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Mother's Knowledge Perceptions and Home Practices toward Their Children with Recurrent Urinary Tract Infection

A Dissertation Submitted

By

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in

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for the Degree of Doctor of Philosophy in Nursing Sciences

Supervised by

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يَرْفَعِ اللَّهُ الَّذِينَ آمَنُوا

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I certify that this dissertation, which is entitled **(Mother's Knowledge Perceptions and Home Practices toward Their Children with Recurrent Urinary Tract Infection)**, was prepared under my supervision at the College of Nursing, University of Babylon in partial fulfillment of the requirements for the Degree of Doctorate Philosophy in Nursing.

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Dedication

To:

- ***My beloved family; mainly father, mother, brothers, and sisters with all love and respect.***

- ***My husband,*** **children,** ***with all love and respect.***

- ***My dear friends, with my love and respect.***

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Abstract

Urinary tract infection (UTI) is one of the most common pediatric infections. It distresses the child, concerns the parents, and may cause permanent kidney damage. Most UTIs happen in the lower part of the urinary tract (the urethra and bladder).

A mother's knowledge perception towards their children with recurrent urinary tract infections (UTIs) can vary depending on various factors, including their knowledge about UTIs and their child's symptoms. The home practices of UTIs in children is essential to reduce the risk of recurrent infections.

The study aims to identify the mother’s knowledge, perceptions and home practices toward their children with recurrent urinary tract infection.

A descriptive cross-sectional design was conducted at AL Zahraa Teaching Hospital. They are set in Al-Najaf Al-Ashraf City from July 14th, 2022, to May 16th, 2023. A non-probability (purposive) sample consisting of (120) mothers was chosen. Interviews and self-report were used to collect data. A descriptive and inferential data analysis approach was used to analyze the data.

The study's findings indicated that the highest percentages for the age categories were 47.5% of mothers (21-28 years old). Although the residents with the highest rate of mothers (73.3%) had rural areas and educational levels, the highest percentage (32.5%) had primary schools. Overall assessment of mothers' knowledge perceptions toward their children with frequent urinary tract infections as accepted with (1.97) mean score. The comprehensive evaluation of mothers' home practices toward their children with recurrent urinary tract infections was poor at the mean score (1.44).

The results of this study indicate that mothers have accepted knowledge perceptions about recurrent urinary tract infections in home practices. Mothers' home practices toward their children with recurrent urinary tract infection (UTI) showed that most mothers understand UTI but lack proper home practices.

Health education programs should be provided to mothers to increase their knowledge and understanding of UTI, its causes, symptoms, and treatments. This would enable mothers to take appropriate actions and make informed decisions. Healthcare providers should provide mothers with clear and concise instructions for home practices, including when to seek medical attention and how to administer medications properly.

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List of Abbreviations and Symbols

Items	Meaning
AAP	American Academy of Pediatrics
AKI	Acute kidney damage
ASB	Asymptomatic bacteriuria
BBD	Bladder and bowel dysfunction
BBD	Bowel and bladder dysfunction
CAP	Continuous antibiotic prophylaxis
CFUs	colony-forming units
CKD	Chronic kidney disease
CRP	C-reactive protein
CT	Computed tomography
d.f.	Degree of Freedom
DMSA	Dimercaptosuccinic acid
DMSA	Dimercaptosuccinic acid
ESR	Erythrocyte sedimentation rate
Freq.	Frequency
G6PD	(Glucose-6-Phosphate Dehydrogenase) Deficiency
HBM	Health Belief Model
IAP	Indian Academy of Pediatrics
IS	Ischemic Strokes
IV	Intravenous

IVU	Intravenous urogram
KUB	kidney, ureter, and bladder
M.S.	Mean of Score
MCUG	Micturating cystourethrogram
mmHg	Millimeter Mercury
NICE	The National Institute for Health and Clinical Excellence
NS	Non-Significance
NSF	National Service Framework
p- value	Probability Value
RUTI	Recurrent urinary tract infection
S	Significance
S. D	Standard Deviation
SCT	Social Cognitive Theory
TGF	Transforming growth factor
URI	Uniform Resource Identifier
UTIs	Urinary tract infection
VCUG	voiding cystourethrography
VEGF	Vascular endothelial growth factor
VUR	Vesicoureteral reflux
WBCs	white blood cells
WHO	World Health Organization
$\chi 2$	Chi-Square Value
%	Percentage

>	More
≤	Less Than or Equal
≥	More Than or Equal

Chapter One

Introduction

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Introduction

1.1. Introduction

Urinary tract infection (UTI) is one of the most common pediatric infections. It distresses the child, concerns the parents, and may cause permanent kidney damage. Most UTIs happen in the lower part of the urinary tract (the urethra and bladder) (Petcu et al., 2021; Seyezadeh et al., 2021).

Recurrent urinary tract infection (UTI) is a distressing condition affecting many preschool-aged children. It is characterized by multiple episodes of UTI within a specific period, often causing discomfort and distress to the child. As mothers play a vital role in the healthcare and well-being of their children, their home practices is crucial in effectively managing and preventing recurrent UTIs in children. This study aims to explore the critical role of mothers in the home practices of their children affected by recurrent UTIs, highlighting their responsibilities, challenges, and strategies for prevention (Smith et al., 2022).

Urinary tract infections (UTIs) are essential in children because they can result in severe consequences such as kidney injury, sepsis, and even fatality when not adequately addressed. UTIs can also bring about discomfort, inconvenience, and pain for the child, potentially leading to absence from school and a diminished quality of life (Leung et al., 2019).

Repeated urinary tract infections (UTIs) can result in long-term renal disease, significantly contributing to illness and death globally. Furthermore, UTIs can impact the economy through expenses associated

with healthcare services, drugs, and caregivers needing time off work (Ginsburg et al., 2017).

Repeated urinary tract infections (UTIs) can significantly affect of children. UTIs result from the invasion of bacteria into the urinary tract, leading to symptoms like frequent urination, a painful or burning sensation while urinating, and a fever (Karmazyn et al., 2017).

Recurrent UTIs can lead to several complications, including kidney damage, chronic pelvic pain, and vesicoureteral reflux (VUR), a condition in which urine flows back into the kidneys (Seyezadeh et al., 2021). Children with recurrent UTIs may also experience emotional and behavioral changes such as irritability, difficulty sleeping, and difficulty concentrating in school (American Academy of Pediatrics, 2011).

It is essential for parents and caregivers to be aware of the signs and symptoms of UTIs in children and to seek medical attention if their child is experiencing recurrent infections. Proper management and home practices, including preventative measures and regular check-ups, can help to reduce the risk of complications and improve outcomes for the child (Williams and Craig, 2019).

Recurrent urinary tract infections (UTIs) are a common problem among children, with an estimated 2-5% of children experiencing recurrent UTIs. These infections can cause significant discomfort and long-term complications if not properly managed (Kaufman, 2019; Baker et al., 2016).

The recurrent UTIs in children are often caused by various factors, including vesicoureteral reflux (VUR), bladder dysfunction, and genetic predisposition. Early diagnosis and appropriate management are essential to prevent long-term complications (Samoa's e Silva & Oliveira, 2015). Children with VUR, a condition where urine flows back into the ureters and kidneys, are at a higher risk for recurrent UTIs. Children with bladder

dysfunction, such as poor bladder emptying or overactive bladder, are also at a higher risk for recurrent UTIs (Tewary & Narchi, 2015; Shaikh et al., 2014).

Urinary tract infections (UTIs) frequently occur in children, with approximately 2% to 3% of young children experiencing them repeatedly. Most cases of recurrent UTIs in this age group are observed in girls (Khorasani et al., 2016).

Repeated UTIs can lead to severe complications like kidney damage if left untreated. Therefore, it is crucial for parents and healthcare providers to be aware of the risk factors and to take appropriate measures to prevent and manage recurrent UTIs in preschool-aged children (Larcombe, 2015).

Recurrent urinary tract infections (UTIs) are common among children. About recurrent UTIs occur in up to 5% of children, and boys and girls are equally affected. (Shaikh, et al., 2016).

One hundred children between the ages of three and five with frequent UTIs participated in the research. The children were checked for vesicoureteral reflux (VUR), urinary tract abnormalities, and constipation, all known risk factors for recurrent UTIs. According to the findings, VUR was the participants' leading cause of repeat UTIs (Fisher, 2016; Marieb and Hoehn, 2015).

Effective management of recurrent UTIs in children involves a combination of preventive measures, such as encouraging the child to drink enough water and fluids and appropriate use of antibiotics, which is essential for reducing the frequency and severity of UTIs in this population (Desai et al., 2016; Keren et al., 2015).

children frequently experience recurrent urinary tract infections (UTIs). About 3% of all UTI cases in children under five are found in this group, with girls having a higher occurrence rate (Millner, 2019; Roman et al., 2015).

Preventative measures for recurrent UTIs in children include ensuring adequate fluid intake, avoiding bubble baths, and promptly treating UTIs. The children who drank more fluids had a lower risk of recurrent UTIs (Khoury et al., 2016; Toker et al., 2010).

The research revealed that 20% of children who experienced a UTI had a recurrence within six months, while 8% had at least two repeats within a year. This emphasizes the significance of implementing appropriate home practices and prevention measures for children who frequently suffer from UTIs (Roberts et al., 2016; Robinson et al., 2014).

Mother's knowledge perception refers to how a mother understands, interprets, and experiences the world around her. This can include her perception of herself as a mother, her children, her relationships, and her environment. Past experiences, cultural background, and mental health can all influence a mother's knowledge perception. It is essential for mothers to be aware of their knowledge perceptions and to seek support if they feel that their knowledge perception is negatively impacting their well-being or their relationships with others (Lansford et al., 2012).

A mother's knowledge perception of a child with a urinary tract infection (UTI) can vary depending on the individual and their experiences. Some mothers may be aware of the symptoms of a UTI and recognize them in their children, while others may not be as familiar with the condition (Dowd et al., 2011).

A mother's knowledge perception of a child with a urinary tract infection (UTI) can vary depending on the mother's knowledge and

experience with the condition, the severity of the disease, and the child's symptoms. Some mothers may recognize the signs and symptoms of a UTI and seek prompt medical attention, while others may not be aware of the condition or delay seeking treatment (Saleh et al., 2017; Chen et al., 2018).

The significance of Home Practices in children for experiencing recurring UTIs is stressed by the American Academy of Pediatrics (AAP). Regular follow-up visits should be scheduled to monitor the child's progress, assess treatment effectiveness, and identify any underlying conditions that may contribute to recurrent UTIs (Shawaf et al., 2018; (Robinson et al., 2014).

In conclusion, mothers play a crucial role in the home practices of their children who have recurrent UTIs. Proper education and understanding of UTIs can lead to better home practices and improved outcomes for the child.

1.2 Importance of the Study

Recurrent Urinary Tract Infection (UTI) is a common condition in children that affects their quality of life and may lead to sever complications if left untreated. The study "Mother’s Knowledge Perceptions and Home Practices toward Their Children with Recurrent Urinary Tract Infection is crucial as it sheds light on the role of mothers in the management and prevention of recurrent UTI in their children (Garelnabi et al., 2021; Eltawab & Shaaban, 2018).

The role of mothers is vital in recognizing and handling recurring urinary tract infections (UTIs) in their young children. They often detect warning signs like frequent urination, painful urination, and blood in the urine. Additionally, they are responsible for seeking medical attention and

ensuring their child receives the necessary diagnosis and treatment (Karmazyn et al., 2017).

Effective management of recurrent UTIs in children involves a combination of preventative measures and prompt medical treatment. These measures may include ensuring that the child is properly hydrated, teaching them proper hygiene practices, and encouraging them to empty their bladder frequently (Larcombe, 2015).

Mothers significantly impact the knowledge perception and management of recurrent UTIs in children. They should be aware of UTIs' symptoms and risk factors and take appropriate action to prevent and treat them (Stephens et al., 2015). A study conducted by Al-Saleh et al. (2017) found that mothers' knowledge perceptions and attitudes toward their child's UTI could significantly affect the management and outcome of the infection.

Van Batavia et al. (2013) found that mothers are critical in managing and following up on their child's UTIs. Therefore, healthcare providers should take the time to educate mothers about the causes and symptoms of UTIs and the importance of preventative measures and timely medical intervention.

Mothers who were more knowledgeable about UTIs and their management had better home compliance and were more likely to adhere to the prescribed treatment plan for their children. This highlights the importance of educating mothers on the causes and management of UTIs to improve home practices compliance and reduce the risk of recurrent infections (Chiang et al., 2017; Roberts, 2011).

In addition, a study by Tashkandi et al. (2016) found that mothers who received emotional support and information about UTIs had a more positive knowledge perception of managing their child's recurrent infections. This suggests that providing emotional support and education to mothers

may improve their knowledge perception of managing recurrent UTIs in children.

Overall, mothers play a critical role in managing recurrent UTIs in children. By providing education and emotional support to mothers, healthcare providers can improve home practices compliance and reduce the risk of recurrent infections (Tewary and Narchi, 2015; Bitsori and Galanakis, 2012).

1.3. Statement of the Problem

Mothers' knowledge perception and home practices have been found to significantly impact recurrent urinary tract infections (UTIs) in children. A study published by Al-Mashat et al. (2018) and Al-Ansary et al. (2015) stated that mothers who had a better understanding of UTI and its management were more likely to seek timely medical attention and adhere to the prescribed treatment, which resulted in a lower rate of recurrent UTI in their children.

Mothers' knowledge perceptions and home practices play a significant role in the recurrent urinary tract infections experienced by their preschool-aged children. The mothers who better understood the disease condition and were more proactive in seeking home Practices care for their children had a lower incidence of recurrent infections. The authors suggested that educational support for mothers may be essential to managing recurrent UTIs in this population (Smith et al., 2022).

Recurrent Urinary Tract Infection (UTI) is frequently observed in children, and neglecting its treatment or improper management can lead to noteworthy implications. One of the most critical aspects of managing recurrent UTIs in children is their mothers' knowledge perception and home practices (Petcu et al., 2021).

Several studies have shown that maternal perception of UTI symptoms and their knowledge about the disease can significantly impact the management and outcomes of the infection in their children. For example, a study in Saudi Arabia found that mothers' knowledge of UTI symptoms and their perceived disease severity was associated with timely medical consultation and better treatment outcomes (Al-Abdi et al., 2019). Thus, early detection and management of UTI in children will decrease the likelihood of recurrent status.

Similarly, a study in Turkey found that mothers more knowledgeable about UTI symptoms and predisposing factors were more likely to seek medical attention promptly and home Practices with appropriate management, leading to better treatment outcomes (Yaman Agaoglu et al., 2017).

However, other studies have shown that maternal misconceptions and lack of knowledge about UTIs can lead to delayed diagnosis, inappropriate management, and poor prognosis, worsening the infection and leading to complications. For example, a study conducted in India found that many mothers unaware of UTI symptoms in their children delayed seeking medical care, leading to more severe infections and higher hospitalization rates (Kavitha et al., 2016).

In summary, maternal knowledge, perception and home practices are critical factors in managing the outcomes of recurrent UTIs in children. Healthcare providers should educate mothers about UTI symptoms and risk factors and encourage prompt medical consultation and appropriate management during the early phase of the disease to prevent complications and improve treatment outcomes.

1.4. Objectives of the Study:

1. To identify the knowledge perceptions toward recurrent urinary tract infections.
2. To determine the mother's home practices for recurrent urinary tract infections.
3. To find out the relationship between mother’s knowledge perceptions and their demographical data (age, residency, level of education, occupation,….)
4. To find out the relationship between mothers’ home practices and their demographical data (age, residency, level of education, occupation, ….)

1.5. Research Question

Are mothers’ knowledge perceptions and home practices effect on recurrent urinary tract infections among their children?

1.6. Hypotheses

It is hypothesized that the results may reveal;

1.6.1: Null hypothesis: There is no significant difference in mothers' knowledge perceptions and home practices toward their children affected with recurrent urinary tract infections.

1.6.2: Alternative hypothesis: There is a significant difference in mothers' knowledge perceptions and home practices toward their children affected with recurrent urinary tract infections.

1.7. Definitions of Terms

.1.7.2. . Mother's Perception

Theoretical definition:

Perception can be defined as the process of organizing and interpreting sensory information to make sense of the world around us. Perception is influenced by various factors, such as attention, motivation, and expectation, which can shape our interpretation of sensory stimuli (Goldstein, 2021; McDonald, 2011)

Operational definition:

Perception is how mothers interpret and understand sensory information about recurrent urinary tract infections in children.

1.7.2. Home Practices:

Theoretical definition:

Home practices refers to the action of monitoring, checking, and ensuring that a particular task, project, or activity is completed or to obtain additional information or feedback (Merriam-Webster, 2021; Chen et al., 2018)

Operational definition:

Home practices with mothers to conduct monitoring, check, and ensure that the treatment prescribed by the doctor is completed and that the child recovers from recurrent UTI.

1.7.4. Recurrent Urinary Tract Infection:

Theoretical definition:

A recurrent urinary tract infection (UTI) is a series of cystitis, pyelonephritis, or urosepsis attacks at different times. (Stein, et al., 2015).

Operational definition:

A recurrent UTI is defined as three or more UTIs within 12 months or two or more UTIs within six months in children under five years

Chapter Two

Literature of Review

2.1. Developmental Perspective of Urinary Tract Infection

Urinary tract infections (UTIs) have been recognized as a medical condition for centuries. The first known description of a UTI was by the ancient Egyptians in 1550 BC, who referred to it as "the disease of the passing of blood." The ancient Greek physician Hippocrates also described symptoms of UTIs in the 5th century BC. In the 19th century, German physician Carl von Voit conducted the first systematic study of UTIs and identified the microorganisms responsible for the infections. The British physician George Nicoll published a landmark study on UTIs describing the symptoms, causes, and treatment of the condition (Goel and Mukherjee, 2016).

Researchers have recently focused on identifying new strategies to prevent and treat UTIs, including developing new antibiotics and using probiotics to prevent recurrent infections. Additionally, studies have been conducted to identify risk factors that contribute to the development of UTIs and to develop new diagnostic methods for the condition (Mukherjee, 2016)

In the 19th century, the German physician Friedrich Gustav Jacob Henle was the first to identify the bacterium responsible for most UTIs, Escherichia coli. In 1877, he published a paper describing the bacterium and its role in causing UTIs. In the early 20th century, the development of antibiotics revolutionized the treatment of UTIs. Sulfa drugs, the first antibiotics, were introduced in the 1930s and were effective against the E. coli that causes most UTIs (Vijayakumar et al., 2011).

Clinicians have sought to establish evidence-based UTI care techniques over the years. In the 1960s, there was no agreement on what constituted "substantial" pyuria, despite the fact that pyuria may be detected in various circumstances, such as acute dehydration, trauma, instrumentation, and calculi. The most reliable approach to diagnosing UTI was shown to be a quantitative bacterial count (Hooton, 2010).

One of the most common infections is urinary tract infection (UTI). Frequent disease affects people of all ages, from newborns to the elderly. It is a bacterial infection of the urinary system, including the kidneys, ureters, bladder, and urethra. Women tend to develop more bladder infections than males, likely due to shorter urethras that allow germs to migrate up to their bladders more easily (Okunola et al., 2012).

UTIs remain a common medical condition affecting millions of people each year. With modern medical techniques, most UTIs can be easily diagnosed and treated. In addition, efforts are being made to develop new treatments and preventive measures, such as vaccines and probiotics, to further reduce the impact of UTIs on public health (Hooton, 2010)

Several factors, such as the area affected, the severity of symptoms, and additional complications, play a crucial role in determining the prognosis of the illness. Categorizing the site of involvement as upper (pyelonephritis) or lower (cystitis) is a commonly used method. In children under three months old, nonspecific symptoms of urinary tract infections (UTIs) may include fever, nausea, restlessness, and persistent jaundice. Although hematuria and dysuria are less prevalent, weight loss and malnutrition may also be symptoms. Fever is one of the most prevalent symptoms in babies older than three months. Furthermore, when one gets older, several symptoms, such as stomach discomfort, flank pain, hematuria, dysuria, and recurrent UTIs, may emerge (Seyzadeh et al., 2021).

2.2. Theoretical Framework

The theoretical framework for this study is based on the Health Belief Model (HBM), which posits that an individual's behaviour is influenced by their perceptions of the threat of a health problem, the perceived benefits and barriers of taking action, and the perceived cues to action (Jones et al., 2015).

Regarding recurrent urinary tract infections (UTIs) in children, the Health Belief Model (HBM) suggests that how mothers perceive the threat of their child experiencing recurrent UTIs, as well as their views on the advantages and obstacles related to home practices, will impact their actions in terms of seeking care and adhering to treatment recommendations. Even when services are provided free of charge, socioeconomic status remains connected to patterns of health-related behavior. While demographic and socioeconomic characteristics cannot be altered through health education, it is hypothesized that educational interventions can target other potentially changeable individual traits associated with health-related behavior, thus influencing behavior patterns at the population level. Furthermore, the Social Cognitive Theory (SCT) is applicable in this context as it emphasizes the influence of social and environmental factors on an individual's behavior (Abraham and Sheeran, 2015).

