the OTC medications itself also had a major influence on parent's decisions since 54.3% of parents indicated that the cost of OTC medications affect their decision to buy it. In about 51% of the parents the first time they used an OTC medications for their child, it was based upon a health care provider's advice. (Albsoul et al., 2011).

Another study was conducted in Australia shows that most parents reported that they would purchase OTC medicines because they had been suggested by a doctor and they had been effective in the past. Moreover, 58% of the parents indicated that they would not purchase OTC medicines without advice from their doctor first. Despite limited research exploring the influence of healthcare provider, recommendation on parental decision-making and use of OTC medicines for young children (Trajanovska et al., 2010b).Their findings also revealed that parents frequently sought advice from nurses employed at M&CH centers and family or friends in relation to management of behavioral complaints (Trajanovska et al., 2010b).

5.2 Purchasing Practices of OTC Medications

This study identified a wide range of different OTC medicines that had been used by mothers for children. The most common OTC medications used by mothers for their children were analgesics and antipyretics medications, followed by cough and cold medications, and the least common OTC medications used were allergy medications. Antipyretics have always been sighted as the number one used OTC medication, and childhood fever is the chief complaint for as many as one third of all pediatric consultations in general practice (Albsoul et al., 2011; Bilenko et al., 2006; Kai, 1998; Lagerlov et al., 2003; Trajanovska et al.). Regarding to cough and cold medications, FDA recommends that these drugs should not be used to treat infants and children less than 2 years of age because serious and potentially life-threatening side effects can occur (Hanoch et al., 2010). In our study, mothers used these medications without looking at the age of the children.

A study was conducted in Australia (Trajanovska et al., 2010b) shows the type of medicines used by parents for management of common childhood complaints their child had experienced in the past year. Oral and parenteral electrolytes were reportedly used for symptoms associated with vomiting or diarrhea in children (4.8%). Most parents indicated using paracetamol and/or ibuprofen to relieve a child's high temperature (82.4% and 21.1%, respectively) or pain (62.3% and 24.6%, respectively). A total of 134 (42.8%) parents reported using at least one cough or cold product for their child. Nine parents had used a cough and cold product, which did not contain an antihistamine for either a dry or chesty cough. One hundred and thirty parents reported using at least one combination cough and cold product, which contained an antihistamine. Of these, all but three had used combination cough and cold products to treat symptoms related to a cold or flu such as cough, runny nose or congestion. (Trajanovska et al., 2010b)

5.3 Sources of Information about OTC Medications

When buying OTC medications from pharmacies, most mothers reported asking the pharmacist for advice. Pharmacists usually give verbal advice and information about OTC medications. It is better if written information is also given to parents to reinforce verbal advice (Albsoul et al., 2011). In addition to the pharmacist, the drug label or leaflet was considered the major source of medication information; mothers mostly read the drug label or leaflet to learn about indications and adverse effects (Albsoul et al., 2011).

A study conducted in Australia (Trajanovska et al., 2010b) found that the most parents (88%) sought advice from a doctor and over half sought advice from a nurse employed at a M&CH centre and family or friends (53% and 51%, respectively). Only 35% of parents would seek advice from a pharmacist (Trajanovska et al., 2010b)

Another study conducted in jordan (Albsoul et al., 2011) found that most parents (80.3%) reported asking the pharmacist for advice. In addition to the pharmacist, the main source for parents' knowledge about OTC medications was: drug label or leaflet (41.5%). Medication label or leaflet can be an important source of information when using an OTC medication. (Albsoul et al., 2011).

5.4 Participants' Beliefs and Attitudes toward OTC Medications

Regarding to mother's beliefs among OTC medications, a high percentage of mothers indicated that OTC medications were safe and more than half of mothers indicated that OTC medications were effective. Since OTC medicines are freely available from pharmacies, they may not be considered as dangerous, and thus, they are also considered as less effective (Hameen-Anttila et al., 2011). In this study, a high percentage of mothers believed that OTC medications might cause side effects to children and that they might interact with other medications. In fact, only a minority of pharmacists thought patients should be given information about side effects and interactions, which were the topics that the public most desired to hear about from them (Hameen-Anttila et al., 2011).

A study was conducted in Jordan (Albsoul et al., 2011) found that half of parents thought that the more expensive OTCs are more effective. About 31.5% of parents thought that OTC medications are safe regardless of how frequently they are used, 39.2% were not aware that OTC medications can possibly cause serious interactions when taken with other medications. Most parents (85.2%) denied their child ever experiencing any side effect after taking an OTC medication (Albsoul et al., 2011).

