

Effect of Pre-designed Instructions for Mothers of Children with Hypospadias on Their Knowledge, Practices, and Early Postoperative Complications

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Abstract:

Background: Surgical repair for hypospadias is complicated and can present challenges. To minimize the occurrence of these complications, preoperative education of mothers is essential. The **aim** of the present study was to determine the effect of predesigned instructions for mothers of children with hypospadias on their knowledge, practices, and early postoperative complications. **Subjects and method:** This study was conducted at Assiut University Children Hospital's pediatric surgery unit; a quasi-experimental research design was used. This trial involved 60 mothers and their children, who were divided equally (30 mothers and their children in each group); data were collected firstly from the control group and then from the study group. Four tools were used to get the data for this study. **Tool I:** Background information form. **Tool II:** A questionnaire about mothers' knowledge regarding hypospadias. **Tool III:** Observational checklist. **Tool IV:** Postoperative complications sheet. The **results** of this study detected that there was a positive correlation between mothers knowledge and their practices ($r=0.866^{**}$) and there was a negative correlation between mothers' knowledge, practices, and the occurrence of postoperative complications ($r=-0.503^{**}$ and -0.460^{**}), respectively. The researchers **concluded** that the application of predesigned instructions for mothers of children with hypospadias resulted in a significant decrease in the occurrence of postoperative complications. Following the adoption of predesigned instructions, mothers' knowledge and practices in the study group improved compared to the control group. Researchers **recommended** that a multidisciplinary team should create and carry out educational programs for mothers in order to sustain improved postoperative outcomes for children.

Key words: Children, Hypospadias, Knowledge, Mothers, Practices, Predesigned Instructions, Postoperative Complications

Introduction

An ectopic urethral meatus can be located anywhere in the glans, penis shaft, scrotum, or perineum (Cunha et al., 2020 and Arnous et al., 2020). Hypospadias is a congenital anomaly of the male urethra, foreskin, and penis that causes abnormal ventral placement of the urethral opening (Roychoudhury, 2019).

Hypospadias is the most prevalent penile deformity and the second most common congenital condition in male neonates. Its frequency has increased by 11.5% in recent decades (Hockenberry & Wilson, 2018). The literature has documented rising prevalence

rates of 0.25 new instances per 10,000 infants annually, which are likely caused by environmental factors (Kaefer et al., 2023).

There are several ways that hypospadias can manifest, ranging from mild cases with the meatus at the corona (distal) to severe cases with the meatus in the perineum (proximal). In a more recent classification, the urethral meatus site is classified as follows: distal penile hypospadias (first degree) 75%, proximal hypospadias (second degree) 15%, and glanular (third degree) 10%. Additionally, the site may be before and after chordee correction, the prepuce (complete or incomplete), the glans (cleft, incomplete cleft, or flat), the width of the urethral plate, the degree of penile rotation,

and the presence of scrotal transposition (Hadidi, 2022).

The precise causes of hypospadias are still unknown, but a number of theories have been proposed to explain this congenital organ defect. Endocrine disorders, such as inadequate androgen secretion or inadequate response by the target tissues, are one of these theories. Other theories include genetic disorders that may run in a family, maternal age, low birth weight babies and twins, placental insufficiency, and environmental factors like estrogen, molecules, fertilizers, and pesticides (Renaux et al., 2019 and Gaspari et al., 2012).

Surgical procedure selection is mostly influenced by the severity of the defect and the existence of related abnormalities. Ages 6 to 12 months are ideal for surgical repair (Gabra et al., 2024). Based on the severity of the condition and the extent of abnormalities, urethroplasty is the recommended treatment for hypospadias (Wood & Wilcox, 2023).

The primary goal of surgical procedures is to increase boys' capacity to urinate in a straight line while standing (Speedie et al., 2021). Nevertheless, surgical procedures are complex, and problems occur in about 10% of children (Sheng et al., 2018).

Early complications occur from day one to seven days after surgery and include bleeding, wound infection, urinary retention, swelling of the genital area, urethral injury, pain and discomfort, bruising, and fever (Dale et al., 2023). Late complications include urethrocutaneous fistula and excess penile skin, which are common. Neo-urethral stricture, urethral diverticulum, and persistent chordee are uncommon complications, and repair may not be possible until after adolescence, when the penis stops growing (Biers et al., 2020).