The theoretical framework for this study is based on the Health Belief Model (HBM), which proposes that an individual's behavior is determined by their perceptions of susceptibility, severity, benefits, and barriers to a health threat. In the context of recurrent urinary tract infections (UTIs) in children, the HBM would suggest that mothers' knowledge perceptions of the susceptibility and severity of their child's condition, as well as their perceived benefits and barriers to seeking home practices, will influence their behavior in managing their child's recurrent UTIs (Fasugba et al., 2020; Abraham, 2012).

One study that supports this framework is "Mothers' knowledge perceptions of urinary tract infection in Young Children: A Qualitative Study." This research discovered that mothers with young children with frequent urinary tract infections (UTIs) had a high level of concern about the condition, but also a lack of understanding about the causes and management of UTIs. The mothers in this study also reported feeling overwhelmed and

frustrated with managing recurrent UTIs and perceived barriers to seeking home practices, such as lack of access to healthcare, financial constraints, and lack of support from healthcare providers. These findings align with the HBM, as the mothers' knowledge perceptions of susceptibility and severity of their child's condition, as well as their perceived barriers to seeking home practices, were found to be significant factors influencing their behavior in managing their child's recurrent UTIs (Nugent et al., 2014).

Another study that supports the HBM in the context of recurrent UTIs in children is "Mothers' Knowledge, attitudes and practices regarding urinary tract infections in Children". The research discovered that mothers of young children experiencing repeated UTIs possessed limited understanding regarding the origins and treatment of urinary tract infections. Their level of knowledge influenced their knowledge perceptions of the severity of their child's condition. The research discovered that mothers with a higher knowledge level about UTIs were more likely to seek home practices for their child's recurrent UTIs. This supports the HBM, as the mothers' knowledge perceptions of susceptibility and severity of their child's condition and their perceived benefits of seeking home practices were found to be significant factors influencing their behavior in managing their child's recurrent UTIs. In conclusion, the theoretical framework for this study is based on the Health Belief Model, which proposes that an individual's behavior is determined by their knowledge perceptions of susceptibility, severity, benefits, and barriers to a health threat. A schematic representation of the model is shown in Fig. 2.1. (Al-Bar et al., 2018).

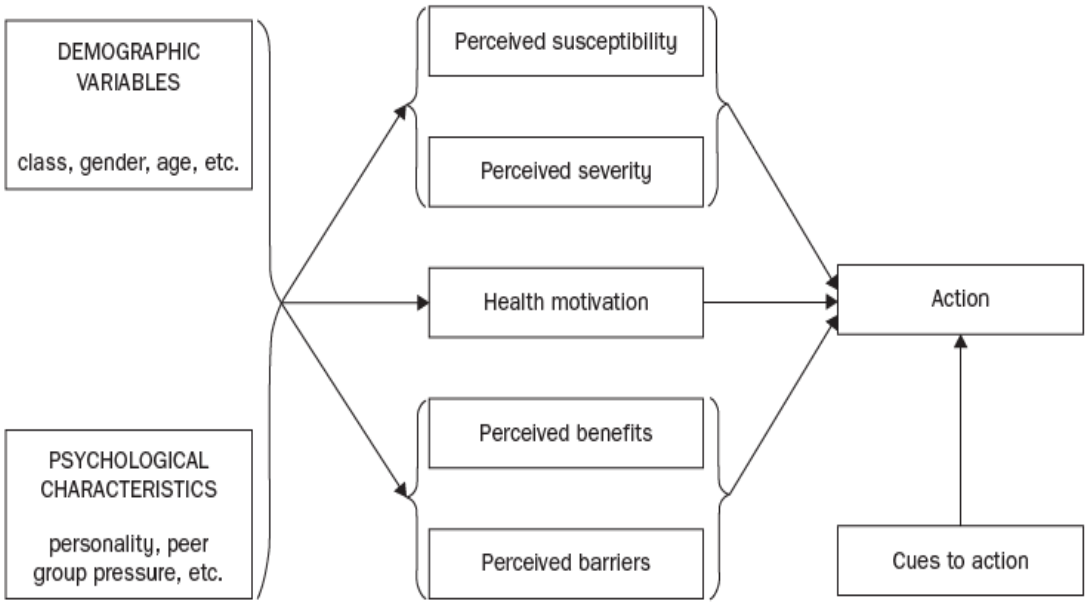

Figure 2.1. Health Belief Model Concepts (Abraham and Sheeran, 2015)

The Health Belief Model (HBM) is a theoretical framework that explains how individuals perceive and respond to health threats. The HBM suggests that health-related behavior is influenced by the perceived susceptibility, severity, benefits, and barriers to action. In the context of recurrent UTIs in children, mothers' knowledge perception of susceptibility and severity of the condition and the perceived benefits and hindrances of home practices may affect their behavior (Renu et al., 2015).

Theoretical approaches can be used to change and maintain healthy behavior. The Health Belief Model is one of numerous models used for individual health program design (HBM) (Patrick and Williams, 2012).

The Health Belief Model offers an explanation for individuals' rejection of disease prevention or screening tests for asymptomatic illnesses. This model suggests that people's willingness to adopt preventive measures is shaped by their knowledge perceptions of the condition. Knowledge perceptions include their belief in the likelihood of contracting the disease (perceived susceptibility), their understanding of the seriousness of the illness and its consequences, both medically and socially (perceived

severity), their personal assessment of the advantages of engaging in preventive behaviors (perceived benefits), and their recognition of any obstacles or negative aspects associated with a particular health action (perceived barriers). Additionally, self-efficacy, or one's belief in their ability to carry out preventive actions, is also influential (Hashemiparast et al., 2015).

Because of the high frequency of children's urinary tract infections, the relevance of knowledge and preventive behavior in the prevention and prompt drug of UTI is at the heart of actions aimed at preventing the disease in children. As a result, this study aimed to identify predictors of preventive behaviors for urinary tract infection based on the health belief model among mothers with children under six (Baghiani et al., 2013).

2.3. Anatomy of the urinary tract system

The urinary system serves as the primary excretory system of the body, while additional organs are within the body. They help clear waste but cannot entirely compensate for kidney loss. The urinary system is made up of two kidneys, which are the principal excretory organs. A ureter transports excretory materials from each kidney to a single urine bladder. The urethra drains waste fluids from the urine bladder (Aydın, 2016).

2.3.1 Kidney Anatomy

The kidneys have the form of a bean. They are retroperitoneal, positioned behind the peritoneum on each side of the spinal column near the psoas major muscles. They are all about the size of a clenched fist. The kidneys go from the lower rib cage to the third lumbar (L3) vertebra and from the final thoracic (T12) vertebra to the lower rib cage (Figure 2.2.). Because the liver is considered better than the right kidney, while the right kidney is slightly inferior to the left, both kidneys measure about 11 cm in length, 5 cm in width, and 3 cm in thickness, and they weigh approximately

130 g, which is approximately equal to the weight of one cup of flour. A thick layer of adipose tissue surrounds the capsule's exterior, cushioning and protecting the kidneys (Bahir, 2019: Ridley, 2018).

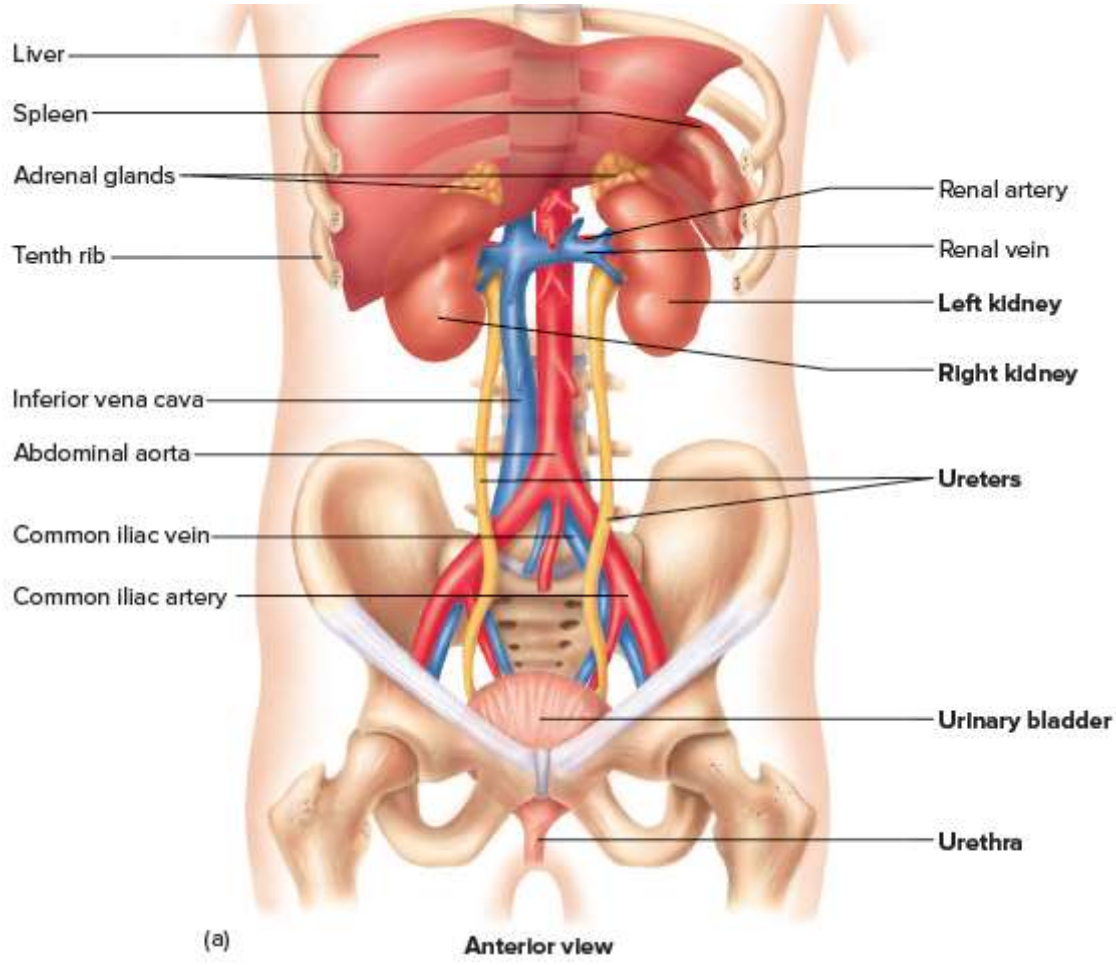

Figure 2.2: Anatomy of the Urinary System Anterior View (Bahir, 2019)

The ureters are tubes that carry urine from the kidneys to the bladder. They leave the kidney at the renal hilum and descend towards the bladder, entering it through the abdominal cavity. The bladder, located in the pelvic cavity, is a hollow and muscular sac. The ureters pass through its posterolateral surface. In men, the bladder is positioned anterior to the rectum, while in females, it is inferior and anterior to the uterus. The bladder volume varies depending on the amount of urine it contains (Kabalin, 2011).

The urinary bladder has an inferior and anterior exit called the urethra, which carries urine out of the body. Positioned between the two ureters and the urethra on the bladder's anterior wall is the trigone, a histologically distinct triangular area on the bladder's posterior wall. Unlike the bladder, the trigone remains unaffected by enlargement. Consequently, it functions as a funnel to facilitate bladder emptying when it swells up. Cystitis, a bladder inflammation, usually arises from a bacterial infection. Bacteria, particularly E. coli, commonly enter the bladder from external sources (Shambayati, 2018; Livingston, 2016).

2.3.2. The functions of the kidneys include:

1. The kidneys remove waste from the blood.
2. The kidneys control blood pressure and blood volume through the generation of urine.
3. The kidneys also regulate other solute concentrations, such as urea.
4. The release of erythropoietin by the kidneys regulates the production of red blood cells in the bone marrow.
5. The kidneys have a crucial role in managing blood Ca2+ levels by controlling vitamin D synthesis, which is essential for this regulation (Van Dang et al., 2019).

2.3.3. Characteristics of normal urine:

Standring (2016) stated that one of the physical features of urine is its volume. Color, turbidity (transparency), smell (odor), pH (acidity or alkalinity), and density are all physical properties that might apply to urine.

1- Color: Typically, yellow-amber, however, might vary depending on recent food, medication, and urine content. Drinking more water reduces the concentration of urine and so causes it to be lighter in color. However, if a person does not drink enough liquids, the attention will rise, and the urine will be darker in color.

2- The odor of urine or smell may provide health information. Diabetics' urine, for example, may have a pleasant or fruity odor due to the presence of ketones (organic molecules of a particular structure). Fresh pee has a light smell; however, stale or diseased urine has a harsher stench comparable to that of ammonia.

3- Acidity: The pH scale measures a solution's acidity (alkalinity). A substance's (solution's) pH is often expressed as a number between 0 (strong acid) and 14 (strong alkali, also referred to as a "base"). Pure water has a pH of 7, meaning it is "neutral" because it is neither acidic nor alkaline. The usual pH range for urine is 4.6 to 8.0, with 6.0 being the average. Diet has a big part in the variety. For instance, a high-protein diet increases the amount of acidic pee, while vegetarian diets often increase the amount of alkaline urine.

4- Specific gravity is another name for density. This is the weight-to-volume ratio of a material compared to the weight of the same volume of distilled water. Urine is mostly water, although it does include certain additional compounds that dissolve in water. It is projected to have a density near to, but somewhat higher than, 1.000 (LeMone et al., 2014).

2.4: Epidemiology of Recurrent Urinary Tract Infection

The prevalence of repeated urinary tract infections (UTIs) in children estimated to be 5-8%. The study found that the highest risk group for recurrent UTIs is female infants and toddlers, with females accounting for 75-90% of cases. The risk of recurrence increases with each UTI episode, with up to 40% of children experiencing a third episode within 12 months. The study also found that underlying anatomic abnormalities, such as vesicoureteral reflux, exist in 25-50% of children with recurrent UTIs (Stamell et al., 2015).

Repeated urinary tract infections (UTIs) are a common problem in children. UTIs in children are estimated to be 8-10%. Risk factors for recurrent UTIs in children include female gender, vesicoureteral reflux, urinary tract obstruction, and poor hygiene practices. The prevalence of UTIs in children under five years old highlights the importance of early diagnosis and appropriate treatment to prevent complications and reduce the risk of recurrent infections (Hoberman et al., 2010).

Children often experience recurring urinary tract infections (UTIs), a prevalent issue. Approximately 8-10% of children under the age of 5 suffer from repeated episodes of UTIs. Girls are more prone to UTIs than boys, with a ratio of 2:1. As children grow older, the risk of recurrent UTIs rises, and the highest occurrence is observed in the 2 to 5-year age group. The most common risk factor for recurrent UTIs in children is vesicoureteral reflux (VUR), which is present in up to 50% of children with recurrent UTIs. Additional factors that increase the risk involve abnormalities in the urinary tract, like hydronephrosis and urethral valves, as well as functional or structural irregularities, such as constipation and neurogenic bladder (O'Brien, 2013).

The most common risk factor for recurrent UTIs in children is vesicoureteral reflux (VUR), which is present in up to 50% of children with recurrent UTIs. Recurrent UTIs can lead to long-term complications, including renal scarring and chronic kidney disease. Therefore, it is crucial to identify and manage children at risk for recurrent UTIs through regular screenings and appropriate management of underlying risk factors (Kaufman et al., 2019).

Repeated urinary tract infections (UTIs) are a common problem in children, with a reported incidence of 2-8% in girls and 0.1-1% in boys. Recurrent urinary tract infections in children. The New England Journal of Medicine, 364(3), 239-250.). Escherichia coli causes most UTIs in children,

and risk factors for recurrent UTIs include female sex, vesicoureteral reflux, and urinary tract anomalies (Meena et al., 2020).

Hoberman et al. (2011) reported that recurrent UTIs can lead to significant morbidity and complications, including renal scarring and hypertension. Therefore, it is essential to identify and manage risk factors for recurrent UTIs in children. This may involve prophylactic antibiotics, surgery for vesicoureteral reflux, and addressing any underlying urinary tract anomalies. In conclusion, recurrent UTIs are a common problem in children and can lead to significant morbidity and complications. Identifying and managing risk factors, including female sex, vesicoureteral reflux, and urinary tract anomalies, is crucial in preventing recurrence.

Recurrent urinary tract infection (UTI) is a common problem among children, affecting approximately 3-8% of this population. Urinary tract infections (UTIs) occur when bacteria invade the urinary tract, resulting in symptoms like discomfort during urination, frequent urination, and an elevated body temperature (Edlin et al., 2013).

The prevalence of recurrent UTIs is higher in girls than in boys. This is due to the female urinary tract anatomy, which allows bacteria to more easily travel from the anus to the bladder and cause an infection. Risk factors for recurrent UTIs in children under five include female gender, vesicoureteral reflux (A state where urine reverses its flow from the bladder to the ureters and kidneys), low birth weight, constipation, and a family history of UTIs. Prevention of recurrent UTIs in this population includes proper hygiene, early treatment of UTIs, and prophylactic antibiotics in high-risk cases (Hoberman et al., 2011).

Recurrent urinary tract infections (UTIs) are a common problem among young children,. RUTIs affect up to 8% of children in this age group and account for 10-20% of all pediatric UTI cases. The prevalence of bacterial infections among children is high, and there is a rising trend in

urinary tract infections (UTIs) among children under five years old (Santos et al., 2019).

UTIs are a common problem in, with female children at a higher risk. The incidence of RUTIs is increasing in this age group, and it is vital to identify and manage risk factors to prevent the recurrence of these infections (Junqueira et al., 2012).

2.5 Classification of the Urinary Tract System

Urinary tract infection (UTI) is a frequent and potentially deadly condition in children. The general incidence in newborns and early children is around 7%, with minor variation dependent on age, gender, race, and circumcision status. The most significant frequencies are found in Caucasians, females, and uncircumcised boys. (Capozza et al., 2017).

Urinary tract infections (UTIs) have the potential to cause harm to either the urethra, bladder, or kidneys, which comprise the lower urinary tract. On the other hand, the upper urinary tract consists of the ureters, renal pelvis, calyces, and renal parenchyma, all of which are components of the kidney. Distinguishing between infections in the upper and lower tracts is challenging, particularly in young children. Therefore, UTI is generally referred to broadly due to this difficulty. Upper UTIs or kidney infections can cause fever and renal scarring, leading to impaired kidney function, hypertension, and renal disease over time. A urinary tract infection (UTI) diagnosis is confirmed when a correctly obtained specimen shows the simultaneous occurrence of pyuria and a minimum of 50,000 colonies per millilitre of a single uropathic organism (Hickling et al., 2017).

Blaivas (2017) stated that urinary tract infections may manifest with or without apparent symptoms, making it often difficult to accurately determine the exact location of the disease. Various terms are used to describe urinary tract issues, such as:

1. Bacteriuria is the term used to describe the existence of bacteria in the urine.
2. Pyuria is the term used to describe the existence of white blood cells in the urine.
3. Asymptomatic bacteriuria is a substantial presence of bacteria in the urine (usually defined as more than 100,000 colony-forming units [CFUs]) without signs of clinical infection.
4. Bacteriuria is accompanied by physical symptoms of a urinary tract infection (such as painful urination, pain above the pubic bone, blood in urine, and fever).
5. The condition is known as symptomatic bacteriuria. Recurrent UTI: A recurring bout of bacteriuria or symptomatic UTI.
6. Bacteriuria persists after antibiotic therapy in patients with persistent UTI.
7. Bacteriuria with fever and other clinical indications of UTI; fever generally implies pyelonephritis.
8. Cystitis is a bladder ailment.
9. Urethritis is a urethral inflammation.
10. Pyelonephritis is an infection that affects the kidneys and the upper urinary system.
11. Urosepsis is identified by a febrile urinary tract infection (UTI) and systemic signs of bacterial infection. A urinary pathogen is detected through a blood culture.

2.6 Etiology and Risk Factors of Urinary Tract Infection:

Edlin et al. (2013) claimed that some pathogens may cause UTIs. The most prevalent pathogen is still E. coli. Overall, uropathogenic prevalence is more significant in females (83%) than males (50%). Proteus mirabilis, Pseudomonas aeruginosa, Klebsiella, and Enterobacter are other

gram-negative microbes linked to UTI Enterococcus, Staphylococcus saprophyticus, and, in rare cases, Staphylococcus aureus are examples of Gram-positive bacterial pathogens. Viruses or fungi usually cause UTIs in children. Most uropathogens begin in the gastrointestinal system, move to the periurethral region, and then climb to the bladder. Various variables, including anatomical, physical, and chemical characteristics or qualities of the urinary tract, contribute to the development of UTIs.