In our study, Chi-square test showed that there was no significant difference between the level of education, occupation, home address, monthly income and mother's attitudes about OTC medications.

Mothers with a largest age have a positive attitude toward OTC medications. This study also shows that mothers that have more experience with children is associated with positive attitude toward OTC medications.

A study was conducted in Finland (Hameen-Anttila et al., 2011) shows the factors which associated statistically significantly with some parental attitudes such as : parental age, level of education, working status, and household income .Parents who used prescription medicines themselves had a more positive attitude toward using medicines in general, compared with parents who did not have prescription medicines in use. In addition, parents who used prescription medicines had a more positive attitude toward using prescription

medicines and long-term use of painkillers. Use of OTC medicines had a similar impact on attitudes toward medicines: parents who had used OTC medicines had a more positive attitude toward using medicines in general, compared with parents who had not OTC medicines in use. (Hameen-Anttila et al., 2011).Parents over 46 years of age had more reservations about using medicines in general than parents younger than 30 years.

Moreover, they had more fears about the risks of medicines. However, parents older than 30 years reported more often that prescription medicines are safe and effective, whereas parents younger than 31 years reported more often that OTC medicines are safe and effective compared to other age groups. Parents with a higher level of education had a more positive attitude toward using medicines in general, compared with parents with a junior high school education or less (B9 years). In addition, these parents with a low educational background had more fears about the risks of medicines and about long-term use of pain-killers. (Hameen-Anttila et al., 2011)

5.5 Participants' Knowledge about OTC Medications

Most of the mothers know that there are different strengths of OTC medications. Around a quarter of the mothers said that antibiotics could be used without doctor consultations. Mothers should ask doctors before using an antibiotic and they should not use it without doctor advice. Around 29% of mothers indicated that Acamol and Ibuprofen have the same efficacy. In fact, Ibuprofen has more efficacy than Acamol and it has a longer half-life.
Mothers with a higher level of education and mothers that have more than 4 children (mothers that have more experience with children) have better knowledge about OTC medications than others. Good knowledge about OTC medications has been found to be associated with the level of education and the number of children. It can be assumed that mothers with higher education have more possibilities to gain knowledge about OTC medications. They may also have better abilities to find reliable information, and also have higher health literacy skills. In addition; our study shows that the age of mothers is associated with their knowledge about OTC medications.

However, the home address, occupation and monthly income were not statistically different with mother's knowledge about OTC medications.

A study conducted in Malaysia (Dawood et al., 2010) showed that 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.

5.6 Participants' Knowledge about Analgesic/ Antipyretic Medications

In this study, regarding to knowledge of analgesics and antipyretics medications, most of the mothers know that high temperature of the body indicates the presence of disease, they know the maximum number of analgesics doses that the child can take it during the day. The type of harm that mothers thought their children would suffer from were convulsions, blindness, brain damage, hearing loss, dehydration, paralysis, coma and death. Almost one-third of the mothers thought that fever might lead to both brain damage and convulsions. The same fears were found amongst parents in several other studies (Bernardo et al., 1999; Impicciatore et al., 1998a). A high percentage of mothers (32.6%) said that brain damage and convulsions is one of the adverse effects if analgesics dose not given for child. In Kuwait study, one-third of the mothers thought that fever might lead to both brain damage and convulsions. The same fears were found among parents in several other studies (Al-Abdel Jalil et al., 2007; Impicciatore et al., 1998b; Schmitt, 1980). High fever can cause a short "benign, febrile" seizure in 3 to 5 percent of all children, but the seizure does not injure the brain (Nelson, 1998). This event is difficult to prevent because febrile seizures usually occur during the first few hours of a fever and prophylactic administration of antipyretics does not decrease seizure recurrence (Nelson, 1998; Stuijvenberg et al., 1999). Concerns about fever and its potential harmful effects may lead to parental behavior such as excessive monitoring and treatment (Schmitt, 1980). This fear is translated into most children being awakened at night for antipyretics (Lippincott, 1997). This causes unnecessary discomfort and distress to the child and considered intrusive to children during the time that they are recovering from their illness (Horn, 2006; May and Bauchner, 1992).