A pediatric nurse's duties include keeping an eye on vital signs, encouraging fluid intake to maintain adequate urine output, maintaining the patency of the stent, monitoring intake and output, checking for cloudiness or an unpleasant odor in the urine, alerting the pediatric surgeon to any

abnormalities, and educating parents about the importance of following up to remove dressings after surgery and how to care for children with stents or urinary diversion (WANG et al., 2024).

The mother needs to be informed about the potential risks following surgery because it is common for the penis to enlarge and bruise during the first 24 hours. To help reduce discomfort, the nurse must encourage the mother to dress her child in loose-fitting clothing for the days following surgery. The penis may occasionally be covered with a dressing. For five minutes, apply light pressure to the wound if bleeding occurs. Contact with the surgeon if the bleeding continues or resumes. The child should be bathed once daily and as needed (after bowel movements) for five to ten minutes in plain water (El-Salam et al., 2022). The child may complain of pain or soreness in the abdominal region and penis, and in this condition, analgesic will be prescribed (Leunbach, et al., 2024).

Significance of the study

During our practical training in the pediatric surgery department at Assiut University Children Hospital, the researchers noticed that the number of children with hypospadias was increasing. Most of the time, the children were under the care of their mothers; this makes them predisposed to numerous early complications due to a deficiency of knowledge and insufficient care given by their mothers. Also, mothers are required to instruct about the importance of preoperative knowledge and practices and related effects on reducing postoperative complications. Unfortunately, in Egypt, there is restricted research about mothers care of hypospadias in the pediatric nursing field. Therefore, the purpose of this study was to determine the effect of predesigned instructions for mothers of children with hypospadias on their knowledge, practices, and early postoperative complications.

Aim of the Study

The aim of the present study was to:

Investigate the effect of predesigned instructions for mothers of children with hypospadias on their knowledge, practices, and early postoperative complications.

This aim was achieved through these objectives:

- To evaluate the improvement in mothers' knowledge regarding hypospadias, and postoperative care after receiving predesigned instructions.
- To examine the changes in mothers' practices following the provision of predesigned instructions, with a focus on adherence to recommended postoperative care and early intervention techniques.
- To determine whether predesigned instructions can reduce the occurrence of early postoperative complications in children with hypospadias, by enhancing mothers' knowledge and practices.

Research hypotheses

H1: Mothers of children with hypospadias who received predesigned instructions had a higher level of knowledge and practices than mothers who didn't receive instructions.

H2: Children with hypospadias whose mothers received predesigned instructions had fewer complications than children whose mothers didn't receive instructions.

Subjects and method

Research design:

This study utilized the nonequivalent control group design which is a type of a quasi-experimental design to evaluate the effects of an intervention when random assignment to groups is not feasible.

Setting:

The setting of this study was the pediatric surgical unit of Assiut University Children Hospital which covers children in Upper Egypt from Beni-Suef to Aswan. A pediatric surgery unit contains 7 rooms. Each room contains 8 beds. The unit contains also, educational class, patient examination room,

a nurse supervisor' room, a room for resident doctor and 3 bathrooms. This unit offers preventive, diagnostic, therapeutic, and surgical services, aiming to deliver high-quality healthcare within an ethical framework.

Subjects:

There were sixty mothers and their hypospadias-afflicted children in the convenient sample of this study, which split into two equal groups. The study group, which consisted of thirty mothers and their hypospadias-afflicted children who received preoperative pre-designed instructions, and the control group, which consisted of thirty mothers and their hypospadias-afflicted children who did not receive preoperative pre-designed instructions.

Inclusion Criteria:

- Children' age from birth to six years.
- The children should be free from other associated congenital anomalies.

Sample size:

The necessary sample size for this study was determined based on the calculations outlined by (Thompson, 2012).

The researchers use Steven K. Thompson equation to calculate the sample size, from the next formula:

$$n = \frac{N x p (1 - p)}{[|N - 1x (d^2 \div z^2)| + p (1 - P)]}$$

Where:

n: sample size (?)