(Shaikh et al., 2019)The structure of the lower urinary tract has long been thought to contribute to the increased prevalence of bacteriuria in females. A simple entry route for organism invasion is the tiny urethra, an average of 2 cm (0.75 inches) in height in young girls and 4 cm (1.6 inches) in mature women. Additionally, following micturition, contaminated microbes may return to the bladder when the urethra shuts. The prostatic secretions' antibacterial properties prevent germs from entering and spreading, and the male urethra has a more considerable length (up to 20 cm [8 inches] in an adult). The significance of urethral length in the pathogenesis of the disease has been questioned due to the high prevalence of UTI in newborn males. Traditional thinking has held that the presence of the lower urinary tract accounts for the higher occurrence of bacteriuria in females (Tortora et al., 2017; Wang et al., 2013).

❖ **Etiology of UTIs in Children:**

1- Bacterial infection: bacteria that enter the urinary tract and multiply primarily cause UTIs. Escherichia coli (E. coli) is children's most common cause of UTIs. Other bacteria that can cause UTIs include Klebsiella, Proteus, and Pseudomonas.

2- Anatomical abnormalities: Children with structural abnormalities in the urinary tract, such as vesicoureteral reflux, hydronephrosis, or an enlarged prostate gland, are more prone to UTIs.

3- Functional abnormalities: Children with functional anomalies, such as neurogenic bladder, may also have an increased risk of UTIs (Tortora et al., 2017).

❖ **Risk Factors of UTIs in Children:**

1- Age: Infants and young children are more vulnerable to UTIs because their structure and immunity are still growing.
2- Sex : Girls are at a higher risk of UTIs due to the short distance between their anus and urethra.
3- Personal hygiene: Poor hygiene practices can increase the risk of UTIs.
4- Constipation: Constipated children are at a higher risk of UTIs because their stools can block urine flow and create a breeding ground for bacteria.
5- Sexual activity: Child who have become sexually active are at a higher risk of UTIs.
6- Use of antibiotics: Prolonged use of antibiotics can increase the risk of UTIs by promoting the growth of antibiotic-resistant bacteria.
7- Immune system: Children with weakened immune systems are more susceptible to UTIs (Shaikh et al., 2019).

2.6.1 Vesicoureteric Reflux in High-Risk Children with Recurrent Urinary Tract Infections

Desai et al. (2013) and Foxman (2016) claimed that Vesicoureteric reflux (VUR) is a condition in which urine flows backward from the bladder into the ureters and potentially up into the kidneys. It is a common urinary tract abnormality in children and can lead to recurrent urinary tract infections, kidney damage, and other complications. The incidence of VUR in children with urinary tract infections was 28%. The study also found that younger children were more likely to have VUR than older children and that VUR was more common in girls than boys.

A kidney, ureter, and bladder (KUB) ultrasound should be performed to assess the renal parenchyma for scarring or morphological abnormalities. It may aid in the identification of low-grade (I-III) diseases. After routine examinations, the child should be sent to a pediatric specialist, who may opt to do additional and more invasive procedures. VUR is diagnosed using voiding cystourethrography (VCUG), recommended in cases with RUTIs, a first febrile UTI, and abnormal renal ultrasonography (Howles et al., 2020; Marberger, 2012).

The International Classification System (ICS) specifies the backflow level from the bladder into upper genitourinary tract structures (Fig. 2-3). A congenital ureterovesical junction abnormality causes primary reflux associated with ectopic or orthotopic ureter implantation, abnormal tunneling of the intramural ureteral segment, and abnormalities in ureter orifice design. The prevalence of primary reflux is estimated to be 1% in the general population, 27% in siblings of children with VUR, and 36% in offspring of VUR parents. Faults in the architecture of the ureter orifice cause primary reflux. The rate of reflux is increasing in women and children with prenatal hydronephrosis. A third of people have reflux grade I-II, a third have reflux grade III, and a third have reflux grade IV-V, with higher degrees associated with renal abnormalities and kidney disease. (Hickling, et al., 2017).

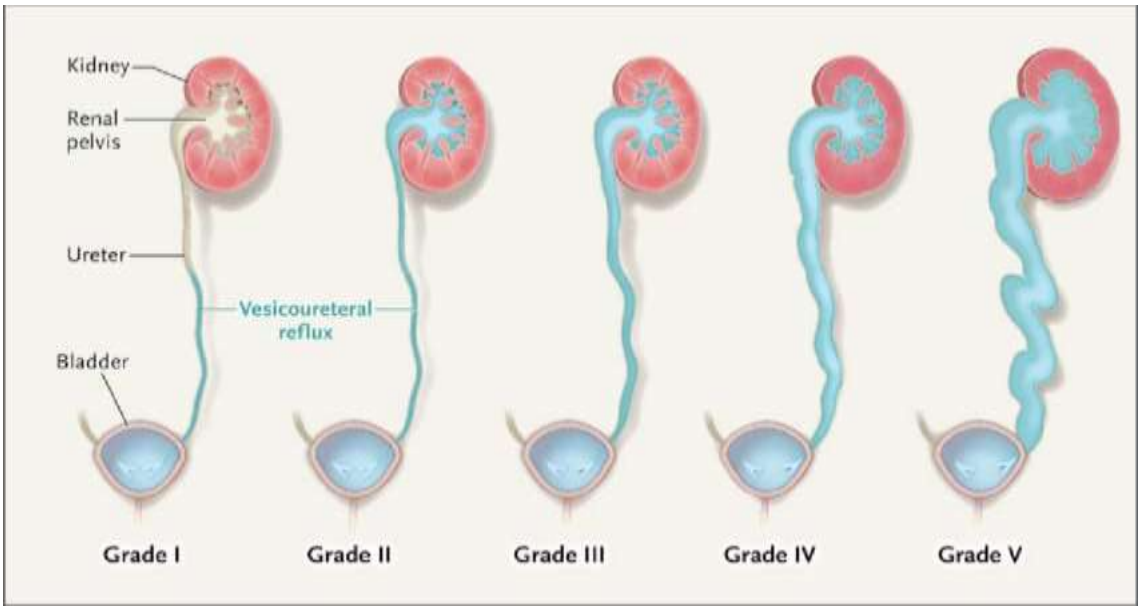

Figure (2.3): International Classification of Vesicoureteral Reflux (Hickling et al., 2017).

Children with urinary tract infections (UTIs) or vesicoureteral reflux (VUR) are more susceptible to pyelonephritis and renal scarring. Secondary reflux occurs when there is abnormally high pressure in the bladder, resulting from anatomical factors such as posterior urethral valves or functional issues like dysfunctional voiding or a neurogenic bladder. Neurogenic bladders caused by spina bifida commonly lead to this condition. The severity of the bladder abnormality influences the extent of VUR, and treatment primarily focuses on addressing the underlying problem rather than correcting VUR (Snow-Lisy et al., 2015).

In children, the most common cause of pyelonephritis is urine reflux due to infection. It has long been believed that the reflux of infected urine, rather than sterile urine, into the renal parenchyma causes renal scarring and increases the risk of kidney disease. However, recent research suggests that vesicoureteral reflux (VUR) is actually a sign of abnormal kidney development, leading to decreased production of renal parenchyma, a condition called primary renal scarring. This new understanding has raised doubts about the previous assumption. The current approach is based on the

belief that VUR increases the risk of renal scarring because it allows bacteria to travel from the bladder to the kidney and cause pyelonephritis (Lee et al., 2021).

Because there is no clear evidence and a recognized connection between VUR and kidney scarring, which can result in chronic kidney disease, VUR is still considered a risk factor. Consequently, it is recommended that all children with VUR undergo an initial assessment of their kidney function, growth, and blood pressure (Petcu et al., 2021).

In most cases of VUR, conservative, nonoperative treatment is sufficient to manage the infection. All VUR grades have a high spontaneous resolution rate over time, with 51% at a mean duration of 2 years. Factors linked with spontaneous remission were diagnosis at less than one year of age, lower grades of VUR, prenatal hydronephrosis, and unilateral reflux. The association between stage and rate of spontaneous resolution is 72%, 61%, 49%, and 32% for stages I, II, III, and IV/V, respectively (Skoog et al., 2010).

Medical therapy comprises continuous antibiotic prophylaxis (CAP), with the premise that this will result in sterile urine and that sterile pee reflux does not cause kidney damage. Trimethoprim and sulfamethoxazole, trimethoprim, or nitrofurantoin, given once daily at bedtime, are the most often used antibiotics. Because of the higher possibility of resistant organisms, amoxicillin is only used in newborns under two months (Tosif et al., 2012).

Continuous antibiotic prophylaxis was traditionally utilized before VUR resolution documentation. This strategy is being reconsidered, and CAP use is becoming more individualized. If a kid has no evidence of voiding dysfunction following toilet training, they may be withdrawn from the program. The dangers and benefits are discussed with the parents with

the severity of the reflux, rates of spontaneous resolution, bowel habits, and family preferences. This long-term therapy demands medical supervision and trustworthy, supportive parents who can follow CAP advice and seek medical assistance if symptoms suggest a UTI or an unexplained fever. Because infections can occur despite CAP, urine cultures are not routinely recommended but should be obtained for symptoms or an unexplainable fever. Surgical therapy of VUR involves either open surgical correction with reimplantation of the ureter(s) or endoscopic correction of the anatomy by inserting the refluxing ureter into the bladder. Patients unlikely to overcome their reflux and are in danger of renal scarring, such as those with grade V reflux, may consider surgical surgery (Hajiyev and Burgu, 2017).

Renal ultrasonography is performed one month after surgery to rule out ureteral blockage. Because the resolution rate after open surgery is 98% and the resolution range with endoscopic injection is 50% to 92%, a VCUG may not be suggested after reimplantation, but it may be necessary. Endoscopic correction is a less invasive technique that involves injecting a bulking agent under the mucosa of the ureterovesical junction during cystoscopy to adjust the angle of the ureter. The material now in use is dextranomer/hyaluronic acid, or Deflux, which has a success rate of up to 80% depending on the severity of the reflux. There is no incision and an outpatient operation, whereas reimplantation necessitates a brief hospital stay (Mori et al., 2010).

Encouragement of compliance is the primary nursing objective for children receiving medical care. Adhering to the medical regimen should be emphasized to parents and older children. Children usually accept the prescriptions recommended to them well, but parents may need assistance in getting their children to take the medication. The approaches presented here give some administrative principles and promote compliance. The

significance of cleanliness and a regular voiding routine are also covered (Mc Gillivray et al., 2013).

Parents should be informed that despite CAP, breakthrough infections can occur; thus, being alert of UTI symptoms and obtaining medical assistance is crucial. Because siblings are at risk for VUR, nurses should educate parents about this risk and encourage them to have their other children checked with renal ultrasonography, followed by cystography if the ultrasound is abnormal. Screening with VCUG was formerly advised for all siblings, but it is now available and encouraged if a sibling has a history of UTI. Because of the elevated risk, kids with a fever or urinary tract symptoms should have their urine tested. For the tests, all children require age-appropriate preparation. Atraumatic Before catheterization, lidocaine jelly is used (Nash et al., 2021).

2.6.2 Bowel and Bladder Dysfunction (BBD)

It has been reported that BBD, also referred to as dysfunctional elimination syndrome, has been associated with a higher occurrence of RUTIs. Symptoms such as urgency, holding back urine, daytime urine leakage, difficulty with bowel movements, and painful bowel movements are all signs of BBD. Bowel and bladder dysfunction is a group of symptoms commonly observed in children. BBD results from various underlying medical conditions, developmental delays, or psychological factors (American Academy of Pediatrics, 2016).

Behavior disorders can occur due to neurogenic diseases, such as spina bifida, which can lead to relaxation failure of the urethral sphincter during voiding. The assessment and management of bladder and bowel dysfunction (BBD) involve a clinical history, physical examination, and the use of diaries to track symptoms. The treatment of recurrent urinary tract

infections (UTIs) presents specific challenges in primary care settings (Yyiue et al., 2015).

2.7. Pathophysiology of Urinary Tract Infection:

Abdul (2015) reported that following bacterial invasion, the lower respiratory tract's initial line of defense. The urinary tract has been entirely emptied. Following bacterial invasion, the first line of defense in the lower urinary tract is complete evacuation by voiding. Within 30 minutes following bacterial pathogen penetration, there is inflammation in the bladder and urethral walls. Leukocytes with polymorphonuclear morphology soon travel to the bladder wall, where they get absorbed within 2 hours. I was injected. Complete bladder evacuation is very crucial for removing microorganisms from urine.

When you urinate, not only does it get rid of bacteria and toxins from urine, but it also helps in effectively getting rid of germs that remain on the thin urine film attached to the bladder wall by voiding. Inflammation of the bladder and urethra walls occurs within half an hour after bacterial pathogens invade. Polymorphonuclear leukocytes fully inject the bladder wall after moving there swiftly. The bladder must be thoroughly emptied to eliminate urine bacteria (Mugie et al., 2013).

Desai et al. (2016) mentioned UTIs occur when uropathogens colonize the periurethral area and ascend, with Escherichia coli responsible for more than 75% of cases. Other bacteria such as Proteus spp., Klebsiella spp., Enterobacter spp., Citrobacter spp., or Staphylococcus aureus can also be causative agents. In rare cases, fungal infections like candidiasis and viral pathogens such as adenovirus or BK virus may be involved. These pathogens can lead to various types of urinary tract disease, including cystitis, prostatitis, pyelonephritis, abscess, or urosepsis.

2.8. Clinical Manifestation of Urinary Tract Infection:

The symptoms of UTIs vary based on the child's age. Babies and children below two years old experience general symptoms like fever, irritability, lack of energy, poor appetite, vomiting, and diarrhea. Newborns with fever, low body temperature, jaundice, rapid breathing, or bluish skin may appear sick. The characteristic signs of UTI are frequently encountered in youngsters above two years. These include enuresis or daytime incontinence in a toilet-trained kid, fever, foul-smelling urine, increased frequency of urination, dysuria, or urgency. Symptoms of faulty voiding (Bachur et al., 2015).

Children may exhibit symptoms such as abdominal pain or sensitivity in the costovertebral angle (flank pain). Some may also have blood in their urine or vomit. Infants and young boys might experience obstructive symptoms like dribbling urine, difficulty urinating, or a decrease in the strength and size of their urine stream. High fever, chills, severe stomach pain, and increased white blood cells indicate pyelonephritis. However, only experiencing flank discomfort and tenderness could also suggest pyelonephritis. This was confirmed during the physical examination (Finnell et al., 2011).

Lower urinary tract infections are identified by frequent and agonizing urination, accompanied by a small amount of disordered urine that may contain a significant amount of blood. Fever is typically not present or only mild. On the other hand, upper urinary tract infections are distinguished by the presence of a fever (above 38° C), chills, and discomfort in the flank area, often alongside lower urinary tract symptoms. Many urinary tract infections in children show no symptoms or atypical clinical signs, and several symptoms are unrelated to the urinary tract. Many are classified as respiratory or gastrointestinal illnesses. It is critical

to identify these youngsters so that therapy can begin. Significant scarring of the kidneys can develop, especially in newborns and young children (Wagenlehner et al., 2020).

❖ ***The following is a brief overview of some of the common signs and symptoms of UTI in children, along with a citation for further reading*** *(*Hoberman *et al.,* 2014 *)**:***

1- Fever: One of the most frequently observed indications of urinary tract infection in children is a fever, which may be accompanied by chills or shivering.

2- Pain or discomfort during urination: Children with UTI may experience pain or discomfort during urination, which may cause them to avoid going to the bathroom or to have accidents.

3- Frequent urination: Children with UTI may need to urinate more often than usual and may experience urgency or a feeling of incomplete emptying.

4- Abdominal or back pain: UTI can cause pain in the lower abdomen or back, accompanied by nausea or vomiting.

5- Cloudy or foul-smelling urine: UTI can cause changes in the color, clarity, or odor of urine, which may be noticeable to parents or caregivers.

6- Bedwetting or daytime accidents: Children with UTI may experience incontinence or accidents, mainly if they are too young to communicate their symptoms effectively.

7- 'Irritability or lethargy: Children with UTI may become irritable, lethargic, or generally unwell, mainly if the infection is severe or has spread to the kidneys.

2.9. Diagnostic studies of urinary tract infection:

Mattoo et al. (2020) noted that diagnosing UTI in newborns and children might be challenging. Furthermore, this paper analyzed current information on urine specimen-collecting procedures and various diagnostic criteria for UTI diagnosis. The Asian Guideline for UTI in Children is highlighted to enhance agreement on UTI diagnosis. A focused history of Urinary tract infection in children is diagnosed using an inspection, with significant investigations in children. Nonverbal patients should be examined to eliminate other potential causes. Verbal children or their caregivers may report symptoms such as painful urination, a strong need to urinate, frequent urination, pain in the abdomen or flank, or lack of control over urination. Because of the non-specific nature of fever and general discomfort in children, UTI should be included in the differential diagnosis.

Koirala et al. (2017) Claimed that the clinical symptoms, urinalysis data, and urine culture were used to diagnose the UTI. Dysuria, urgency, and frequency were clinical signs in older children. Weight loss, restlessness, and poor eating were common complaints in children. The gold standard method for identifying urinary tract infections (UTIs) is through urine culture. Suppose the urine culture of a symptomatic patient or one with a single pathogen shows a colony count higher than 50,000 in suprapubic urine samples or urinary catheters. In that case, it indicates the presence of UTIs.

Regarding the bagged urine collection method, a urinary tract infection (UTI) was diagnosed in symptomatic patients with positive urinalysis results if the urine culture showed more than 100,000 single bacteria. However, the American Academy of Pediatrics (AAP)/Clinical Practice Guideline (2011) suggests that for children who have not been toilet

trained, the preferred methods of urine collection are the suprapubic technique or urinary catheters (Elder, 2016).

The diagnosis of UTI depends on a high degree of suspicion, a review of the history and physical examination, and urine and culture. A potential infection's urine may seem murky, hazy, or thick, with visible strands of mucus and pus; it may also have a disagreeable odor, even when fresh. A presumptive UTI diagnosis can be obtained based on a microscopic examination of the urine, which frequently exhibits pyuria (Korbel, et al., 2017).

At least ten white blood cells per milliliter of uncentrifuged urine) and the presence of at least one bacteria on the Gram stain. On the other hand, a routine urinalysis may be seen in cases with asymptomatic bacteriuria. Pyuria is crucial in identifying natural UTIs from asymptomatic bacteriuria (Keren et al., 2015).

If a person has recently consumed a large amount of fluids, it could result in an inaccurately low number of organisms detected unless the specimen being tested is obtained in the morning. As a result, do not push youngsters to drink excessive amounts of water to acquire an illustration fast. Suprapubic aspiration (for children under two years old) and correctly conducted bladder catheterization are the most reliable tests for bacterial content (as long as the first few milliliters are excluded from collection). Caring for a urine specimen taken for culture is a critical nursing role in diagnosis. The sample must be fresh (1 hour after voiding with room temperature storage or 4 hours after withdrawing with refrigeration) to ensure urinalysis sensitivity and specificity and to avoid organism development (Barakat et al., 2012).

Urinalysis should focus on biochemical analysis of leukocyte esterase and nitrite using a fast dipstick approach and urine microscopic

inspection for pyuria and bacteriuria to identify UTI. The leukocyte esterase test detects the presence of this enzyme in urine, which is secreted by white blood cells (WBCs). The presence of positive leukocyte esterase is equivalent to pyuria WBC >5/HPF (Hoberman et al., 2014).

False Positive findings might be the consequence of exogenous contamination (vulvovaginitis), a viral infection (roseola infantum), acute appendicitis, or strenuous activity are all possibilities. Nitrates are created when bacteria break down nitrates, often found in urine. Most gram-negative bacteria grown from urine infections can result in positive nitrite test findings (Gauthier et al., 2012).

Most gram-positive bacteria, including P. aeru ginosa, do not make nitrite; the conversion process takes at least 4 hours. Children who often void may have false negative results. Thus, The nitrite test has a limited sensitivity (about 50%) but a high specificity (98%) for pediatric UTIs. As a result, a negative nitrite test result does not rule out UTI. When the test results are positive, UTI is quite likely. The combination of leukocyte esterase and nitrite testing is susceptible and specific (Taskinen et al., 2012).

2.10. The complications of urinary tract infection:

Mohseny et al. (2018)**;** Leung et al. (2018) claimed that urinary tract infection (UTI) is a common bacterial infection that can affect any part of the urinary system, including the kidneys, bladder, ureters, and urethra. UTIs are more common in girls than boys and can occur at any age. While UTIs can be mild and resolve independently, they can also cause complications, particularly in children. Here are some potential complications of UTIs in children:

1- Renal scarring: This is the most common complication of UTIs in children. It occurs when the infection spreads to the kidneys and causes

damage to the renal tissue. Renal scarring pyelonephritis can cause chronic kidney disease and elevated blood pressure. This severe kidney infection can occur when UTIs are left untreated. Pyelonephritis can cause fever, chills, nausea, vomiting, and severe pain in the abdomen or back.