Studies (Bilenko et al., 2006; Kai, 1998) have revealed that parents' knowledge about fever may be incorrect, and that their worries about fever may be historically deep-seated across generations. When managing parents' conceptions of childhood illnesses, it is recommended that health care providers listen more to the concerns and beliefs of parents about their children's illnesses, tailor information, and education to parents' particular needs (Bilenko et al., 2006; Kai, 1998).

In our study, Chi-square test showed that there was no significant difference between the occupation, home address, monthly income and mother's knowledge of analgesics and antipyretics medications. Mothers with a largest age have better knowledge of analgesics and antipyretics medications This study also shows that mothers that have more experience with children is associated with knowledge of analgesics and antipyretics medications . level of education, is also significant with knowledge of analgesics and antipyretics medications.

A study conducted in Spain (Crocetti et al., 2009) found that high school completion was positively associated with correct knowledge of a normal temperature (Crocetti et al., 2009).

Another study conducted in Greek (Matziou et al., 2008) found that mothers with children younger than 12 months old knew less about fever and its treatment than mothers with older ones.

5.7 Participants' knowledge about the name of OTC medications

Regarding to mother's knowledge of the name of OTC medications when certain medical conditions and availability of them at home, most of the mothers indicated that they know the name of analgesics and antipyretics medication such as paracetamol and acamol .

The antipyretic medicine paracetamol (acetaminophen) is used frequently in many countries, and the use seems to be growing (Al-Abdel Jalil et al., 2007; David, 1983). Most of the mothers in our study have it at home and they use an antipyretic when they feel their child is feverish or hot, and not necessary upon temperature measurement (Albsoul et al., 2011). A few of the mothers know the name of constipation and diarrhea medications, and they are not available at their homes. Most of the mothers indicated that they use herbal or natural products when their children have constipation or diarrhea.

A study conducted in Malaysia (Dawood et al., 2010) found that the most of parents weren’t familiar with the name of medicines especially in cases of diarrhea and cough .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. (Dawood et al., 2010)

5.8 Participants' Administrations Practices about OTC Medications

When buying OTC medications from pharmacies, most parents reported asking the pharmacist for advice. In addition to the pharmacist, the drug label or leaflet was considered the major source of medication information; however, only 60.9% of the mothers reported reading it. Mothers do not read it because sometimes is long and they do not have time to read it. Label language can also be difficult for some mothers to understand. A study conducted in Jordan (Albsoul et al., 2011) found that parents do not read the drug label or leaflet because of they took the medication before (22.5%), difficult to understand (5.6%), the drug label or leaflet is in English which he/she cannot read (5%), very small font to read (2.8%), and reading is time consuming (3.3%). For parents who read the drug label or leaflet, 65.2% indicated they read it all, while the rest read only part of it; of these parents 13.2% read the indications, 7.2% read the adverse events, 7.1% read the dosage, and 4.2% read the cautions section (Albsoul et al., 2011) .Innovative approaches are needed to make drug labels or leaflets or OTC medications labels more understandable by the general population. Label or leaflet language needs to be tailored to that of the target group expected to be using it (Albsoul et al., 2011).

This study shows that few mothers (6.2%) reported that they gave a larger dose when they felt that their children were more sick than usual; this is a very dangerous practice. It is especially dangerous when some of these mothers are using more than one OTC medication at the same time. Ingestion and over dosage of OTC medications containing a decongestant, for example, can lead to hypertension, tachycardia, bradycardia, seizures, stroke, and cerebral hemorrhage (Albsoul et al., 2011).In Jordan study (Albsoul et al., 2011) more than two thirds of parents generally showed good practice, some reported giving their child a larger dose if their child is more sick than usual, or give an OTC medication if the child has no symptoms e.g. for a sibling who is not sick (Albsoul et al., 2011). More than half of the mothers were giving dietary supplements such as vitamins and herbs for their children. They are concerned and worried about their children's health,

so they do their best to prevent and protect their children from any ailments (Dawood et al., 2010). In this study, a high percentage (81.8%) of mothers Record/ Memorize drug administration time. Mothers must be very careful so that the medicines that had been given to their children are at the right amount and time (Dawood et al., 2010).