N: Population size (71)

Z: Confidence level at 95% (1.96)

d: Error proportion (0.05)

p: Probability (50%)

According to this formula the total sample size was 60 which mean that a minimum of 30 mothers and their children in each group is needed to collect the data of this study. Using this sample size calculation is

important to ensure that the study has enough power to detect a significant effect if one exists. This minimizes the risk of Type II errors

Tools of data collection:

Data was collected for the current study through the following four tools, which were designed by the researchers based on reviewing the necessary literature and previously validated studies by (El-Salam, et al., 2022 and Mohamed, 2019) which were translated into Arabic language and used for both the control and the study groups as the following:

Tool I: Background information form, which included two parts:

Part one: personal and medical data of the studied children, such as age, birth order, degree of hypospadias, and circumcision.

Part two: personal data of the studied mothers, such as age, residence, education, occupation, and consanguineous marriage.

Tool II: A questionnaire to assess mothers' knowledge regarding their children with hypospadias which consisted of (10) open-ended questions related to the definition of hypospadias, common symptoms of hypospadias, common causes of hypospadias, diagnosis of hypospadias, the associated problems with hypospadias, the treatment options for hypospadias, the potential complications of hypospadias surgery, postoperative care for a child with hypospadias, the importance of follow-up appointments after hypospadias surgery, and the psychological or emotional impacts of hypospadias on the child and family.

Scoring system: A complete correct answer was given a score of two, an incomplete correct answer was given a score of one, and a wrong answer or don't know was given a score of zero.

- Poor level of knowledge less than 50% (<10).

- Good level of knowledge = 50%–65% (10-13).

- Excellent level of knowledge more than 65% (>13) (Mohamed, 2019).

Tool III: Observational checklist: It was developed to evaluate mothers' practices regarding diaper care, which included 21 steps.

Scoring system: For practice items, the (done) step was given a score of one, and the (not done) step was given a score of zero.

- Satisfactory practices $\geq 50\%$ (≥ 10).

- Unsatisfactory practices $<50\%$ (<10) (El-Salam et al., 2022).

Tool IV: Postoperative complications sheet, which assesses the occurrence of early postoperative complications immediately (1-7 days) after surgical repair for those children included bleeding, wound infection, urinary retention, swelling of the genital area, urethral injury, pain and discomfort, bruising, and fever.

Method

1. An official permission was obtained from the director of the pediatric surgery unit at Assiut University Children's Hospital to collect the necessary data for this study.

2. Tools of the study were developed by the researchers and were tested for their content validity by 5 experts in both pediatric nursing and pediatric surgery fields, and it was 95%.

3. Tools reliability was done using the alpha Cronbach test, and it was 0.935 for tool I, 0.967 for tool II, 0.957 for tool III, and 0.923 for tool IV.

4. A pilot study was carried out on 10% of mothers and their children (6) to test the clarity and applicability of the sheet and to estimate the time needed to fulfill each sheet, and the necessary modification was done, and the final form was developed, and this sample was excluded from the total sample of the study.

5. Data was collected using the designed tools from the study and control groups.

Field of the work:

Beginning in May 2024 and ending in

October 2024, this study was conducted over a six-month period. Three times per week, the researchers went to the hospital. Data was collected firstly from the control group then from the study group.

Control group:

Data was collected from the control group through two phases: the preparation phase and the evaluation phase.

During the preparation phase:

The researchers introduced themselves to the children's mothers, fulfilling study criteria, and explained the aim of the study. On the day of the surgical operation, the written informed consent was obtained from each mother after a complete description of the purpose and the nature of the study, and then the researchers filled out the background information sheet (tool I, part one and part two) from the children's mother through a structured interview on an individual basis to collect the personal data about the mothers and their children's personal and medical data, which took about 15 minutes.

During evaluation phase:

The knowledge of the mothers was tested using tool II any time after surgery, mothers allowed to answer questions by themselves without any help, for mothers who couldn't read and write the researchers ask them orally and written their answer and this took about 20 minutes. Mothers' practices were observed after surgery using tool III for one time which took about 15 minutes. The researcher recorded the early post-operative complications expressed from children and their mothers from day one until the day seven as mentioned in tool (IV) which took about 10 minutes. Children in control group were received routine hospital care and data was collected without any intervention from the researchers.