2- Septicemia: UTIs can cause bacteria to enter the bloodstream, leading to septicemia, a life-threatening condition that requires immediate medical attention.
3- Urinary tract abnormalities: Some children are born with abnormalities in their urinary tract, such as vesicoureteral reflux (VUR), which can increase the risk of UTIs and their complications.
4- Recurrent UTIs: Children who experience frequent UTIs may be at higher risk of complications, mainly if the infections are not treated promptly.

A urinary tract infection (UTI) can cause distress to children, worry for parents, and commonly leads to discomfort, as well as missed school and work. This condition can adversely affect the overall quality of life for the child and parents, especially when the UTI recurs or results in chronic kidney problems. Additionally, UTIs in childhood increase the risk of experiencing repeated abdominal discomfort (Milani et al., 2017).

Renal hypo dysplasia, often present at birth, is the primary reason for renal scarring, which is a common occurrence. Renal scarring may also result from abnormalities in the urinary tract, such as high-grade vesicoureteral reflux or urinary tract blockage. Nevertheless, about 5% of girls and 13% of boys develop kidney scars after their initial clinical episode of pyelonephritis. Additional factors that increase the risk of renal scarring include experiencing pyelonephritis during childhood, a higher frequency of

pyelonephritic attacks, delayed antibiotic treatment, bacterial virulence, and individual susceptibility (Morello et al., 2016; Doern et al., 2016).

2.11. Management of Urinary Tract Infection

Collaboration between children, caregivers, and healthcare experts is required for successful UTI management. Where appropriate, referral to a pediatric service for review should be explored. Caregivers should be educated so that immediate medical examination occurs in the event of future febrile illnesses to ensure that UTIs are addressed promptly (Ammenti, et al., 2015).

2.11. 1. Medical management

Robinson, et al. (2015); Shaikh, et al. (2016) In children without any kidney abnormalities, recurrent urinary tract infections (UTIs) are often caused by noncompliance, inadequate antibiotic treatment, bacterial resistance, urinary stasis, or host sensitivity, particularly vesicoureteral reflux. However, these recurrent UTIs typically do not lead to renal scarring. Therefore, it is rarely necessary to administer routine antibiotic prophylaxis because the number of children needed to be treated (16 children on antimicrobial prophylaxis for one year) to prevent a single UTI episode is too high, especially when considering the potential adverse effects and the development of antimicrobial resistance.

The prevailing viewpoint suggests that children who experience repeated febrile urinary tract infections (UTIs) should be considered for ongoing antibiotic prophylaxis regardless of urinary tract abnormalities. Certain specialists argue that children with grade IV or V vesicoureteric reflux or a severe urological abnormality resulting from a UTI should receive ongoing antibiotic prophylaxis. In such situations, they discussed the benefits and risks of antimicrobial prophylaxis with the child and their

parents before initiating the preventive treatment (Hewitt, et al., 2017; Moreno, et al., 2014).

Children and their parents need to learn proper methods for maintaining perineal cleanliness. These methods involve wiping from the front of the perineum to the anal area, regularly washing the perineum in girls, and cleaning the foreskin and glans in boys. While uncircumcised male newborns are at a higher risk of urinary tract infections (UTIs), it is not recommended to circumcise them during the neonatal period routinely. This is because it would require circumcising 110 to 140 male infants to prevent a single UTI case (Stein, et al., 2015).

In boys with recurrent UTI, circumcision or, even better, topical administration of corticosteroid to the distal stenotic area of the prepuce may be explored. The symptoms and warning indications of a recurrence and when to seek medical assistance should be explained to parents (Desai, et al., 2016).

Carson, et al. (2017); Laney, et al. (2015) began that pediatric UTI treatment aims to remove the acute infection, minimize complications, and limit the risk of kidney damage. Antibiotic treatment is based on laboratory culture and sensitivity testing. Nonetheless, when fever or systemic symptoms are present, empiric therapy based on the child's history and symptoms may be required. Illness exacerbates UTI. Penicillins, sulfonamides (including trimethoprim-sulfamethoxazole), cephalosporins, and nitrofurantoin are common antiinfective drugs for UTI. Because of bacterial resistance, all antibiotics may have adverse effects or be rendered useless.

Hospitalized children with suspected pyelonephritis and a fever receive intravenous antibiotics for at least 48 hours. Blood and urine samples can be obtained during and after treatment to conduct cultures. Febrile

infants or children are not treated with nitrofurantoin. Patients are suspected of having Pyelonephritis because it is excreted in the urine and does not reach therapeutic levels in the blood or the kidneys (Schizophr, 2016).

Renal scarring can occur during the first infection, particularly in children under five years. As a result, some practitioners consider that the first UTI in children, regardless of age or gender, requires radiologic assessment. The conventional evaluation of UTI using renal ultrasonography and VCUG is being reassessed, with significant dispute and diverse imaging, screening, and therapy guidelines. Although vesicoureteral reflux (VUR) is insufficient to produce acute pyelonephritis and renal scarring in children, substantial data indicates that VUR is significantly linked to renal injury (Stephens, et al., 2015).

Anatomic flaws such as primary reflux or bladder neck blockage may necessitate surgical repair to prevent recurrent infection, or they may suggest the need for prophylactic antibiotics and close monitoring. Home practices plays a crucial role in medical care due to the notable occurrence of recurring infections, which typically emerge 1 to 2 months after the completion of treatment. In such circumstances, therapy and close monitoring aim to avoid morbidity and limit the likelihood of renal scarring (Doern, et al., 2016; Jackson, 2015).

2.11. 2. The Role of Nurses in Educating Mothers Regarding Recurrent Urinary Tract Infection in Children

Pougnet, et al. (2017); Jackson (2015) claimed that the goals of nursing care include identifying children with UTIs and educating parents and children about infection prevention and treatment. Aside from the impact of renal abnormalities, girls aged 2 to 6 years are generally a high-risk cohort. As children acquire bowel and bladder control, this is a frequent age for the

development of constipation and stool and urine-delaying habits. The nursing care for children with UTIs includes:

1. Encouragement of appropriate bathroom habits, dietary hydration, and fiber consumption can help avoid these issues.
2. Mother should be aware of the signs and symptoms of UTI, and after the children is toilet trained, a regular urinalysis should be conducted during well-child checkups.
3. Nurses should instruct mother to look for signs of UTI, which are not always as apparent as those of upper respiratory tract infection.
4. The nurse must take every measure to get appropriate, clean-voided specimens to avoid employing additional collection processes except when necessary.
5. Prepare your children for these tests according to their age. Children old enough to comprehend require an explanation of the process, its purpose, and what they will experience.
6. Encourage adequate fluid intake to prevent and treat UTIs since this helps prevent risk factors such as constipation and urinary stasis.
7. Fluid requirements depend on body size and fluid losses.
8. The child who is febrile and unable to drink liquids is given intravenous (IV) hydration until the fever resolves and oral liquids are tolerated.

2.11. 4. Prevention of Urinary Tract Infection

The most crucial objective in both primary and recurring illnesses is prevention. Most preventative interventions are straightforward, everyday hygiene practices that should be a regular component of daily care. Educate parents and older children about healthy habits that can help them avoid UTIs (Visuri, et al., 2017).

Children with recurrent febrile UTIs or infections exacerbated by VUR may be administered a suppressive or preventive antibiotic for months or years. The drug is usually taken once daily; the patient and parents should take the antibiotic before bed because this represents the most extended duration without urinating. Sulfamethoxazole and trimethoprim are two commonly used antibiotics for urinary prophylaxis. First-generation cephalosporins or nitrofurantoin (Carson, et al., 2017).

Children and their carers should receive education on good hygiene habits that reduce bacterial load. Instruction on proper perineal care, including wiping (dabbing or front-to-back) after bowel movements. Uncircumcised males' glans and foreskin cleaning might help prevent the colonization of uropathogens. It is advised to reduce the chances of an oncoming UTI since it might irritate mucosa and create vaginal pain (Fitzgerald, et al., 2012).

Extensive research regarding the role of antibiotic prophylaxis in UTIs has been conducted. It is suggested that a pediatrician be consulted on the possibility of developing resistance. The choice to begin long-term antibiotic prophylaxis should involve a professional. Furthermore, in 8-10% of instances, continuous antibiotic prophylaxis (CAP) medication is linked with side effects, most of which are non-serious responses such as nausea, vomiting, and skin rashes. CAP should be considered for high-risk populations prone to recurrent urinary tract infections (UTIs) and at risk of kidney damage (Shahian, et al., 2012).

Individuals with both vesicoureteral reflux (VUR) and bladder and bowel dysfunction (BBD) are at the most significant risk of rUTI and may benefit most from CAP. It is advised to monitor urine cultures routinely. However, the effectiveness of regular urine cultures in detecting recurring infections after an initial UTI has not been investigated. We collected and

evaluated 3-year follow-up data on these children to assess the effectiveness of regular urine monitoring after initial UTI. We also evaluated the risk variables for UTI recurrence (Verliat-Guinaud, et al., 2015)

2.12. Home Practices

It is crucial to effectively manage children's urinary tract infections (UTIs) to decrease the chances of recurring infections, lasting kidney damage, and overall health complications. The subsequent measures are suggested for the ongoing management of UTIs in children (Ammenti, et al., 2020):

1- Reassessment of symptoms: Reassess the child's symptoms regularly to determine if the infection has resolved. If symptoms persist, a further investigation is necessary to confirm the diagnosis and identify any potential underlying causes.
2- Monitoring urine culture results: Regularly monitoring urine culture results is essential to assess the efficacy of antibiotics and determine the presence of any antibiotic-resistant bacteria.
3- Urologic evaluation: Children with recurrent UTIs or those with underlying urologic abnormalities may require a urologic assessment to determine the underlying cause and appropriate treatment
4- Regular preventive measures: Implementing preventive measures such as good hygiene, adequate fluid intake, and avoiding bladder irritants can help reduce the risk of recurrent UTIs

It is crucial to regularly schedule appointments with the child's primary care doctor to monitor their overall health and assess if additional treatment or interventions are needed. Consistent home practices for UTIs in children is vital for minimizing the chances of recurring infections, long-term kidney damage, and overall health complications. By consistently tracking symptoms, analyzing urine culture results, and implementing

preventive measures, we can enhance the outcomes for children suffering from UTIs (Gupta, et al., 2011).

In the past, it has been crucial to conduct Home Practices studies to examine the natural progression and outcomes of different types of urinary tract infections (UTIs), vesicoureteral reflux (VUR), and treatments for renal damage. After discovering that numerous children with UTIs experienced recurring infections and had underlying renal and urological issues, the concept of home practices for children with urinary infections developed. Through consecutive imaging, the advancement of renal parenchymal abnormalities became evident (Hashemi, et al., 2013).

Home Practices meetings were utilized for various tactics, such as organizing, describing, and communicating the results of imaging tests. Advice on urine screening for hidden infections, diagnosis and treatment of recurring UTIs, and avoidance of recurrence (Yousefi, et al., 2012).

- Management of prophylaxis reiterating recommendations and preventive measures
- provide guidance on the dangers and effects of renal parenchymal abnormalities, and use sequential imaging to check for VUR
- referral for surgery to correct VUR if medical management failed advice on familial renal disease, including VUR
- Monitoring of blood pressure in children with renal abnormalities
- Evaluation of renal function and proteinuria as indicators of chronic kidney disease (CKD)
- There is a need to understand the natural history of this disorder, as well as the implications of various therapies

His contemporary healthcare system emphasizes a targeted approach, offering increased patient and family involvement, decentralizing

care whenever feasible, prioritizing proven effective interventions, and implementing a formal and structured research approach. Despite thorough home practices, prompt treatment for recurring infections is not assured as it rarely happens during a typical clinic visit. Recognizing symptoms necessitates the active participation of the primary care system, the patient, and local hospitals (Okarska-Napierała et al., 2017; Keren, et al., 2015).

The Renal National Service Framework (NSF) suggests that individuals with CKD should be given appropriate Home Practices and evaluation. This includes any young person with a congenital or acquired renal parenchymal abnormality. It is essential to consider the potential benefits of this Home Practices compared to other more common, potentially preventable, but severe health conditions (Raimund et al., 2013).

Children with frequent infections could benefit from expert guidance and treatment to minimize the likelihood of recurring episodes. Specifically, the recurrence of acute pyelonephritis or upper urinary tract infections is especially problematic. Certain families may experience heightened anxiety due to a family history of vesicoureteral reflux (VUR) or other significant renal issues, necessitating ample time and precise information regarding the condition and its hereditary nature (Uwaezuoke, 2016).

2.13. Mother's Knowledge Perception of Urinary Tract Infection

A mother's knowledge perception of UTI in children is crucial in ensuring proper diagnosis and treatment. Mothers often have concerns about the cause and management of UTI in children, and some may delay seeking medical care. The study also found that mothers who have previous experience with UTI in their children or have received education about the condition have a better understanding of UTI and are more likely to seek prompt medical attention (Albright, et al., 2011).

Mothers' knowledge perception of UTI (Urinary Tract Infection) in children is essential as they play a crucial role in seeking healthcare for their children. According to a study conducted by Lawton et al. (2017), mothers with a higher level of education were more likely to recognize the signs and symptoms of UTI and seek medical attention for their children. However, mothers with low levels of education were less likely to recognize the signs and seek medical attention. The study highlights the need for health education programs to increase awareness among mothers, particularly those with low levels of education.

In another study by Al-Jasser et al. (2015), mothers reported that they first noticed UTIs in their children through symptoms such as fever, frequent urination, and pain during urination. They also reported that they sought medical attention when their children's symptoms persisted for more than two days. The study highlights the importance of mothers being able to recognize the signs and symptoms of UTI and seeking prompt medical attention for their children. Mothers' knowledge perception of UTI (Urinary Tract Infection) in children is crucial in managing and preventing the disease.

According to a study conducted by Zaki et al. (2015), mothers' knowledge and attitudes towards UTI are critical in detecting and treating the infection early. The study found that mothers well-informed about UTIs in children were more likely to seek medical attention promptly and provide the appropriate care to their children.

However, the study also revealed that mothers' knowledge perception of UTI was limited. Many mothers lacked knowledge about UTI's symptoms, causes, and risk factors. Moreover, some mothers believed that UTI was a minor illness that could be treated with home remedies. Knowledge perception hindered the early detection and treatment of UTI, which can lead to severe complications (Al-Jasser et al. 2015).

2.14. Related literature:

2.14.1. First study:

Seyezadeh, et al. (2021) conducted an aimed to evaluate the parental awareness of UTIs in infants and children and related demographic factors. Cross-sectional analytical study, 270 parents who had a child or infant with UTIs referring to the Nephrology Clinic of Mohammad Kermanshahi Hospital in Kermanshah, Iran, in 2018 were selected by a convenience sampling method. To analyze the data, the chi-square test and Fisher's exact test were used. According to the results, the parental awareness of the symptoms of UTIs in children was moderate, and the overall score on the awareness of complications, treatment, prevention, and diagnosis of UTIs in children was high. There were statistically significant relationships between the parental age and knowledge of UTI treatment in children, between paternal education and treatment and diagnosis and the total score of knowledge on UTIs in children, and between maternal education and awareness of the symptoms and how to prevent UTIs. Further, there was a statistical relationship between the children's history of UTIs and the awareness of how to diagnose and treat UTIs in children ($P < 0.05$). Given the results, educational programs must be promoted to raise parents' awareness of UTIs in infants and children, especially UTI symptoms in lower educated, elderly parents whose other children have not had any history of UTIs.

2.14.2. Second study:

Ahmadi, et al. (2020) the aimed of study was to investigate the impact of Theory Planned Behavior (TPB) -based education on the promotion of preventive behaviors of urinary tract infection in mothers with a daughter under age two. The sample consisted of 100 mothers who had a daughter under age two. They were selected through convenience sampling

and then were randomly assigned to the intervention and control groups (each group included 50 participants). The significance level was considered 0.05. Three months after the intervention, the mean score of the constructs of TPB in the intervention group was significantly higher than the control group. The performance of prevention of urinary tract infection in the intervention group before the education increased from 2.85 ± 0.51 to 3.74 ± 0.29 (out of 4) ($p = 0.001$). TPB-based education with active and interventional home practices was effective in promoting the preventive behaviors of urinary tract infection. Therefore, due to the side effects of UTI, especially in vulnerable periods such as childhood, it is recommended that trainings based on this model be carried out in other health care centers in order to maintain children health.

2.14.3 Third study:

A study conducted by **Fazel, et al., (2019)** aims to evaluate the knowledge, attitude and practice of mothers regarding the prevention of urinary tract infections. Cross-sectional descriptive-analytic study was performed in the Pediatric Clinic of Imam Khomeini Hospital to determine the knowledge, attitude, and practice of mothers about UTI in children and to evaluate its relationships with some demographic features. The data collection tool was a researcher-made questionnaire based on the literature review. One hundred and fifteen mothers who presented to the Pediatric Clinic of Imam Khomeini Hospital participated in this study. The average knowledge, attitude, and practice score in the first part and the practice score in the second part was 6.21, 47.85, 13.86, and 10.66, respectively. The significant relationship between access to information resources and the maternal knowledge and attitude scores confirms the importance of awareness in improving the knowledge of mothers in preventing urinary tract infection.

2.14.4. Fourth study:

Sophia, et al. (2019) conducted a study is aimed to assess the knowledge and attitude regarding urinary tract infection among mothers of under-five children in selected hospitals of Madhurai. Descriptive survey approach was used. Convenient sampling technique was used to select the sample; total 100 mothers of under-five children in selected hospitals at Madurai district were selected for the present study. A structured questionnaire on knowledge and 5 point likert's attitude scale was used to assess the knowledge regarding attitude regarding urinary tract infection respectively. Results of the study revealed that 67 % mothers had inadequate knowledge, following that 26% mothers had moderate knowledge and only 7 % had adequate knowledge. Regarding the level of attitude 47% had negative attitude, 32% had neutral attitude and 21% had positive attitude regarding urinary tract infection. There was significant positive correlation between knowledge and attitude (r=0.43). There was a significant association between knowledge with educational status and source of information.

2.14.5. Five study:

Abiodun and Oluwafemi, (2017) the study aims to evaluate parental knowledge perception of symptoms, causes, complication and treatment of childhood UTI, and propose relevant interventions. Cross-sectional study using a structured questionnaire comprising a 35-item Likert-like scale on perception of UTI in children with a reliability rating of 0.93. Adequate perception of each variable was defined as mean score ≥ 3.0. Weighted mean scores were tested for significant difference using F-test. Results: Altogether, 600 guardians/ parents took part in the study. Their mean age was 29.8±6.5 years and almost two-thirds of them (62.3%) were females. Only 18.3% of the participants had adequate perception of UTI in

children. Their grand mean score on knowledge perception of UTI was 2.68 ± 0.52. There was an upward trend in weighted mean scores of the various subscales (F-test = 21.63, p=0.000). Significant predictors of adequate knowledge perception of UTI in this survey. Conclude of study was low parental knowledge perception of UTI in children in our study setting. Regular health education on childhood urinary tract disorders is recommended.

2.15. Summary of Previous Studies:

Research has emphasized the importance of providing increased attention and targeted information to mothers of children who experience frequent urinary tract infections (UTIs), intending to reduce their occurrence. Some information regarding UTIs may increase mothers' awareness and take primary steps before harmful consequences can happen. Many researchers emphasized that mothers' knowledge perception and home practices toward recurrent UTIs of their preschool children are obligatory to save their children from unpredictable results. Clinical information can be as significant as diagnostic evaluation. For instance, early detection of high temperature, burning sensation during urination, and frequency may bring mothers' attention to seek health care at appropriate times to prevent the late stage of the disease process.

Furthermore, awareness is critical in determining the early intervention. Mothers' awareness depends on their knowledge of what is causing the UTIs and how the disease could affect their children's overall health status. UTIs are preventable if mothers follow a specific intervention such as personal hygiene, healthy diet, and daily habits and keep their children hydrated.

Chapter Three

Methodology

Chapter Three

Methodology

This chapter presents and describes the methodology employed in the current study. A research method explains the techniques used to obtain the data and identify, select, process, and analyze information about a study topic. The tools and methods have been taken to accomplish the present study and are organized according to the following manner:

3.1. The Study Design

A descriptive cross-sectional study investigated mothers' knowledge perceptions and home practices of their children with recurrent urinary tract infections. The research was conducted from July14 th, 2022, to May 16th, 2023 (Figure 3.1).

3.2. The Administrative Arrangements

Initially, the researcher collaborated with her academic advisor to choose a study topic for the dissertation. After the dissertation proposal was reviewed by the Scientific Postgraduate Committee at University of Babylon/ Faculty of Nursing Council, the research proposal was approved, and no significant modification was suggested to proceed. The pediatric Nursing department of the Faculty of Nursing / University of Babylon grants permission to the researcher. Additional consent is attained from "Al-.Najaf Al-.Ashraf Health Directorate/ AL Zahraa Teaching Hospital (Appendix-C) an attempt to conduct interviews for every subject.