Fever is a common childhood condition that is often misunderstood and incorrectly managed by parents(Crocetti et al., 2009). Studies (Crocetti et al., 2001; Schmitt, 1980) have revealed that parents have numerous misconceptions about fever, its management, and its rolling illness. Regarding to mothers practices among analgesics antipyretics, measuring temperature is the most accurate method of detecting fever, but in this study 34.4% of mothers use non-measurement method such as touching the child only and the others 65.6% used a thermometer for measuring fever . Measuring the temperature is obviously the most accurate method of detecting fever (Al-Abdel Jalil et al., 2007), The majority of mothers, regardless of their educational level or number of children, would awaken their febrile child to administer antipyretic. A study conducted in Kuwait found that two thirds of the mothers recognized fever of the child by touching him and only one third of the mothers actually measured the child's temperature at home to detect fever (Al-Abdel Jalil et al., 2007). The most common site that mothers used for measuring temperature of the all children was the armpit and mouth. Recent experience indicates that axillary temperature provides at best a reasonable approximation of body temperature in the neonate but not in other ages (i.e., during childhood or adult age) (Lippincott, 1997). Similar to a study conducted in the UK (Al-Abdel Jalil et al., 2007) and in contrast to a study done in continental Europe, mothers did not like to take the anal temperature although the anus has been the most accurate site for children under the age of three years. Mouth was the least preferred site by mothers despite of being the most accurate site for children older than three years old (Al-Abdel Jalil et al., 2007). The accuracy of oral temperature is influenced by location and length of time of the thermometer in the mouth (Bernardo et al., 1999). Most of the mothers use water compresses or bathing before using antipyretics. Cold compresses may be used to reduce fever. Apply cold compress directly over the forehead or the nape of the neck to be very effective in reducing fever. (Crocetti et al., 2009) In our study, most of mothers use antipyretics when the temperature is 37.5 ˚c and higher. Current pediatric practice for a febrile child includes the use of antipyretics when the temperature is greater than 38.5 ºC. However, parents and most physicians feel

compelled to give antipyretics whenever a child has any fever at all (Al-Abdel Jalil et al., 2007). 61.9% of mothers indicated that 37.5 ºC is normal and more than 37.5 ºC is detected as fever. The normal body temperature varies with site and has a diurnal variation of about 0.5 ºC. In adults, the mean oral temperature is 36.8 ºC. If it is 36 or 37 ºC, it is accepted as normal (Al-Abdel Jalil et al., 2007). A survey of relatively well educated parents in the USA and two other studies also found that about one-fourth gave antipyretics to children when the temperature was within the normal range (Al-Abdel Jalil et al., 2007). Antipyretics should, however, be used with discretion and not given automatically. Whether or not to use antipyretics should depend on the comfort of the child rather than the thermometer reading (Adam and Stankov, 1994). Initial management of a febrile child should ensure that the child is adequately hydrated and has received an adequate dose of an antipyretic (Kilmon, 1987; Krantz, 2001; Sharber, 1997).

Mothers with a higher level of education and mothers that have more than 4 children have better Administrations Practices about OTC Medications than others. Administrations Practices about OTC Medications has been found to be associated with the level of education and the number of children. Our study shows that the age of mothers is associated with Administrations Practices about OTC Medications.

However, the home address, occupation and monthly income were not statistically different with mother's Administrations Practices about OTC Medications.

A study conducted in Malaysia (Dawood et al., 2010) found that parents with the high education level and the monthly income showed statistically significant (p=0.004) and (p=0.001) with administrations Practices about OTC Medications . 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). (Dawood et al., 2010)

Another study conducted in Kuwait (Al-Abdel Jalil et al., 2007) found that the association between the educational level of mothers and method used to measure temperature was statistically significant ($p < 0.05$); the association between perceived need of antibiotics and educational status was statistically very highly significant ($p < 0.001$), and there was no statistically significant association between the educational level and the preferred site of temperature measurement, frequency of temperature recording, and teething as a cause of fever. The association between perceived consequences of fever and level of education was statistically highly significant ($p < 0.005$). A significant association was also found between perceived consequences of fever and number of children ($p < 0.05$) (Al-Abdel Jalil et al., 2007).

Regarding to mothers practices among analgesics antipyretics, study conducted in Spain (Crocetti et al., 2009) found that the age of the respondent, number of children in the household, visit type, identification of death or brain damage as a harm of fever, and frequent checking of temperatures during a febrile illness were not statistically associated with selection of correct values for a normal temperature or a fever. Mothers of Mexican origin were 2 times less likely to correctly select a temperature value within the fever range compared with mothers of Latino non-Mexican origin (OR, 0.5; 95% CI, 0.2-1.0; $P = .04$).