3.3. Ethical Consideration

Ethical considerations play a vital role in research, ensuring that studies are conducted with integrity, respect for human subjects, and adherence to moral principles. The protection of participants' rights and welfare is of utmost importance. Researchers must carefully evaluate and address potential risks and benefits associated with their studies and obtain informed consent from participants. Ethical guidelines also emphasize confidentiality and anonymity, ensuring participants' personal information remains protected. Additionally, researchers must strive for transparency and honesty in reporting their findings, avoiding any form of data manipulation or fraudulent practices (American Psychological Association, 2020).

One crucial ethical principle is obtaining informed consent from participants before their involvement in research. Informed consent ensures that individuals are fully aware of the study's purpose, procedures, potential risks, and benefits, enabling them to make voluntary and informed decisions about their participation. By obtaining consent, researchers respect the autonomy and self-determination of participants, acknowledging their right to make choices regarding their involvement in the study (Sobel and Elmore, 2020).

Ethical consideration is one of the most important parts of nursing research. Its goal is to protect the rights of the researcher and the people participating in the study.

The member's dignity and principles must be respected before gathering any information. The ethical committee of research in the collage of Nursing / University of Babylon can grant this permission to the

researcher (Appendix-B1). Before the study is done, ethical agreements (consent forms) are also obtained from each mother at the hospital who has given either written or verbal permission to participate in the study (Appendix-B2).

3.4. The Setting of the Study

The study was conducted at AL Zahraa Teaching Hospital in AL-Najaf AL-Ashraf City. The hospital was selected for the following purposes:

3.4.1. It is a teaching facility that provides accessible services to children suffering from recurrent urinary tract infections.

3.4.2. This setting provides a facility responsible for treating and following up with all children with recurrent urinary tract infections who attend clinics.

3.4.3. To obtain a large number of participants within a limited time this can helpfully represent the target population.

3.5. The Study Sample

A study sample is a crucial component of research, providing a representative subset of a larger population that allows researchers to draw meaningful conclusions and make generalizations. It serves as the foundation upon which research findings are based, making its selection and composition critical to the validity and reliability of the study. The sample size, sampling technique, and inclusion criteria are essential considerations that researchers carefully address to ensure the sample's appropriateness and relevance to the research objectives (Rani et al., 2019).

A non-probability (purposive sample) technique that utilized in selected (132) mothers admitted to AL Zahraa Teaching Hospital for treatment of children with recurrent UTIs. Twelve mothers chosen for pilot study and exclude from original sample. Final number complete the study were (120) mother. The study sample was selected based on the following criteria:

3.5.1. Inclusion Criteria

Inclusion criteria help researchers ensure that the study participants accurately represent the population of interest and increase the internal validity of the study findings. Inclusion criteria vary depending on the research objectives, design, and people under investigation. The requirements for the selection of the study sample were:

a. All children who are medically diagnosed with recurrent urinary tract infections.
b. Mother able to verbal communication is required for orientation.
c. Absence of any significant psychiatric or cognitive disorders that may affect study participation.

3.5.2. Exclusion Criteria

a. The mothers who are voluntarily disagree to participate in the study
b. Children who were newly diagnosed with UTIs.

3.6. The Study Instrument:

The study instrument, or a research instrument, refers to any tool or technique used to collect data or information in a research study. It is an

essential component of the research process, as it helps researchers gather reliable and valid data to answer their research questions. Tools used to collect data by using questionnaire format comprehensive evaluation of review literature and research (Appendix-D).

The study instrument and tools developed to assess the mother's knowledge, perceptions and home practices toward their children with recurrent urinary tract infection and consists of the following:

Part I: Mother's Socio-Demographic Data:

The demographical information page comprises (9) categories: (age, residency, level of education, occupation, monthly income, type of family, number of children, period of disease, and the number of disease occurrences in children**).**

Part II: Mothers' Knowledge Perception of Recurrent Urinary Tract Infection:

The second part includes mothers' knowledge perception of recurrent urinary tract infection that consists of (4) domains:

1- The concept of disease and its cause consists of (5) items.
2- Symptoms of disease and consist of (4) items.
3- Complications of disease consist of (2) items.
4- Treatment of disease consists of (5) items.

Part III: Home practices of recurrent urinary tract infection in children:

This part of the questionnaire comprises (10) items about home practices regarding recurrent urinary tract infections in children.

3.7. Rating and Scoring:

The researcher uses the following manner for rating and scoring the study instrument:

The assessment by cutoff point (0.66) due to the three rating and scoring with three levels of assessment for mother knowledge perception as poor (1-1.66), accepted (1.67-2.33), and good (2.34-3), while for mother home practices the two rating and scoring as less than 1.49 (poor) and more than 1.5 (good)

The measuring of the mothers' knowledge perception regarding managing recurrent urinary tract infections in children. Each question has three choices: the agreed choice takes a score (3), the uncertain choice takes a score (2), and the disagree choice takes a score (1). Mother home practices to measure with two scoring levels: (2) for yes and (1) for no.

3.8. Validity of the study questionnaire:

The face validity of the study tools (mother's knowledge perception and home practices toward their children affected with recurrent urinary tract infection questionnaire) is assessed by a panel of (14) experts with a minimum of five years of experience in their specialty (Appendix A). In addition, experts were distributed for (5) experts from the Faculty of Nursing / University of Baghdad, (4) experts from the Faculty of Nursing / University of Babylon, and (4) experts from the Faculty of Nursing / University of Kufa least one expert from the Faculty of Nursing / University of Al-Ameed.

Additionally, the average number of years of expertise for the expert panel is favorable (24) years. Those experts were asked to review the instruments for content, clarity, relevancy, and adequacy; some items were excluded, and others were added after a face-to-face discussion with each expert

and after the instrument was considered valid after considering all the comments and recommendations. Therefore, 100% of experts agreed on the final draft of the study instrument.

3.9. Pilot Study

In this study, the pilot study was conducted on a purposive sample of twelve Mothers with children diagnostic recurrent UTIs, who have been selected from the AL Zahraa Teaching Hospital. The pilot study sample is excluded from the original sample of the study.

❖ **Purpose of the pilot study:**

1- A pilot study is used to formulate the full-scale experiment design, which can then be adjusted.
2- Recognize the obstacles that can be faced throughout the collection of data procedure.
3- Determine the duration and the amount of time needed to gather data.
4- Determine the best way to get the mother on board with the researcher and identify the challenges that can be overcome.
5- Ensure the survey form is easy to fill out and contains enough information.
6- Determine the reliability of the survey questions.

❖ The outcome of the pilot study:

The results of pilot study indicate the following:

1- The questionnaire's questions (Mother’s Knowledge Perceptions and Home Practices) were simple and straightforward for the mothers to understand.

2- The interview period was estimated to be (15-20) minutes for every participant.

3.10. The Reliability of the Instrument:

The reliability of an instrument is a crucial aspect of research, as it refers to the consistency and stability of measurement. Questionnaire reliability is the continuity of performing a particular method in measuring or observing the same phenomenon. The determination of the questionnaire reliability of the study depended upon the reliability of the internal consistency (Table 3.1). By using Microsoft Excel/correlation task, the reliability can be specified by using Pearson's Correlation Formula (r) as below:

$$r = \frac{n\sum XY - (\sum X)(\sum Y)}{\sqrt{[n\sum X^2 - (\sum X)^2][n\sum Y^2 - (\sum Y)^2]}}$$

r= the correlation coefficient of the variables x &y.
n= number of cases.
x=an individual's score of variable X
y= an individual's score of variable Y
∑= the summation of.

(Barton & Peat, 2014)

Table (3.1): Reliability Coefficients for the Questionnaire the mother's knowledge, perceptions and home practices

Domain	Reliability Coefficients	Result	Assessment
Mother's Knowledge Perceptions	Internal consistency (Alpha Cronbach)	0.87	Acceptance
Home Practices	Internal consistency (Alpha Cronbach)	0.82	Acceptance

The correlation procedure was used to determine the degree of dependability. Reliability coefficients usually range from (-1.00 to +1.00); the table above depicts a (0.70) reliability coefficient that is regarded as satisfactory (Barton & Peat, 2014). The reliability coefficient for all areas of mothers' knowledge, perception is 0.87, and the and home coefficient is 0.82 (Table 3.1).

The Alpha Cronbach's result indicates that the instrument item has a high dependability and internal consistency level when utilizing this approach to describe reliability. Consequently, the estimated findings of the questionnaire reveal that the study instrument can measure the phenomena of interest at any point in the future (Barton & Peat, 2014).

3.11. Data collection methods

The process of gathering data for quantitative studies follows a predetermined blueprint. It is common for a researcher's plan to include procedures for gathering data (such as where and then when data will be collected), communicating with respondents, and documenting findings (all of which are typically included). In addition, keeping the privacy between the mothers and the researcher during data collection, the Mother’s Knowledge Perceptions Home Practices by direct face-to-face interview and self-report were interviewed between 15th October and 19th January 2023, and the data were collected in the city of Al-Najaf Al-Ashraf, specifically at AL Zahraa Teaching Hospital. Each mother needed about fifteen to twenty minutes to complete the questionnaire and answer all of the questions. The Arabic version was only used for the participants; the same time in the pilot study was spent for each participant.

3.12. Data Analysis

The data from the current study were analyzed using Statistical Package of Social Sciences (SPSS) version 26. The study employed the following statistical data analysis methods to assess and interpret the study findings:

3.12.1. Descriptive Statistical Means

This includes measurement of the following:

1. Frequency (F)

The frequency (or frequency of occurrence) on the occasion of a happening in statistics represents the number of recurrences an event occurred during an experiment or research (Lindstrom, 2010).

2. Percentage: Percentage is a standard metric for expressing statistical data. To express percentages, use the percent symbol. Percent merely means "per hundred." To calculate one percent, divide the whole number by 100 and multiply the result by one hundred.

Percentage formula:

$$\% = \left(\frac{frequency}{sample\ size}\right) \times 100\% \qquad \text{(Statcan, 2015).}$$

3. The Mean: is the arithmetic average of the distribution. The formula used to compute the Mean is:

$$\overline{x} = \frac{\sum x_i}{n} \qquad \text{(Bhandari , 2020).}$$

4. Standard deviation (Sd.)

The standard deviation specifies how much variability there is in a data set on an average basis. It indicates the average deviation of each result from the mean. When the (SD.) is significant, it suggests that the data is

typically distributed from the mean. In contrast, when the (SD.) is low, it suggests that the data is generally clustered around the mean. The basic formula for the sample standard deviation is:

$$s=\sqrt{\frac{\Sigma f(x-\bar{x})^2}{n-1}}$$ (Bhandari , 2020)

where:

x_i = Value of the i^{th} point in the data set

$\overline{x}$ = The mean value of the data set

n = The number of data points in the data set

5. The Bar Graph

When plotting data, a bar graph uses rectangular bars and sections to represent each category's overall number of data points.

3.12.2. Inferential Analysis

The purpose of using this type of statistical data analysis was to determine the level of acceptance or rejection of the research hypothesis, and it includes the following:

1. Chi-Square Test: The Chi-Square test (X^2) determines the independence of observed frequencies and the relationship between study variables according to their type.

E= Expected

O= Observed

$$X^2=\Sigma\frac{(O-E)^2}{E}$$

(Warner, 2013).

2. Analysis of Variance (ANOVA)

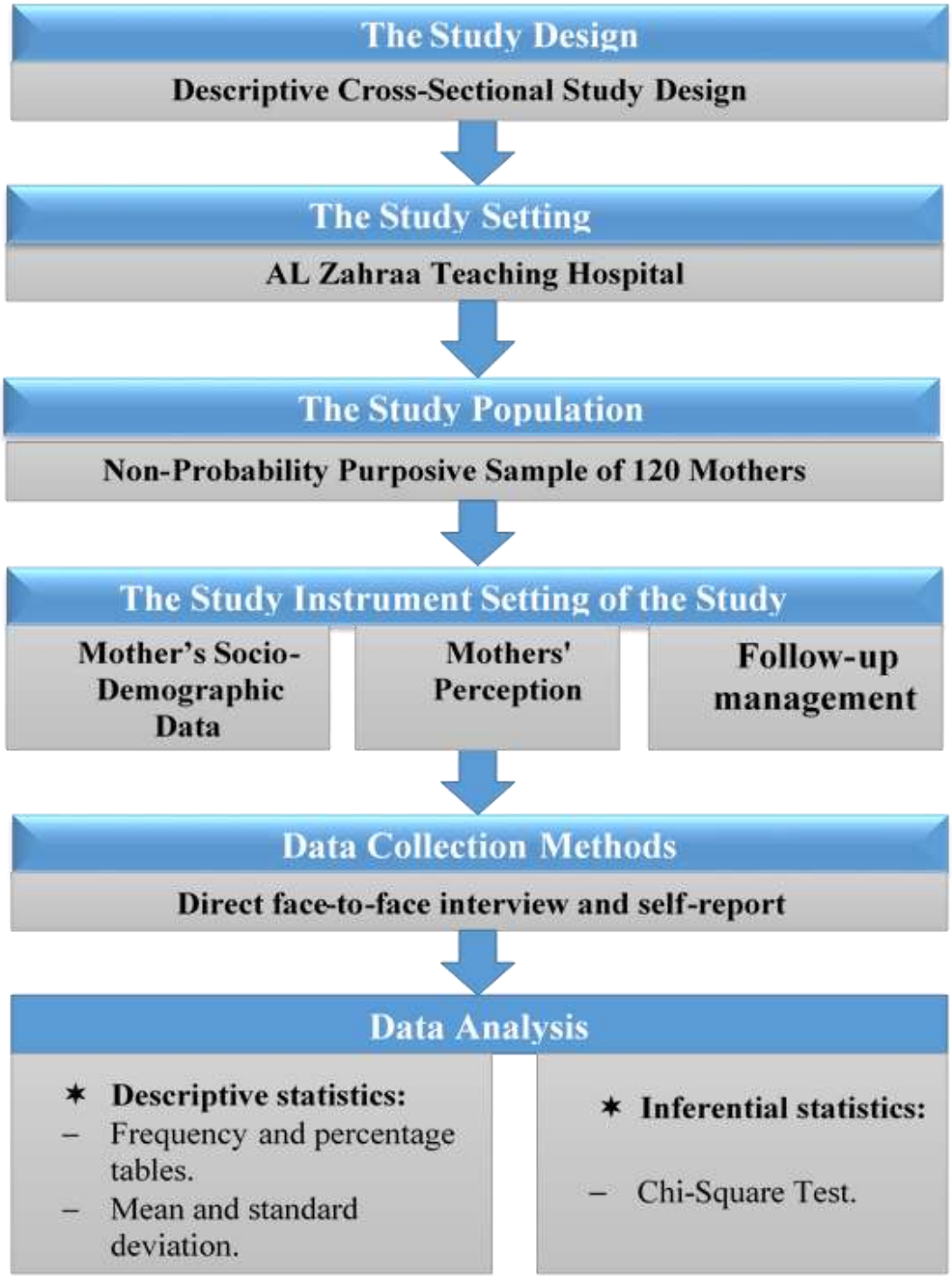

Figure 3.1: Study Process

It is important to note that the diagram represents a general framework for a descriptive cross-sectional study. The details and steps may vary depending on the research question, study design, and methodology.

Chapter Four

Results and Findings

Chapter Four

Study Results

Chapter four focuses on the statistical analysis techniques used to achieve the objectives of the study and testing the hypothesis related to the study phenomena. The purpose of this chapter is to present, describe, and interpret the result of the study in a systematic and detailed way.

Table (4-1): Distribution of the Observed Frequencies and Percent of Demographic Characteristics

Variables	Categories	Frequency	Percent
Age Group	<= 20	10	8.3
	21 - 28	57	47.5
	29 - 36	30	25.0
	37 - 44	18	15.0
	45 and more	5	4.2
	Total	120	100
	Mean + Sd.	28.28 ± 6.301	
Residency	Rural	32	26.7
	Urban	88	73.3
	Total	120	100
Level of education	Not read and write	29	24.2
	Read and write	22	18.3
	Primary school graduated	39	32.5
	Intermediate school graduated	18	15.0
	Secondary school graduated	2	1.7
	Institute and above	10	8.3
	Total	120	100
Occupation	Employed	14	11.7
	Unemployed	106	88.3
	Total	120	100
Monthly Income	Sufficient	48	40.0

	Barely Sufficient	63	52.5
	Insufficient	9	7.5
	Total	120	100
Types of Family	**Nuclear**	35	29.2
	Extended	85	70.8
Number of Children (years)	**<= 3**	72	60.0
	4 - 7	48	40.0
	Total	120	100
	Mean + Sd.	**3.25 ± 1.41**	
Disorder duration (years)	**<= 1**	73	60.8
	2 - 3	45	37.5
	4+	2	1.7
	Total	120	100
	Mean + Sd.	**1.46 ± 0.65**	
Disorder occurrence (years)	**<= 2**	36	30.0
	3 - 5	78	65.0
	6+	6	5.0
	Total	120	100
	Mean + Sd.	**3.23 ± 1.13**	

Table (4-1) According to the demographic results, the highest percentages for the age categories were 47.5% of mothers (21-28 years old). Although the residents with the highest percentage of mothers (73.3%) had urban areas and educational levels, the highest percentage (32.5%) had primary schools, and the majority of participants (88.3%) were housewives. Furthermore, the monthly income survey results revealed that more participants (52.5%) had barely sufficient income. Moreover, the majority of the study sample (70.8%) belonged to extended families; the highest percentage of the study sample (60.0%) had three or fewer children; the disorder duration was equal to or less than one year; and the disorder occurrence (3-5) was (65.0 %).

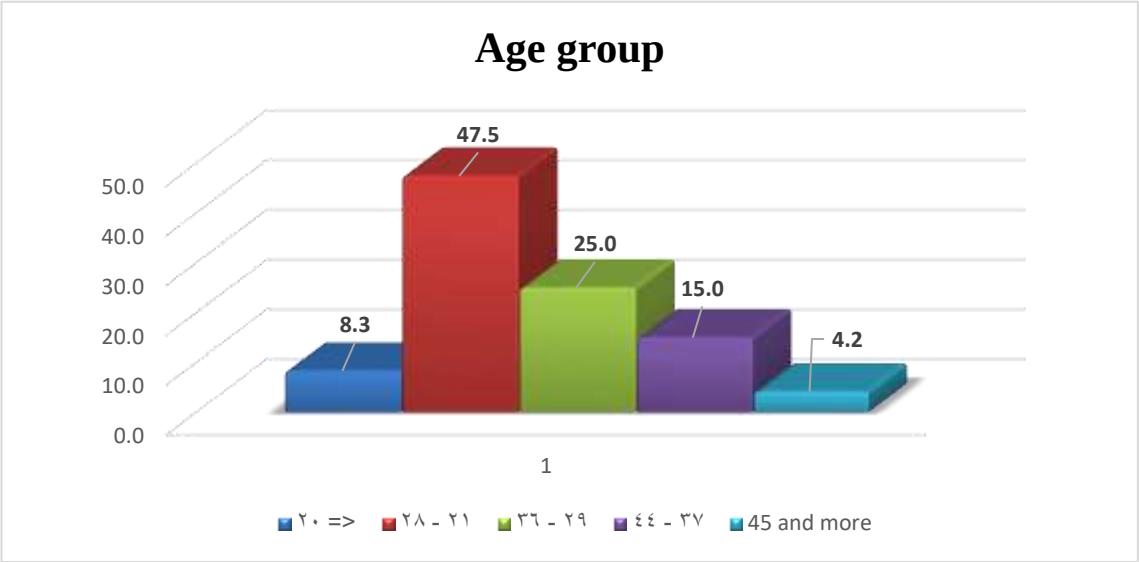

Figure (4.1): Age group Percentage

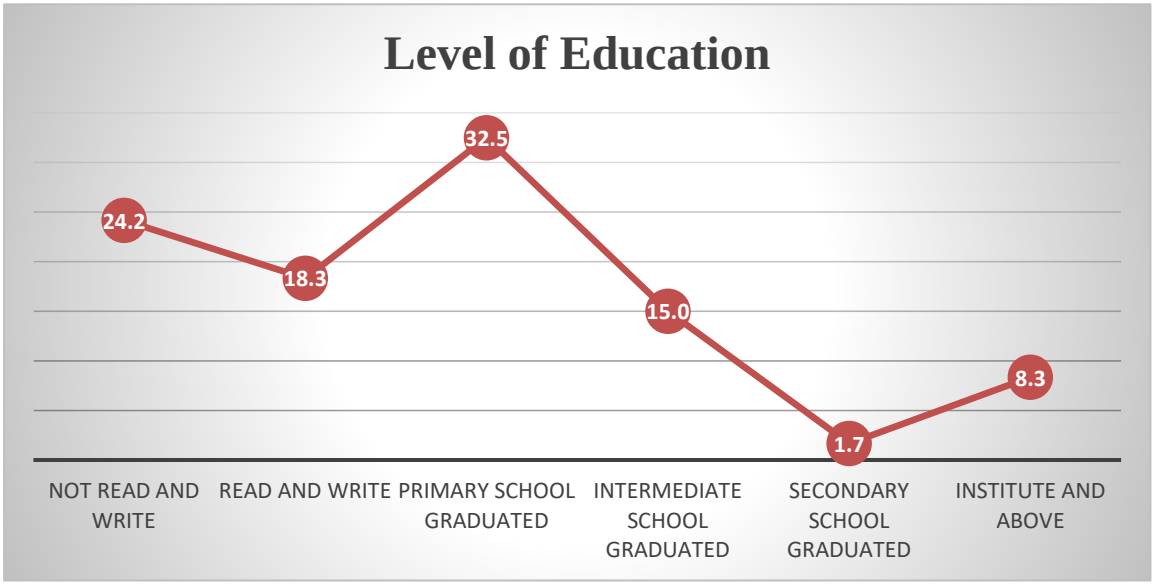

Figure (4.2): Level of Education Percentage

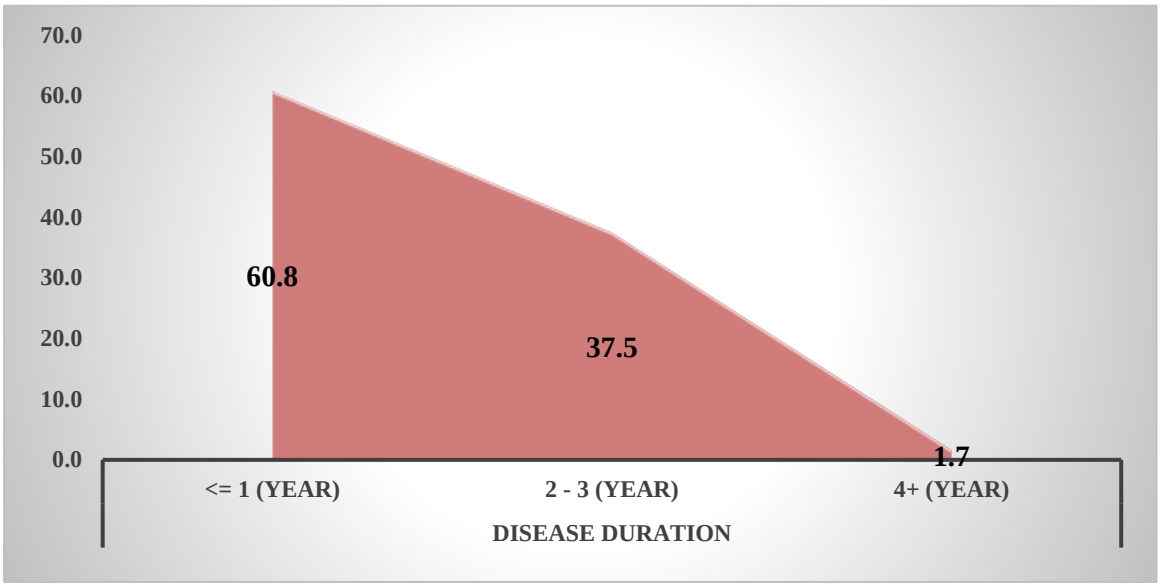

Figure (4.3): Disease Duration

Table (4-2): Initial Assessment of Mother's Knowledge Perceptions of Their Children Affected by Recurrent Urinary Tract Infection

Items	Responses	Frequency	Percent	mean	Sd.	Level of Assessment
1- A urinary tract infection is a common condition in children under the age of five years.	Disagree	73	60.8	1.58	0.795	Poor
	Uncertain	24	20.0			
	Agree	23	19.2			
2- Urinary tract infection varies with gender variations.	Disagree	70	58.3	1.57	0.742	Poor
	Uncertain	32	26.7			
	Agree	18	15.0			
3- The mother's lack of attention to the hygiene of the child may lead to a urinary tract infection	Disagree	31	25.8	2.34	0.865	Good
	Uncertain	17	14.2			
	Agree	72	60.0			
4- A mother teaching her child to urinate before bedtime is considered a factor that prevents urinary tract infection	Disagree	78	65.0	1.58	0.837	Poor
	Uncertain	15	12.5			
	Agree	27	22.5			
5- Urinary tract infection is associated with the amount of drinking fluid throughout the day	Disagree	27	22.5	2.38	0.832	Good
	Uncertain	20	16.7			
	Agree	73	60.8			
6- A child with a high temperature is an essential indicator that recurrent urinary tract infection has existed	Disagree	32	26.7	2.34	0.874	Good
	Uncertain	15	12.5			
	Agree	73	60.8			
7- Continuing discomfort and restlessness are considered among the signs and symptoms of UTI	Disagree	63	52.5	1.73	0.847	Accepted
	Uncertain	26	21.7			
	Agree	31	25.8			
8- Warning signs of a urinary tract infection include involuntary urination of a child	Disagree	57	47.5	1.78	0.825	Accepted
	Uncertain	33	27.5			
	Agree	30	25.0			
9- Blood in a child' urination is a strong indication of a urinary tract infection	Disagree	21	17.5	2.24	0.733	Good
	Uncertain	49	40.8			

	Agree	50	41.7			
10- Kidney failure is one of the most critical complications of recurrent urinary tract infection	**Disagree**	56	46.7	1.68	0.722	Accepted
	Uncertain	46	38.3			
	Agree	18	15.0			
11- UTI is considered one of the most common conditions that hinders the child's growth	**Disagree**	66	55.0	1.63	0.777	Poor
	Uncertain	32	26.7			
	Agree	22	18.3			
12- Regularly consulting a doctor is the best solution to prevent recurrent UTIs.	**Disagree**	28	23.3	2.37	0.840	Good
	Uncertain	20	16.7			
	Agree	72	60.0			
13- One of the mother's duties is accurately implementing the doctor's recommendations to treat recurrent UTIs.	**Disagree**	20	16.7	2.55	0.765	Good
	Uncertain	14	11.7			
	Agree	86	71.7			
14- Recording any sign or symptom of a child is one of the most essential steps in preventing complications of recurrent UTI	**Disagree**	80	66.7	1.57	0.847	Poor
	Uncertain	12	10.0			
	Agree	28	23.3			
15- Medications are considered as the primary method to treat urinary tract infection.	**Disagree**	66	55.0	1.71	0.854	Accepted
	Uncertain	23	19.2			
	Agree	31	25.8			
16- Preventing the child from ingesting particular food and drinks is among the steps of curing recurrent UTI	**Disagree**	26	21.7	2.43	0.827	Good
	Uncertain	16	13.3			
	Agree	78	65.0			

N (120), poor (mean of the score (1-1.66), accepted (mean of score 1.67-2.33), good (mean of score 2.34 and more), cut off point (0.66)

Table (4.2) shows that the mother's knowledge perception responses to the recurrent urinary tract infection items are poor for the following items: (A urinary tract infection is a common condition in children under the age of five years; urinary tract infection varies with gender variations, a mother is teaching her child to urinate before bedtime is considered a factor that prevents urinary tract infection, UTI is considered one of the most conditions that hinders the child's growth, recording any sign or symptom of a child is one of the essential steps in preventing complications of recurrent UTI). The following items are accepted (continuing discomfort and restlessness are considered among the signs and symptoms of UTI; warning signs of a urinary tract infection include involuntary urination of a child, Kidney failure is one of the most critical complications of recurrent urinary tract infection, and medications are considered as the primary method to treat urinary tract infection). The remaining items are good.

Table (4-3): Mother's Knowledge Perceptions toward Their children Affected by Recurrent Urinary Tract Infection Domains

knowledge Perception Domains	Level of Measurement	Frequency	Percent	Ms.	Sd.	Assess.
Causes of disease	**Disagree**	49	40.8	1.89	0.47	Accepted
	Uncertain	44	36.7			
	Agree	27	22.5			
Symptom of disease	**Disagree**	23	19.2	2.0229	0.45605	Accepted
	Uncertain	69	57.5			
	Agree	28	23.3			
Complications of disease	**Disagree**	70	58.3	1.6583	0.65138	Accepted
	Uncertain	30	25.0			
	Agree	20	16.7			
Treatment of disease	**Disagree**	15	12.5	2.1250	0.43313	Accepted
	Uncertain	69	57.5			
	Agree	36	30.0			

N (120), poor (mean of the score (1-1.66), accepted (mean of score 1.67-2.33), good (mean of score 2.34 and more), cut off point (0.66)

Table (4.3) shows that the mother's answers to all questions about the repeated urinary tract infection were accepted.

Table (4-4): Overall Assessment of Mother's Knowledge Perceptions of Their children Affected by Recurrent Urinary Tract Infection

Knowledge Perception (Overall Assessment)	Level of Measurement	Frequency	Percent	MS	S.D	Assessment
	Disagree	21	17.5	1.97	0.35	Accepted
	Uncertain	77	64.2			
	Agree	22	18.3			

The table above shows the overall assessment of mothers' knowledge perceptions toward their preschool-aged children who have frequent urinary tract infections as accepted.

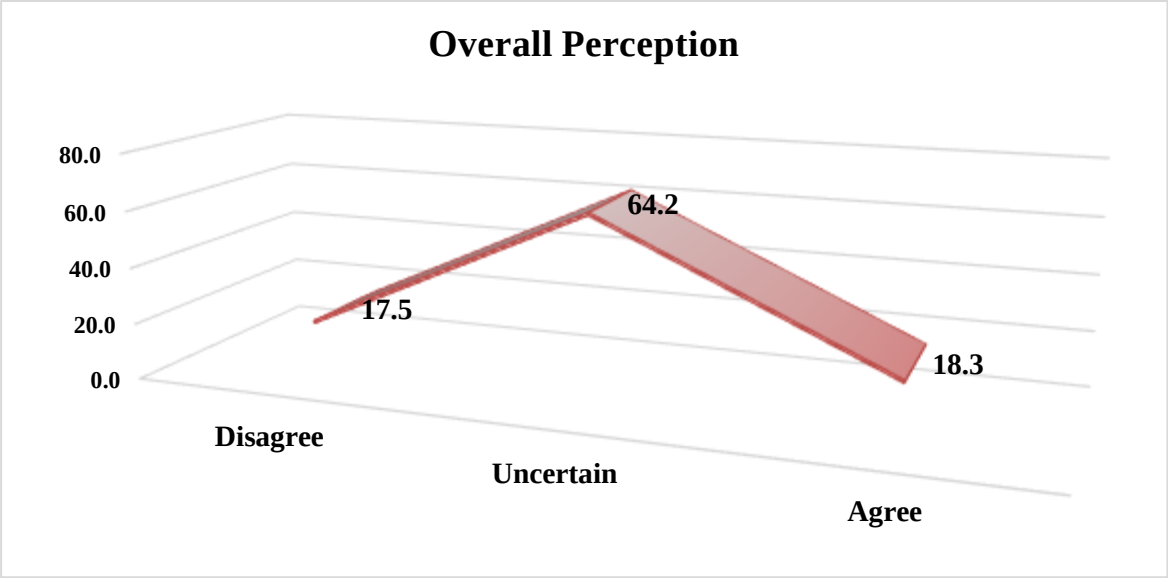

Figure (4.4): Overall Assessment of Knowledge Perception

Table (4-5): Initial Assessment of Mothers' Home Practices on children with Recurrent Urinary Tract Infection

Items	Responses	Frequency	Percent	MS	Sd.	Rs.	Assess.
1- Encourage the child to go to the toilet when he or she feels the need for that	I do not	67	55.8	1.44	0.50	72.08	Poor
	Yes I do	53	44.2				
2- Give the child plenty amounts of fluids	I do not	51	42.5	1.58	0.50	78.75	Good
	Yes I do	69	57.5				
3- Give the child antibiotics as described to him/her	I do not	45	37.5	1.63	0.49	81.25	Good
	Yes I do	75	62.5				
4- Ask the child whether he feels any pain when urinating	I do not	60	50.0	1.50	0.50	75.00	Good
	Yes I do	60	50.0				
5- Encouraging the child to avoid drinking a carbonated soft drink	I do not	51	42.5	1.58	0.50	78.75	Good
	Yes I do	69	57.5				
6- Take care of the child's personal hygiene, especially the anal area	I do not	77	64.2	1.36	0.48	67.92	Poor
	Yes I do	43	35.8				
7- Follow the child's condition with the doctor continuously.	I do not	80	66.7	1.33	0.47	66.67	Poor
	Yes I do	40	33.3				
8- Visit the doctor when symptoms or other signs of the child appear	I do not	79	65.8	1.34	0.48	67.08	Poor
	Yes I do	41	34.2				
9- Teaching the child how to wash or wipe from front to back after urination	I do not	81	67.5	1.33	0.47	66.25	Poor
	Yes I do	39	32.5				
10- Encouraging the child to empty their bladder before bedtime	I do not	81	67.5	1.33	0.47	66.25	Poor
	Yes I do	39	32.5				

N (120), poor (mean of score 1.49 and less), good (mean of score 1.5 and more)

According to Table (4.5), the mother's home practices responses to the recurring urinary tract infection were good for the following items: giving the child plenty of fluids, giving the child antibiotics as prescribed, asking the child if he feels any pain when urinating, encouraging the child to avoid drinking a carbonated soft drink, and the remaining items were poor.

Tables (4-6): Overall Assessment of Mothers' Home Practices on children Affected by Recurrent Urinary Tract Infection

Home Practices (Overall Assessment)	Responses	Frequency	Percent	MS	Sd.	Assessment
	I do not	61	50.8	1.44	0.18	Poor
	Yes I do	59	49.2			

N (120), poor (mean of score 1.49 and less), good (mean of score 1.5 and more)

According to the table above, the overall assessment of mothers' home practices toward their children with recurrent urinary tract infections was poor.

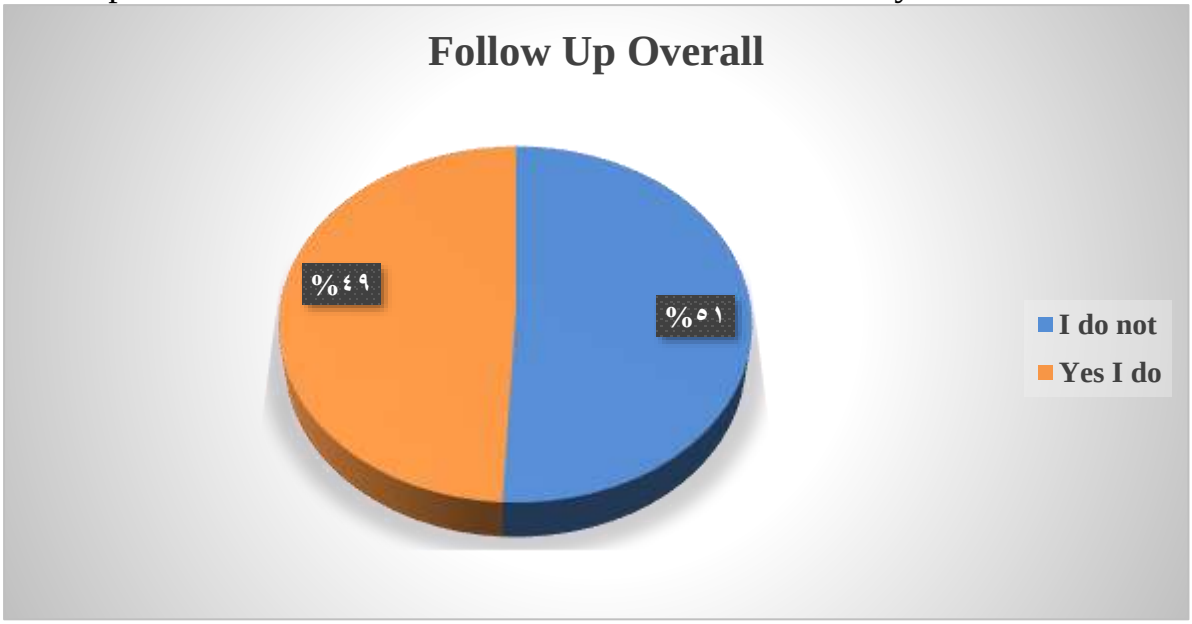

Figure (4.5): Overall Assessment of Home Practices

Table (4-7): Relationship between overall Mother's Knowledge Perceptions and Their Residency

Variable		statistics	Knowledge Perception			Chi-Square	df.	P-value
			Poor	Accepted	Good			
Residency	Rural	F.	15	58	15	0.494	2	0.808 NS
		%	17.0%	65.9%	17.0%			
	Urban	F.	6	19	7			
		%	18.8%	59.4%	21.9%			

Ns. non-significant; D.F. degree of freedom

This table shows no significant relationship between the overall mother's knowledge perception and their residency at a P-value of more than 0.05.

Table (4-8): Relationship between Overall Mother's Knowledge Perceptions and Their Types of Family

Variable		statistics	Knowledge Perception			Chi-Square	df.	P-value
			Poor	Accepted	Good			
Types of Family	Nuclear	F.	8	22	5	1.265	2	0.531 NS
		%	22.9%	62.9%	14.3%			
	Extended	F.	13	55	17			
		%	15.3%	64.7%	20.0%			

Ns. non-significant; D.F. degree of freedom

This table shows no significant relationship between the overall mother's knowledge perception and their types of family at a P-value of more than 0.05.

Table (4-9): Relationship between Overall Mother's Knowledge Perceptions and Their demographic data

Variable	df.	F.	Sig.
Age	22	0.709	0.820 **NS**
Level of education	22	0.776	0.747 **NS**
Occupation	22	0.969	0.508 **NS**
Monthly Income	22	0.926	0.562 **NS**
Number of Children	22	0.944	0.540 **NS**
disorder duration	22	0.696	0.833 **NS**
disorder occurrence	22	0.480	0.974 **NS**

Ns. non-significant; D.F. degree of freedom

This table demonstrates that there is no statistically significant relationship between the overall mother's knowledge perception and demographic data (age, level of education, occupation, monthly income, number of children, disease duration, and disease occurrence).

Table (4-10): Relationship between Mothers' Home Practices and Their Residency

Variable		statistics	Home Practices		Chi-Square	df.	P-value
			Poor	Good			
Residency	Rural	F.	47	41	0.876	1	0.349 NS
		%	53.4%	46.6%			
	Urban	F.	14	18			
		%	43.8%	56.3%			

Ns. non-significant; D.F. degree of freedom

This table shows no significant relationship between mothers' home practices and their residency at a P-value of more than 0.05.

Table (4-11): Relationship between Mothers' Home Practices and Their Types of Family

Variable		statistics	home practices		Chi-Square	df.	P-value
			Poor	Good			
Types of Family	Nuclear	F.	16	19	0.518	1	0.471 NS
		%	45.7%	54.3%			
	Extended	F.	45	40			
		%	52.9%	47.1%			

This table shows no significant relationship between mothers following up on their types of family at a P-value of more than 0.05.

Table (4-12): Relationship between Mothers' Home Practices and their demographic data

Variable	df.	F	Sig.
Age	9	0.431	0.916 NS
Level of education	9	2.085	0.036 S
Occupation	9	0.421	0.921 NS
Monthly Income	9	1.853	0.066 NS
Number of Children	9	1.766	0.082 NS
Disease duration	9	0.461	0.897 NS
Disease occurrence	9	0.797	0.619 NS

This table shows no significant relationship between mothers' home practices and their demographic data (age, occupation, monthly income, number of children, disease duration, disease occurrence), except that the level of education is significant at a p-value less than 0.05.

Chapter Five

Discussion of the Results

Chapter Five

Discussions of the Study Results

The study findings have been analyzed and interpreted according to the study prespecified objectives. The study is designed to identify the mother's knowledge perception and home practices toward their preschooler children effected by recurrent urinary tract infection. This chapter discussed the study findings with previous research studies and highlighted the significant outcomes.

5.1. Part I: Discussion of Mother's Socio-Demographic Characteristics (Table 4.1).

The current study utilizes a descriptive design to scrutinize Mother's Knowledge Perceptions and Home Practices to determine the effect of recurrent UTIs among their preschool children. The sample of this study consists of (120) mothers.

Analysis of mothers' demographic characteristics was determined. In regard to the study findings, the more significant percentage of study participants are between the age group of (21-28) years old. This result is matched with the finding of the Seyezadeh et al., (2021), who conducted a research study related to the Assessment of Parents' Awareness of Urinary Tract Infections (UTIs) in Infants and Children and Related Demographic Factors. The researchers reported that most study results were between the age group of (20-30) years old.

Regarding to the residency, the study results showed that the highest percentage of study subjects are living in an urban area. This is in agreement with the study carried out by Selamat et al., (2020), who reported that the majority of the respondents are living in urban area (95.6%) compared to only (4.4%) from rural area.

Concerning the educational level, most of the study sample are primary school graduates. This result could be that the low education level may lead to a decrease in the mother's knowledge perceptions and home practices mothers toward recurrent urinary tract infection. Moreover, this finding agrees with Seyezadeh et al., (2021), who declared that most participants possessed a primary school level of educational qualification.

According to study results, the mothers' occupation indicated the majority of study subjects occupation were housewives. This finding is supported by Ahmadi et al., (2020), who concluded that the highest percentage of the study sample was a housewife.