Another study conducted in Greek (Matziou et al., 2008) found that Mothers with a university degree gave more right answers about fever and its treatment in contrast with mothers of a primary or secondary education, except for the question on the frequency of antipyretics' administration.

5.9 Conclusion:

This study shows that mothers are using a number of OTC medications for their children to manage childhood complaints specially analgesics and antipyretics medications, common cold and cough medications. For this reason, mothers need to be vigilant in the usage and administration of these medications to the children.

This study highlights the major role that pharmacists play in providing mothers with information and advice about symptom use of OTC medicines during child illness. It also

indicates that parents in our study were not worried about bothering the doctor for minor illness, but preferred to seek advice from a pharmacists or family or friends.

From this study, we found out that mothers with better education have better knowledge and practices for managing their children's ailments when they deal with OTC medicines. Educational interventions by health care professionals aiming at educating young mothers with a low educational level is important. This shows the need for raising the awareness of mothers through health professionals in order to decrease the wrong use of OTC medications for children.

5.10 Recommendations

Recommendations for policy makers:

1. Health policy makers should develop and implement regulations for drug manufacturers regarding medication leaflet to make it easier and not long so mothers and medication users can read it without any difficulties. Opportunities exist for health care authorities as well manufacturers to revise existing labels and leaflets to improve mother's comprehension and enhance child safety.

2. A comprehensive health education program is needed to educate mothers about using of OTC medications for their children. Mothers' education about OTC medication is important to protect the children and to prevent any side effect to happen. Mothers educational interventions, which ensure that children will receive the best quality of care.

3. Information about OTC medication should be available to all medication users regardless of the educational background. Health care providers and health professionals need to continued provision of information to mothers with respect to safe use of OTC medications to manage childhood complaints. As we show in our study, low educated mothers had less knowledge about OTC medications and less knowledge about analgesics and antipyretics medication. Health care providers should target epically mothers who are young or mothers that have few children

(one or two children), provide them with information about OTC medications and how to use these agents for their children. Doctors and pharmacists should participate in raising the awareness of mothers about using OTC medications, provide mothers with information and advice about symptom management and use of OTC medicines during child illness.

Recommendations for future research and researchers

1. Need for research that explores the influence of healthcare provider recommendation on mother's decision-making and use of OTC medicines for children.

5.11 Study Limitations:

1- We carried out this research by asking mothers only, because most of the children are taken care by their mothers and most of the father's time is at work and outside the home.
2- Inclusion of only 4 primary health care clinics at Nablus, the whole number of primary health care clinics is 7. It is better to include more centers in this study.
3- Inclusion of primary health care clinics only, this is not including people who do not use MOH clinics.
4- Some mothers were afraid from the answers' consequences, this can affect the results.
5- Recall bias can happen if mothers have child more than one year.

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Appendix 1

Questionnaire in Arabic

إستبيان خاص للطالبة / حنين ماجد لأغراض البحث العلمي كمتطلب لرسالة الماجستير في الصحه العامه – جامعة القدس - فلسطين

*** المعلومات الشخصية للأم:**

1. العمر:.....

2 . مستوى التعليم :.....

3. الوظيفة : أ) ربة منزل ب) موظفة جـ)عمل خاص

4. مكان الاقامة : أ) مدينة ب) قرية جـ) مخيم

5. معدل الدخل : أ) عالي ب) متوسط جـ) متدني

6. عدد الأطفال: .....

7.هل تقومين بشراء أدويه من الصيدلية لطفلك دون الرجوع الى الطبيب؟

أ) نعم ب) لا

8. إذا كانت إجابتك نعم في السؤال السابق ما هي الأدويه التي تشترينها من الصيدليه؟

أ) مسكنات اللآلام وخافضات الحراره ب) أدوية الرشح واحتقان الأنف

جـ) الكريمات والدهون الموضعيه د) أدوية المغص والاسهال هـ) أدويه الإمساك

و) المضادات حيوية ي) أدوية الحساسية

9. ماهوالسبب الذي دفعك الى شراء الأدويه لطفلك من الصيدليه دون الرجوع الى الطبيب ؟

أ) كان المرض بسيطا ولم يستدع زيارة الطبيب.

ب) أصيب طفلك بهاذا المرض من قبل فأصبح لديك درايه كافيه لعلاجه.