However, the study's results reveal that most study subjects' economic status was barely sufficient income, and this finding is highly congruent with Bazargani et al., (2022), who reported that most of their participants were at moderate level of income.

Regarding the family types, the study results showed that the highest percentage of study subjects were extended families. This result disagrees with the study by Abd Elfatah, et al., (2021), who reported that more than half of the studied women (53.6%) had nuclear family.

According to the number of children, the results showed that the majority of study subjects number of mothers have three children. This finding is supported by the Fazel et al., (2019) study, which represented the highest percentage of the study sample were three children.

Regarding the disease duration, the results showed that most subjects of the study had a UTI for a year or less than a year. This finding is apparent in a study conducted by Campbell et al., (2021), who reported that recurrence of UTI among children occurs through a year or less. However, the study reveals that most study subjects had a disease occurrence (3-5) years. This finding matches the result of Campbell et al., (2021), which

revealed that most of the study results indicated a frequency of urinary tract infection more than two times per year.

5.2. Part II: Discussion of Mother's Knowledge Perceptions about Recurrent Urinary Tract Infection

Table (4.2) shows that the mother's answers to all of the questions about the repeated urinary tract infection were at the accepted level.

The questionnaire contains 16 items with four domains. The domains include causes, symptoms, complications, and treatment of recurrent UTI. The overall findings of mothers' knowledge perception toward those four domains are at the accepted level. In table (4.2), the results of some items, such as (items 3, 5, and 6) showed a good level of mother knowledge perception, but other items, such as (1, 2, and 4) showed a poor level which indicated fluctuated in mothers' knowledge perception toward recurrent UTI. Those results induce the importance of education through scheduled visit hospitals.

Mothers need accurate information about urinary tract infections (UTIs) to seek immediate medical attention if they suspect their child may have an infection.

When a child has a repeated UTI, it's important for the healthcare professional to gather as much information as possible about the child's symptoms and medical history, as well as any potential risk factors for the infection. The mother's responds to questions about the child's symptoms, such as frequency and urgency of urination, pain or discomfort while urinating, and any other symptoms.

The mother's answers to all of the questions about a repeated urinary tract infection (UTI) can provide vital information for healthcare providers in terms of understanding the child's symptoms, the mother's

concerns and level of knowledge about the condition, and the potential impact of the infection on the child and the family (Alsibai et al., 2018).

The mother's knowledge perception and response to a child with repeated urinary tract infections (UTIs) can vary depending on the mother's knowledge and experience with the condition, the severity of the infectious process, and the child's symptoms (Garcia et al., 2018).

Mothers' knowledge perception of recurrent urinary tract infections (UTIs) in children can be moderate, as they may have a general understanding of the condition but may not fully understand the causes and risks associated with recurrent infections (Almatrafi, et al., 2022)

A study conducted by Kandaswamy et al., (2019) regarding mothers of children with recurrent UTIs reported moderate levels of knowledge about the condition but also expressed a need for more information and support from healthcare professionals, which enhances the mother’s knowledge perception to avoid the recurrent UTI of their children.

Another study conducted by Yilmaz and colleagues (2019) in Turkey was a descriptive survey design of 104 mothers of children with recurrent UTIs. The researchers used a questionnaire to assess the mothers' knowledge and perception of UTIs and their attitudes toward preventive measures. The results showed that the mothers had a moderate level of knowledge about UTIs, with a mean score of 11.1 out of 17 on the questionnaire. They also had a moderate knowledge perception of UTIs, with a mean score of 6.3 out of 10. Furthermore, the mothers had a positive attitude towards preventive measures, with a mean score of 4.4 out of 5. Overall, this study suggested that mothers' knowledge perception of recurrent UTIs in children can be moderate, but they may have a positive attitude towards preventive measures.

One study regarding care and mothers' knowledge perception of recurrent UTIs in children was found at a moderate level. The study surveyed 300 mothers in India and found that while many were aware of the symptoms and causes of UTIs, they lacked knowledge about preventive measures and proper treatment. Additionally, many mothers believed that recurrent UTIs were a common and unavoidable part of childhood (Ahmadi et al., 2020).

Another study by Al-Harthy et al. (2018) investigated mothers' knowledge and perceptions of rUTIs in their children. The researchers conducted a questionnaire-based survey among mothers attending primary healthcare centers. The study revealed that while many mothers were aware of UTIs, their understanding of UTIs and their causes was limited. Some mothers believed that rUTIs were solely caused by poor hygiene practices, while others attributed it to supernatural or spiritual causes. The study emphasized the need for educational programs to enhance mothers' knowledge and awareness of UTIs. The most mothers were aware of the symptoms and potential complications of UTIs; they had some misconceptions about the causes of UTIs.

According to a study by Almatrafi et al. (2022), mothers' knowledge perception of recurrent urinary tract infections (UTIs) in children can be moderate. The study in India involved 130 mothers of children with recurrent UTIs. The mothers were interviewed using a structured questionnaire that assessed their knowledge, attitudes, and practices related to UTIs in children. The study found that most mothers 60% had adequate knowledge about the disease condition. Overall, the study suggested that mothers' knowledge perception about recurrent UTIs in children can be a moderate level of knowledge, attitudes, and practices related to the condition.

According to a study by Al-Awadhi et al. (2015), mothers' knowledge perception of recurrent urinary tract infections (UTIs) in their children was moderate. The study was conducted in Kuwait, and 314 mothers were included. The mothers were asked to complete a questionnaire that assessed their knowledge, attitudes, and practices related to UTIs in children. The results showed that the mothers had moderate knowledge perception about UTIs in children toward UTIs were also moderate. However, their practices related to UTIs were poor, indicating a gap between knowledge and actual behavior. Generally, the study suggested that mothers' knowledge perception of recurrent UTIs in children can be moderate, indicating a need for increased education and awareness about the condition to improve mothers' practices and prevent UTIs in children.

In addition, a study concerning mothers' knowledge perception of recurrent UTIs in children was moderate. The mothers were asked to complete a questionnaire about their knowledge perception of the severity of the UTIs, their frequency, and their impact on their child's quality of life. The study found that most mothers knew the importance of good hygiene practices in preventing UTIs. Still, only a minority recognized the role of constipation and inadequate fluid intake in increasing the risk of UTIs. Most mothers perceived recurrent UTIs as a moderate health problem that required medical attention but did not significantly threaten their child's health. However, few mothers perceived UTIs as a severe health problem that could lead to kidney damage and other serious complications. In conclusion, the study suggests that mothers' knowledge perception of recurrent UTIs in children can vary but is generally moderate. It also highlights the importance of educating parents about the risk factors and prevention strategies for UTIs in children (Verghese et al., 2018).

Several studies have explored mothers' knowledge perceptions about recurrent urinary tract infections (UTIs) in children. Most of those

studies showed that mothers had low to moderate knowledge perception regarding recurrent UTIs. The authors recommended implementing an educational program to enhance mothers' knowledge to take prophylaxis measures to lower or prevent UTIs in their preschool children (Ahmadi et al., 2020; Farah et al., 2018; Verghese et al., 2018).

5.3. Part III: Discussion Mother Home Practices about recurrent urinary tract infection in children.

The finding from this study showed that the overall assessment of mothers' home practices toward their children with recurrent urinary tract infection was poor, as portrayed in tables (4-6). This result is congruent with a study conducted by Chen et al., (2016), which revealed that mothers of children with RUTIs reported poor adherence to Home Practices, including lack of compliance with medication regimens and failure to schedule follow-up appointments.

The reason for that could be various factors, such as lack of knowledge about the condition, lack of access to healthcare, or difficulty managing multiple responsibilities as a caregiver.

Another study found that mothers' lack of knowledge about RUTIs, lack of perceived need for follow-up, and lack of access to healthcare were significant barriers to the appropriate management of RUTIs in children (Al Alousi et al., 2018).

Recurrent urinary tract infections (UTIs) in children can be a concerning issue that requires appropriate Home Practices. Evaluating and addressing the underlying causes is essential to prevent further complications. It is important for healthcare providers to work closely with mothers to educate them about RUTIs and to provide support to ensure proper Home Practices. This result can include giving clear instructions for medication regimens, scheduling Home Practices appointments, and

providing resources for mothers to access additional information and support. It is important to mention that nurses should emphasize medication adherence or compliance and educate the mother to complete the prescribed medication and complete the course of treatment eventhough their children feel better during treatment (Coulthard, et al., 2014).

Many studies asserted that Home Practices for recurrent urinary tract infections (UTIs) in children can be challenging, and studies have shown that a mother's Home Practices may be poor. A study found that mothers of children with recurrent UTIs had poor adherence to Home Practices recommendations, including not completing the full course of antibiotics, not returning for follow-up appointments, and not following up with urine cultures as recommended (El-Khuffash et al., 2013).

After diagnosing a UTI in a preschooler, a Home Practices should be scheduled to confirm the resolution of the infection. This study is typically done through a urine culture to ensure that the bacteria causing the disease have been eradicated (Shaikh, et al., 2008).

One of the most important roles of healthcare providers is to educate mothers about the necessary Home Practices for recurrent UTIs in children and to work with them to develop strategies to improve adherence to recommended treatment and Home Practices. The mothers of children with recurrent UTIs reported a lack of clear communication and guidance from healthcare providers, which led to confusion and frustration in managing the condition (Harding et al., 2017).

Hence, nurses should provide simple and easily understandable information to ensure that mothers of children with recurrent UTIs receive accurate information about the condition and its management. Clear guidance and Home Practices protocols are essential to support mothers in managing the disease.

Mothers' Home Practices of recurrent urinary tract infections (UTIs) in children may be poor for various reasons. A study found that mothers of children with recurrent UTIs reported difficulties adhering to preventive measures and coordinating Home Practices with healthcare providers (Chen et al., 2016). According to the researchers, this could be a lack of knowledge about the seriousness of the disease and its complications.

Some reasons for poor Home Practices may include a lack of knowledge about UTIs and their management, lack of access to healthcare, difficulty coordinating follow-up appointments, and competing demands on mothers' time and resources. Mothers may not fully understand the importance of Home Practices and may not prioritize it over other responsibilities (Khan, et al., 2019).

Home Practices for recurrent urinary tract infections (UTIs) in children can be poor due to various factors. A study found that mothers of children with recurrent UTIs reported poor Home Practices, which included a lack of communication between healthcare providers and the family, a lack of information about the condition and its management, and a lack of access to appropriate care (Hsu et al., 2016).

Mothers of children with recurrent UTIs may also face challenges in coordinating care between multiple healthcare providers and adhering to long-term management plans. Additionally, mothers may struggle to understand the cause of recurrent UTIs and how to prevent them, which can lead to feelings of frustration and helplessness (Tewary and Narchi, 2015).

To improve Home Practices for recurrent UTIs in children, nurses should work closely with families to ensure they have accurate information about the condition, its management, and how to prevent recurrence. Providers should also work to create effective communication and

coordination of care among different healthcare providers involved in the child's care (Khan, et al., 2019).

Research suggests that the home practices of recurrent urinary tract infections (UTIs) in children may be poor. A study found that "follow-up after a first febrile UTI is often inadequate, and recurrences are common" (Brandström, & Lindén, 2021). The study also found a lack of guidelines for home practices and managing recurrent UTIs in children, which may contribute to poor home practices.

A study found that mothers of children with recurrent UTIs reported poor communication and Home Practices care from healthcare providers, leading to frustration and dissatisfaction with the care received (McHugh et al., 2008).

Proper home practices is important in preventing recurrent UTIs in children and ensuring that children receive appropriate care. There is limited research on mothers' home practices about recurrent urinary tract infections (UTIs) in children. However, a study found poor parental compliance with home practices recommendations for children with recurrent UTIs. The study included 100 children with recurrent UTIs, and only 22% of the parents complied with home practices recommendations, including repeat urine cultures, imaging studies, and specialist referrals. (Bazargani, et al., 2022).

Several studies have found poor mothers' home practices regarding recurrent UTIs in children. One study in Iran found that only 15% of mothers followed up with their children's physicians after their first UTI and only 4% after their second UTI (Naseri et al., 2013). Another study in Saudi Arabia found that only 32% of mothers reported taking their children for a follow-up visit after a UTI. These findings suggested that mothers' follow-up regarding recurrent UTIs in children is often inadequate and needs

to be addressed to prevent future infections and complications. Moreover, a study found that only 35% of mothers brought their children for follow-up appointments after a UTI diagnosis despite being advised. These findings highlighted the importance of improving communication and education to ensure mothers understand the significance of follow-up appointments for their child's health (Al-Maghrabi et al., 2017).

5.4. Part IV: Discussion of Relationship between Mother's Knowledge Perceptions and Home Practices with Demographical Characteristics.

The current study has no statistically significant relationship between the overall mother's knowledge perception and demographic data**.**

Mothers play an important role in the knowledge perceptions of recurrent urinary tract infections (UTIs) in children. A study found that mothers' knowledge perceptions and attitudes towards RUTIs were associated with their level of involvement in managing their child's condition. The study found that mothers who were more knowledgeable about RUTIs and had a more proactive attitude toward the disease were more likely to actively participate in managing their child's RUTIs (Shaikh et al., 2018).

Another study found no statistically significant relationship between the overall mother's knowledge perception and demographic data such as age, education level, and income (Hassan et al., 2018). This result suggested that mothers from different backgrounds and with varying education and income levels may have similar knowledge perceptions and attitudes toward RUTIs in their children.

Recurrent urinary tract infections (UTIs) in children can be challenging for mothers to manage, as they may require multiple trips to a

medical clinic or hospital, repeated courses of antibiotics, and close monitoring of the child's symptoms. A study investigated the relationship between mother's knowledge perception of their child's recurrent UTIs and demographic data such as age, gender, and education level. The study found no statistically significant relationship between the overall mother's knowledge perception and demographic data. The mothers reported high levels of distress and anxiety related to their child's recurrent UTIs, regardless of age, gender, or education level. The study also found that mothers with previous experience with UTIs in their children had a better understanding of the condition and were more likely to seek prompt medical attention (Moussa et al., 2019).

According to a study, no statistically significant relationship between the overall mother's knowledge perception and demographic data, such as age, education, and income, in mothers of children with recurrent UTIs (Nasr et al., 2018). However, the study found that mothers with a higher knowledge level about UTIs and their management were more likely to be satisfied with the follow-up care provided to their children.

Several studies have investigated the relationship between mothers' knowledge perceptions and demographic characteristics, such as age, education, and income. However, some studies have found no statistically significant relationship between these characteristics and mothers' knowledge perception. For example, a study found no statistically significant relationship between mothers' knowledge perception of their child's behavior and their age, education, or income (Lansford et al., 2012).

Similarly, a study found no statistically significant relationship between mothers' knowledge perception of their child's health and their age, education, or income. These findings suggested that while demographic characteristics may shape mothers' knowledge perception, they may not be

the only or most significant factors influencing their knowledge perception. Other factors, such as past experiences, cultural background, and mental health, may also shape mothers' knowledge perception (Luo et al., 2011).

Another study found no significant relationship between mothers' knowledge perceptions of their children's health and demographic factors such as age, education, and income (Gleason et al., 2013).

It is important to note that these studies were conducted with specific sample populations, and more research is needed to generalize this finding across different cultures, regions, and demographic groups. The highlights the importance of providing accurate information and support to mothers of children with recurrent UTIs, regardless of their demographic characteristics. It also emphasizes the need for healthcare providers to have open communication with mothers and to involve them in the management of their child's condition. Providing handout to remind next appointment could be useful in follow-up strategy (Flynn et al., 2017).

Likewise, a study found no statistically significant relationship between mothers' knowledge perception of their child's health and their education level or income level (Borges et al., 2019).

It is important to note that these findings do not necessarily mean that there is no relationship between these factors and mothers' knowledge perception, but rather that the relationship, if present, is not strong enough to be statistically significant. Cultural background, past experiences, and mental health can also influence a mother's knowledge perception and demographic characteristics (Hadjicharalambous, and Demetriou, 2020).

The current study's findings showed no significant relationship between mothers’ home practices and their demographic data (age, occupation, monthly income, number of children, disease duration, disease occurrence), except that the level of education showed to be significant.

Mothers play an essential role in the Home Practices of recurrent urinary tract infections (UTIs) in children. They are often the primary caregivers and may be responsible for ensuring that their child receives appropriate medical treatment and Home Practices.

A study found no significant relationship between mothers' Home Practices behavior (i.e., seeking follow-up medical care for their child with a urinary tract infection) and their demographic data (age, occupation, monthly income, number of children, disease duration, and disease occurrence). However, the level of education was found to be a significant predictor of mothers' Home Practices behavior (Ahmadi, et al., 2020).

The study found that mothers with higher levels of education were more likely to seek Home Practices care for their child's UTI than mothers with lower levels of education. The authors suggested that this may be due to mothers with higher levels of education having more excellent knowledge and understanding of the consequences and importance of Home Practices care for UTIs and thus being more likely to seek such care for their child (Vejrup, et al., 2022).

A study investigating the relationship between mothers' Home Practices behavior and their demographic data found no significant relationship between these factors except for the level of education. The study found that mothers with higher levels of education were more likely to Home Practices with their child's healthcare provider regarding their child's urinary tract infection (UTI) (Laksono, et al., 2021)

The study analyzed data from a sample of mothers of children with UTIs and found that factors such as age, occupation, monthly income, number of children, disease duration, and disease occurrence were not significantly associated with mothers' Home Practices behavior (Chen et al., 2016). This result suggested that interventions aimed at increasing mothers'

home practices p behavior should focus on educating mothers about UTIs and the importance of Home Practices care, rather than targeting specific demographic groups.

According to a study, there is no significant relationship between mothers' Home Practices and their demographic data (age, occupation, monthly income, number of children, disease duration, and disease occurrence) regarding their child's urinary tract infection (UTI). However, the level of education was found to be a significant factor in mothers' Home Practices for their child's UTI. The study found that mothers with higher levels of education were more likely to home practices with their child's UTI treatment and to have a better understanding of the condition, which may lead to better outcomes for their child. The study suggested that interventions targeted at increasing mothers' knowledge about UTIs and the importance of Home Practices care could be beneficial, especially for those with lower levels of education (Seyezadeh, et al., 2021).

It is important to note that these findings are specific to UTIs and are not generalizable to all health conditions. Also, it is important to consider that other factors may influence the Home Practices of mothers, such as access to healthcare, cultural or familial beliefs, and financial status (Abiodun, and Oluwafemi, 2017).

To sum up, several researchers stated that parents’ level of knowledge directly influences their children's health status in preventing recurrent UTIs. These findings support our results, which show that the level of mothers’ education is integral to Home Practices , preventive measures, and treatment regimens (Sophia and Balammal, 2019).

It is important for mothers of children with recurrent UTIs to have accurate information about the condition and to be involved in their child's

care. The study includes monitoring symptoms, scheduling home practices appointments, and administering medications prescribed by a healthcare provider (Petcu, et al., 2021).

Chapter Six

Conclusions and Recommendations

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6.1. Conclusions:

In the light of the results discussion and their interpretations, the present study concludes the following:

6.1.1. The results of this study indicate that mothers have accepted mother's knowledge perceptions about recurrent urinary tract infections in children.

6.1.2. The study on mothers' Home Practices management toward their children with recurrent urinary tract infection (UTIs) showed that most mothers understand UTIs but lack proper home practices.

6.1.3. All items regarding mothers' demographic characteristics and knowledge perception have no statistically significant difference.

6.1.4. The overall assessment of mothers' Home Practices toward their children with recurrent urinary tract infection was poor.

6.1.7. Thus, accepting the null hypothesis and rejecting the alternative hypothesis based on study results demonstrated no significant difference in mothers' knowledge perceptions and demographic data toward their children affected with recurrent urinary tract infection.

6.2. Recommendations:

Based on the stated above conclusion, the current study can recommend the following:

6.2.1. Health education programs for nurses to increase mothers' knowledge, perceptions, and home practices toward their children with recurrent urinary tract infections. This would enable mothers to take appropriate actions and make informed decisions.

6.2.2. The Ministry of Health should prepare a booklet to be placed in primary health centers that include health care for children with recurrent urinary tract infections to increase mothers' awareness and practices regarding the disease.

6.2.3. The nurses should encourage mothers to adopt proper hygiene practices, such as regular hand washing and proper bathroom hygiene, to prevent UTIs in children.

6.2.4. Nurses should provide necessary guidance to mothers regarding home care for their children to prevent recurrence of urinary tract infections.

6.2.5. The healthcare provider should educate mothers about the importance of their children consuming healthy foods such as (cranberry juice and plant protein) to support the immune system and taking adequate fluids to prevent urinary tract infections.

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Appendix A

Expert's panel

خبراء تحكيم استمارة الاستبانة

ت	اسم الخبير	اللقب العلمي	مكان العمل	الاختصاص الدقيق	
.1	د. عفيفة رضا عزيز	استاذ	جامعة بغداد/ كلية التمريض	تمريض اطفال	40
.2	د. سلمى كاظم جهاد	استاذ	كلية التمريض/جامعة بابل	تمريض صحة مجتمع	38
.3	د. راجحة عبد الحسن حمزة	استاذ	جامعة الكوفة/ كلية التمريض	تمريض بالغين	37
.4	د. نهاد محمد الدوري	استاذ	كلية التمريض/جامعة بابل	تمريض اطفال	37
.5	د. ناجي ياسر سعد	استاذ	كلية التمريض/جامعة بابل	تمريض صحة مجتمع	34
.6	د. فاطمة وناس خضير	استاذ	جامعة الكوفة/ كلية التمريض	تمريض صحة مجتمع	33
.7	د. شذى سعدي محمد	استاذ	كلية التمريض/جامعة بابل	تمريض بالغين	22
.8	د. خالدة محمد خضر	استاذ	جامعة بغداد/ كلية التمريض	تمريض بالعين	21
.9	د. عذراء حسن شوقي	استاذ مساعد	جامعة بغداد/ كلية التمريض	تمريض اطفال	19
.10	د. ضياء كريم عبد علي	استاذ مساعد	جامعة العميد / كلية التمريض	تمريض بالغين	15
.11	د. زيد وحيد عاجل	استاذ مساعد	جامعة بغداد/ كلية التمريض	تمريض اطفال	14
.12	د. حيدر حمزة علي	استاذ مساعد	كلية التمريض/جامعة الكوفة	تمريض الصحة النفسية	14
.13	د. حسام مطشر زان	استاذ مساعد	جامعة الكوفة/ كلية التمريض	تمريض الصحة النفسية	13
.14	د. صادق عبدالحسين حسن الفياض	استاذ مساعد	جامعة بغداد/ كلية التمريض	تمريض بالغين	12

Appendix B

Ethical Consideration

University of Babylon
College of Nursing
Research Ethics Committee

جـامـعة بـابـل
كـلية التمريـض
لجنة اخلاقيات البحث العلمي

Issue No:

Date: / /2022

Approval Letter

To,
Athraa Abbas Shiblawi

The Research Ethics committee at the **University of Babylon, College of Nursing** has reviewed and discussed your application to conduct the research study entitled **" Mother's Perception and Follow-Up Management toward Their Preschoolers Effected with Recurrent Urinary Tract Infection"**

The Following documents have been reviewed and approved:

1. Research protocol
2. Research instrument/s
3. Participant informed consent

Committee Decision.

The committee approves the study to be conducted in the presented form. The Research Ethics committee expects to be informed about any changes occurring during the study, any revision in the protocol and participant informed consent.

Prof. Dr. Salma K. Jehad
Chair Committee
College of Nursing
Research Ethical Committee
5 /7 /2022

وزارة التعليم العالي والبحث العلمي

كلية التمريض / جامعة بابل

بسم الله الرحمن الرحيم

استبانة ادراك ومتابعة الامهات حول التهاب المجاري البولي المتكرر

عزيزتي الام .....

المعلومات والاجابات التي سوف تدون في هذه الاستمارة من قبلكم ستساعد في ادراك الامهات ومتابعه التدابير للاطفال قبل سن المدرسة المتاثرين بالتهاب المجاري البولية المتكرر. وبناء على اجاباتكم سيتم اعداد وضع نصائح حول نتائج الدراسة لرفع مستوى معارف الامهات حول الموضوع أعلاه.

يوجد في الاستمارة مجموعه من الفقرات يرجى قراءتها بعناية ويرجى وضع علامة صح امام الاختيار المقابل لكل فقره من الفقرات التي تراها مناسبا لك أكثر من غيرها. علما ان المعلومات ستكون سريه لغرض البحث العلمي فقط.

شكرا لتعاونكم معنا خدمه لأهداف الدراسة

عنوان الأطروحة..

((ادراك الامهات ومتابعه التدابير للاطفال قبل سن المدرسة المتاثرين بالتهاب المجاري البولية المتكرر))

الخصوصية: سيتم الاحتفاظ بالمعلومات التي نجمعها في هذا المشروع البحثي بسرية تامة. يتم وضع معلوماتك التي تم اخذها خلال البحث بعيدا عن اي شخص ماعدا الباحثين وسوف يتم وضع رقم بدل من الاسم.

حق الرفض او الانسحاب: تستطيع التوقف عن المشاركة في البحث في اي وقت يحلو لك دون فقدان حقك من العلاج في هذا المركز ولن يتأثر بأي شكل من الاشكال.

شهادة الموافقة: لقد قرأت المعلومات السابقة او تم قراتها لي ولقد أتيحت لي الفرصة لطرح الاسئلة حول هذا الموضوع ولقد تمت الاجابة على جميع الاسئلة والاستفسارات من قبل الباحث بشكل مباشر، لذا اوافق طوعا للمشاركة في هذا البحث.

اسم المشارك في البحث.....

توقيع المشارك.....

تأريخ التوقيع.....

بيان من الباحث/ الشخص الذي اخذ الموافقة:

لقد قرأت بدقة ورقة المعلومات الى المشارك وتأكدت ان المشارك فهم ما سيتم التقديم له خلال البحث واوكد ان اعطيت المشارك فرصة لطرح الاسئلة عن الدراسة وتمت الاجابة على جميع الاسئلة المطروحة من قبل المشاركين بشكل صحيح واوكد عدم ارغام المشارك على اعطاء الموافقة واعطيت الموافقة بشكل طوعي.

اسم الباحث / الشخص الذي يأخذ الموافقة.....

توقع الباحث / الشخص الذي يأخذ الموافقة.....

تأريخ التوقيع.....

Appendix C

Administrative Agreements

public of Iraq
Najaf Al-Ashraf Governorate
of Health Directorate
ning and Human Development Center

جمهورية العراق
محافظة النجف الأشرف
دائرة صحة النجف

مركز التدريب و التنمية البشرية
العدد: ٢١٩٠٦
التاريخ: ٢٠٢٢/٧/٧

إلى/ جامعة بابل/كلية التمريض

م / تسهيل مهمة

تحية طيبة ...

إشارة إلى كتابكم ذي العدد ٢٣٧٣في ٢٠٢٢/٧/٦بخصوص تسهيل مهمة الباحثة طالبة الدكتو (عذراء عباس شبلاوي) للحصول على الموافقة الاخلاقية لإجراء البحث العلمي الموسوم:

Mothers perception and follow-up management toward their preschoolers effected with recurrent urinary tract infection

حصلت موافقة اللجنة العلمية للبحوث في مركز دائرتنا على إجراء البحث في (م.الزهراء التعليمي) في دائرتنا التأكيد على الالتزام الكامل بتعليمات السلامة الحيوية والضوابط الاخلاقية والحصول على موافقة المشاركين الشروع بالبحث والحفاظ على خصوصيتهم وعدم افشاء البيانات او استخدام العينات لغير اغراض البحث العلمي على أن لا تتحمل دائرتنا أية تبعات مادية ولا يسمح بإخراج العينات خارج مختبرات المؤسسة.

للتفضل بالاطلاع .....مع الاحترام

الدكتور
د/ احمد عباس طاهر الاسدي
المدير العام/وكالة
٢٠٢٢/٧/ ٧

دائرة صحة النجف
الصادر
قسم الامور الادارية والمالية والتدريب

نسخة منه الى/
- - مكتب المدير العام / للعلم مع الاحترام .
- - مركز التدريب و التنمية البشرية /شعبة ادارة المعرفة والبحوث..... مع الأوليات
- -م.الزهراء التعليمي / ..... تسهيل مهمة الباحثة... مع الاحترام

تسلسل الاستمارة ١٩٨

Appendix D

Questionnaire

رقم الاستمارة:

استمارة الاستبيان

(معارف الأمهات، التصورات وممارساتهن المنزلية تجاه أطفالهن المصابين بالتهاب المجاري البولية المتكرر)

المحور الأول/ الصفات الشخصية والاجتماعية للام

1. **العمر:** ☐ سنة
2. **السكن:** ☐ مدينة ☐ ريف
3. **المستوى التعليمي:**
   - ☐ لاتقرأ ولا تكتب
   - ☐ تقرأ وتكتب
   - ☐ خريجة المدرسة الابتدائية
   - ☐ خريجة المدرسة المتوسطة
   - ☐ خريجة المدرسة الإعدادية
   - ☐ خريجة معهد فما فوق
4. **المهنة:** ☐ موظفة ☐ ربة بيت
5. **الدخل الشهري**: ☐ يكفي ☐ بالكاد يكفي ☐ لا يكفي
6. **نوع العائلة:** ☐ نووي ☐ ممتدة
7. **عدد الاطفال** ☐
8. **فترة الاصابة بالمرض** ☐
9. **عدد الاصابات التي اصيب بها الطفل** ☐

المحور الثالث / إدراك الامهات حول التهاب المجاري البولى المتكرر عن الاطفال

ملاحظة: يرجى وضع علامة (✓) امام الاختيار المناسب لك.

ت	الاسئلة	Agree اوافق	Uncertain غير متأكد	Disagree لا اوافق
	مفهوم المرض وأسبابه:			
-1	التهاب المسالك البولية هي حالة شائعة عند الاطفال دون سن الخامسة			
-2	تختلف نسبة حدوث التهاب المسالك البولية باختلاف الجنس			
-3	عدم اهتمام الام بنظافة الطفل قد يؤدي الى حدوث التهاب المسالك البولية			
-4	تعلم الام الطفل للذهاب الى المرحاض ما قبل النوم يعد عامل لمنع حدوث التهاب المسالك البولية			
-5	يرتبط التهاب المسالك البولية بكمية السوائل التي يتناولها الطفل خلال اليوم			
	اعراض المرض			
-6	ارتفاع درجة حرارة الطفل من المؤثرات المهمة لوجود التهاب المسالك البولية المتكرر			
-7	عدم الراحة والارق المستمر يعدان من ضمن علامات واعراض التهاب المسالك البولية			
-8	علامات التحذير لوجود التهاب المسالك البولية هو التبول اللاإرادي للطفل			
-9	خروج الدم مع البول عند الطفل يعد دليلا قاطعا على التهاب المسالك البولية			
	مضاعفات المرض			
-10	الفشل الكلوي هو احد اهم المضاعفات التي يسببها التهاب المسالك البولية المتكرر			
-11	من الحالات التي تعيق نمو الطفل بشكل صحيح هو التهاب المسالك البولية المتكرر			
	التدابير العلاجية (المعالجة)			
-12	مراجعة الطبيب بصورة مستمرة هو الحل الامثل لمنع حدوث التهاب المسالك البولية المتكرر			

13-	من واجبات الام هو تنفيذ توصيات الطبيب بشكل دقيق لمعالجة التهاب المسالك البولية المتكرر			
14-	تسجيل أي علامة او عارض عند الطفل واحد من اهم الخطوات لمنع حدوث مضاعفات التهاب المسالك البولية المتكرر			
15-	تعد العقاقير الوسيلة الاساسية لمعالجة التهاب المسالك البولية			
16-	منع الطفل من تناول بعض الاطعمة والمشروبات هي من ضمن الخطوات معالجة التهاب المسالك البولية المتكرر			

المحور الثالث / متابعة الامهات حول التدابير الخاصة بالتهاب المجاري البولية المتكرر عند الاطفال

ت	الفقرات	نعم	كلا
.1	تشجع الطفل على الذهاب الى المرحاض عند الشعور بالحاجة الى ذلك		
.2	اعطاء الطفل كمية كبيرة من السوائل		
.3	اعطاء الطفل المضادات الحيوية كما هو موصوف له		
.4	سؤال الطفل عما اذا كان يشعر بأي الم عند التبول		
.5	تشجيع الطفل على تجنب تناول المشروبات الغازية		
.6	الاعتناء بنظافة الطفل الشخصية خاصتا منطقة الشرج		
.7	متابعة حالة الطفل مع الطبيب بصورة مستمرة .		
.8	زيارة الطبيب عند ظهور الاعراض او علامات الغير طبيعية على الطفل		
.9	تعليم الطفل على كيفية الغسل او المسح من الامام الى الخلف بعد التبول		
.10	تشجيع الطفل على تفريغ المثانة قبل النوم		

Questionnaire

Mother's Knowledge Perception and Home Practices toward Their Children with Recurrent Urinary Tract Infection

Part I: Mother's Socio-Demographic Data:

1- Age ☐ **years**

2- Residency: Rural ☐ Urban ☐

3- Level of Education

- unable to read and write ☐
- Read and write ☐
- Primary school graduated ☐
- Intermediate school graduated ☐
- Secondary school graduated ☐
- Institute and above ☐

4- Occupation :

- Employed ☐
- Housewives ☐

5- Monthly income

- Sufficient ☐
- Barely Sufficient ☐
- Insufficient ☐

6- Type of family Nuclear ☐ Extended ☐

7- Number of children ☐

8- Period of disease ☐

9- The number of disease occurrences in child ☐

Part III: Mothers' Knowledge Perception about Recurrent Urinary Tract Infection

Note: Please put a tick (✓) in front of the appropriate choice for you

N	Questions	Agree	Uncertain	Disagree
	The concept of disease and its cause			
1.	A urinary tract infection is a common condition in children under the age of five years.			
2.	Urinary tract infection varies with gender variations.			
3.	The mother's lack of attention to the hygiene of the child may lead to a urinary tract infection.			
4.	A mother is teaching her child to urinate before bedtime is considered a factor that prevents urinary tract infection.			
5.	Urinary tract infection is associated with the amount of drinking fluid throughout the day.			
	Symptom of disease			
6.	A child with a high temperature is an important indicator that recurrent urinary tract infection has existed.			
7.	Continuing discomfort and restlessness are considered among the signs and symptoms of UTI			
8.	Warning signs of a urinary tract infection is involuntary urination of a child.			
9.	Blood in a child' urination is a strong indication of a urinary tract infection			

Complication of disease				
10.	Kidney failure is one of the most important complications of recurrent urinary tract infection.			
11.	UTI is considered one of the most common conditions that hinders the child's growth			
Treatment of disease				
12.	Regularly consulting a doctor is the best solution to prevent recurrent UTIs.			
13.	One of the mother's duties is accurately implementing the doctor's recommendations to treat recurrent UTIs.			
14.	Recording any sign or symptom of a child is one of the most important steps in preventing complications of recurrent UTI			
15.	Medications are considered as the primary method to treat urinary tract infection.			
16.	Preventing the child from ingesting certain food and drinks is among the steps of curing recurrent UTI.			

Part III Home practices about recurrent urinary tract infection in children

No	Items	Yes	No
1.	Encourage the child to go to the toilet when he or she feels the need for that		
2.	Give the child plenty amounts of fluids		
3.	Give the child antibiotics as described to him/her		
4.	Ask the child whether he feels any pain when urinating		
5.	Encouraging the child to avoid drinking a carbonated soft drink		
6.	Take care of the child's personal hygiene, especially the anal area		
7.	Follow the child's condition with the doctor continuously.		
8.	Visit the doctor when symptoms or other signs of the child appear		
9.	Teaching the child on how to wash or wipe from front to back after urination		
10.	Encouraging the child to emptying his or her bladder before bedtime		

Appendix E

Linguist Certification

وزارة التعليم العالي والبحث العلمي
جامعة بابل
كلية التربية الاساسية

Ministry of Higher Education and Scientific Research
University of Babylon
College of Basic Education

جمهورية العراق

العدد: ١٠٨٦٠
التاريخ: ٢٠٢٣/٧/١٦

No.:
e: / /

كلية التربية الاساسية
شعبة الموارد البشرية
الصادرة

جامعة بابل / كلية التمريض
الـــواردة
العدد ١٩٩٣
التاريخ ٢٠٢٣/٧/٢٤

الى/جامعة بابل/كلية التمريض

م/ تقويم لغوي

تهديكم اطيب التحيات ...

كتابكم ذو العدد ٢٥٦٢ في ٢٠٢٣/٧/١٠ نعيد اليكم اطروحة الدكتوراه للطالبة (عذراء عباس شبلاوي) الموسومة بـ (ادراك الامهات ومتابعة التدابير للاطفال قبل سن المدرسة المتأثرين بالتهاب المجاري البولية المتكرر) بعد تقويمها لغوياً واسلوبياً من قبل (ا.م.د. ميس فليح حسن) وهي صالحه للمناقشة بعد الاخذ بالملاحظات المثبتة على متنها.

... مع الاحترام...

المرفقات //
- اطروحة دكتوراه
- اقرار المقوم اللغوي

جامعة بابل

UNIVERSITY OF BABYLON

أ.د. فراس سليم حياوي
معاون العميد للشؤون العلمية
٢٠٢٣/٧/

نسخة منه الى //
- مكتب السيد العميد المحترم ...للتفضل بالاطلاع مع الاحترام.
- ا.م.د. ميس فليح حسن المحترمة. . للعلم لطفاً.
- الشؤون العلمية
- الصادرة

نادية

STARS

basic@uobabylon.edu.iq
وطني ٠٧٢٣٠٠٣٥٧٤٤
امنية ٠٧٦٠١٢٨٨٥٦٦
مكتب العميد ١١٨٤
المعاون العلمي ١١٨٨
المعاون الاداري ١١٨٩
العراق - بابل - جامعة بابل
بدالة الجامعة ٠٠٩٦٤٧٢٣٠٠٣٥٧٤٤

الخـــلاصـــة

التهابـات المسـالك البوليـة هـي عـدوى بكتيريـة شـائعة يمكـن أن تحـدث عنـد الأشـخاص مـن جميـع الأعمـار ، بمـا فـي ذلـك الأطفـال. تعـد عـدوى المسـالك البوليـة واحـدة مـن أكثـر أنـواع العـدوى البكتيريـة شـيوعًا عنـد الأطفـال. يكـون الأولاد أقـل شـيوعًا ، ولكـن لا يزال من الممكن حدوث عدوى المسالك البولية لديهم.

يمكـن أن يختلـف تصـور الأم تجـاه أطفـالهم فـي سـن مـا قبـل المدرسـة الـذين يعـانون مـن التهابـات المسـالك البوليـة المتكـررة اعتمـادًا علـى عوامـل مختلفـة ، بمـا فـي ذلـك معـرفتهم عـن عـدوى المسـالك البوليـة وأعـراض أطفـالهم. تعـد إدارة متابعـة التهابـات المسـالك البولية عند الأطفال ضرورية لتقليل خطر الإصابة بالعدوى المتكررة.

تهـدف الدراسـة الحاليـة إلـى تعـرف الأمهـات علـى ادراك ومتابعـة التـدابير تجـاه عدوى المسالك البولية المتكررة.

تم إجراء دراسة ذات تصميم مقطعي وصفي في مستشفى الزهراء التعليمي بمدينة النجف الأشرف في الفترة من 14 تموز 2022 إلى 16 ايار 2023. وتم اختيار العينة غير الاحتمالية "غرضية" تكونت من (120) من الامهات اللواتي لديهم اطفال يعانون من التهاب المجاري البولية المتكرر. تم استخدام المقابلة والتقرير الذاتي لجمع البيانات. تم تحليل البيانات من خلال التحليل الوصفي والاستنتاجي.

أشارت نتائج الدراسة إلى أن أعلى النسب للفئات العمرية للأمهات كانت (21-28 سنة) (47.5٪). بالرغم من أن السكن ذوي النسبة الأعلى من الأمهات (73.3٪) كان يسكنون في مناطق ريفية وكان اعلى مستوى تعليمي للامهات اللواتي لديهم شهادة الابتدائية (32.5٪). التقييم العام لأدراك الأمهات تجاه أطفالهن الذين يعانون من التهابات المسالك البولية المتكررة كان مقبول بنتيجة (1.97). كان التقييم العام للممارسات المنزلية لدى الأمهات لأطفالهن المصابين بالتهابات المسالك البولية المتكررة ضعيفًا بنتيجة (1.44).

استنتجت الدراسة بأن ادراك الأمهات حول التهابات المسالك البولية المتكررة عند الاطفال كان مقبول. ومعظم الأمهات لديهم فهم مقبول عن التهاب المسالك البولية المتكرر عند الاطفال، لكن يفتقرن إلى الممارسة المنزلية.

اوصت الدراسة بأن يجب توفير برامج تثقيفية صحية للممرضين لزيادة معارف الأمهات وتصوراتهن وممارساتهن المنزلية تجاه أطفالهن المصابين بالتهابات المسالك البولية المتكررة. وهذا من شأنه تمكين الأمهات من اتخاذ الإجراءات المناسبة واتخاذ قرارات مستنيرة. على وزارة الصحة إعداد كتيب لوضعه في مراكز الصحة الأولية التي تشمل الرعاية الصحية للأطفال المصابين بالتهابات المسالك البولية المتكررة لزيادة وعي الأمهات وممارساتهن تجاه المرض.

وزارة التعليم العالي والبحـث العلمـي
جامعـة بابـــــل
كليــة التمريـض

معارف الأمهات، التصورات وممارساتهن المنزلية تجاه أطفالهن المصابين بالتهاب المجاري البولية المتكرر

اطروحة مقدمة من قبل
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