جـ) عدم توفر طبيب بالقرب من مكان سكنك.

د) للتوفير.

10. ما مصدر معلوماتك عن الدواء الذي استخدمته لطفلك دون الرجوع الى الطبيب:

أ) الصيدلاني. ب) الأهل والأصدقاء. جـ) النشره المرفقه بالدواء.

د) غير ذلك ( )

11* مواقف الأمهات تجاه الأدوية بدون الوصفة الطبية:

	نعم	لا
1- الأدوية بدون وصفة طبية آمنة		
2- الأدوية بدون وصفة طبية فعالة		
3- فعالية الدواء المستخدم لعلاج الأطفال له علاقة بسعره		
4- استخدام الأدوية بدون وصفة الطبية قد يسبب أعراضا جانبية		
5- يمكن أن تتفاعل الأدوية بدون وصفة مع أدوية أخرى		

12* معرفة الأمهات بالأدوية بدون وصفة طبية:

	نعم	لا
الأدوية بدون وصفة طبية لها تركيزات (عيارات) مختلفة		
يجوز استخدام المضادات الحيويه دون الرجوع للطبيب		
الأكامول والتروفين لهم نفس الفعاليه		

13 *مدى معرفة الأمهات باستخدام خافضات الحراره:

	نعم	لا
1- ارتفاع درجه الحراره عباره عن ردة فعل للجسم يدل على وجود مرض		
2- معرفه العدد الأقصى لجرعات خافض الحراره التي يتناولها الطفل خلال اليوم		
3- عدم إعطاء خافض الحرارة للطفل يؤثر سلبا عليه		

4-عند أي درجه حراره تعتقدين أنها خطيره وتسبب أعراض جانبيه للطفل ؟

5-ماهي الأعراض الجانبيه التي تسببها درجه الحراره المرتفعه؟

14*مدى معرفة الأمهات بالصنف الدوائي عند حالات مرضية معينة ومدى توافره بالمنزل

الجملة	نعم	لا	متوفر في المنزل
ارتفاع درجه الحرارةامسكن الالام			
الإسهال			
الإمساك			

الرشح \ الكحه			
السماط (التسميط)			

15*الممارسات العامه لاستخدام الأدويه بدون الوصفه الطبيه:

	نعم	لا
1. التحقق من تاريخ انتهاء الصلاحية قبل استخدام الدواء		
2. القيام بتسجيل الوقت الذي قامت فيه بإعطاء الطفل جرعة من الدواء		
3. القيام بزيادة الجرعة للطفل عندما تسوء حالته أكثر من المعتاد		
4. القيام باعطاء مكملات غذائيه مثل الفيتامينات للطفل		
5. القيام بقراءة النشرة المرفقة بالدواء قبل استخدامه للطفل		
6- القيام بقياس درجه حرارة طفلك قبل استخدام خافض الحرارة		
7- استخدام كمادات الماء البارد قبل استخدام خافضات الحرارة		

8-عند أي درجه حراره تعطي طفلك خافض الحراره؟

شكرا لتعاونكم

Appendix 2

Consent form of the study

حضرة الدكتور سعيد الهموز المحترم

مدير عام التعليم العالي في وزارة الصحة

الطالبة: حنين ماجد أبو عرة

برنامج الصحة العامةا جامعه القدس-أبوديس

تحية طيبة وبعد :

أرجو من حضرتكم التكرم بالموافقة والايعاز لمن يلزم وذلك بالسماح باجراء البحث المخصص للطالبة المذكوره أعلاه تحت عنوان **(دراسة مدى معرفة وممارسات ومواقف الأمهات من الأدويه بدون وصفة طبيه)** وذلك بالسماح للطالبة بعمل مقابلة مع الأمهات وتعبئة الاستبيان الخاص بالدراسة.

مؤكدين لكم بأن كافة المعلومات التي سوف يتم جمعها هي لأغراض البحث العلمي فقط, وسوف يتم الحفاظ على السريه التامه وعدم استخدام هذه المعلومات لأغراض أخرى .

راجين منكم تسهيل مهمة الطالبة وشاكرين لكم تعاونكم في تطوير المسيرة العلمية والمهنية

المكان المطلوب لعمل الدراسة: عيادات الرعاية الأوليه في منطقة نابلس

وتفضلوا بقبول فائق الاحترام والتقدير ..

كلية الصحة العامة