Study group:

After finishing data collection from the control group, the researchers collected data from the study group into three phases preparation phase, implementation phase and evaluation phase.

During the preparation phase:

The same as with the control group plus

preparing the predesigned instructions about hypospadias, PowerPoint presentation, booklet that covered the theoretical and practical parts (Hockenberry & Wilson, 2018). Videos, doll, equipment needed in demonstration and remonstration. Book an appointment to give predesigned instructions to mothers in the educational class.

During the implementation phase:

Two educational sessions (one theoretical and another one practical) were held to explain preoperative nursing guidelines to the mothers in the study group on the day of the surgery. Each session lasted roughly 30 to 45 minutes, and occasionally, it included two to five mothers. In the theoretical session the researchers provided the mothers with all information about hypospadias in Arabic language using PowerPoint presentation and discussion. In the practical session, the researchers illustrated proper postoperative care for the child following surgical treatment of hypospadias with the help of videos and an educational illustrated Arabic booklet that covers basic facts about hypospadias, maintenance of the repaired area (dressing, stent, and adhesion prevention), medications, hygienic care, food, fluid intake, and activities. Demonstration and re-demonstration of practices on a doll, which focused on diaper care was done to ensure that the mothers perform practices skillfully. These sessions were carried out at the educational class.

During the evaluation phase:

The same as with the control group.

To determine the effect of predesigned instructions for mothers of children with hypospadias on postoperative complications, the researchers compare the data collected from the control group with that collected from the study group.

Ethical consideration

The director of the pediatric surgery unit at the Children University Hospital officially approved the study after it was reviewed and approved by the Ethics Committee of the Assiut University Faculty of Nursing under the number 3720034. It was

followed by the submission of a formal letter detailing the study's objectives. Next, make sure that every participant understands the aim, benefits, and methods of data collection of this study. It was explained to the participants that they can pause at any moment without incurring any penalties and that their participation was completely voluntary. Next, signed consent was requested from the mothers of each child included in this study. All data collected would be kept strictly confidential and used only to advance the objectives of the study.

Statistical analysis

Data were collected, coded, revised and entered to the Statistical Package for Social Science (IBM SPSS) version 22. The data were presented as number and percentages, mean & standard deviations. Chi-square test was used to compare the variables between two groups also, Pearson correlation between variables was employed.

Results:

Table (1): Represents the percentage distribution of the studied children according to their personal and medical data in the study and control groups. Regarding their age, 60% and 66.7% of them, respectively, were in the age group less than 2 years; 40% and 53.3% of them, respectively, were the first child according to their birth order; 80% and 86.7% of them, respectively, had first-degree hypospadias; and 86.7% and 80% of them, respectively, didn't make circumcision. There were no statistically significant differences between the two groups regarding personal and medical data.

Table (2): Clarifies the percentage distribution of the studied children's mothers in both the study and control groups. Regarding their age (60% and 40%) of them, respectively, were in the age group less than 25 years, (66.7% and 73.7%) of them, respectively, lived in rural areas, (20% and 13.3%) of them didn't read and write, (80% and 60%) of them, respectively, were housewives, and (73.3% and 60%) of them, respectively, had consanguineous marriages. There were no statistically significant differences between the

two groups regarding personal data of the children's mothers.

Table (3): Shows the percentage distribution of the studied children's mothers according to their knowledge regarding hypospadias in both groups. It was found that there were statistical and highly statistically significant differences between the study and control groups (**p-value less than 0.05* and 0.005****) respectively.

Figure (1): Illustrates total mothers' knowledge levels of both groups. It was noticed that more than two-thirds (73.3%) of mothers in the control group had a poor level of knowledge, while 30% and 43.3% of mothers in the study group had good and excellent levels of knowledge, respectively.

Table (4): Describes the distribution of the studied children's mothers according to their practice regarding diaper care for children undergoing hypospadias surgery in both groups. It was detected that there were statistical and highly statistical significant differences between the study and control groups during preparation, changing diapers, and disposal (**p-value less than 0.05* and 0.005****) respectively, except in the step of washing hands thoroughly before starting and sealing the dirty diaper in a plastic bag for disposal; there were no statistically significant differences (**p-value was 0.142 and 0.167**) respectively.

Table (5): Demonstrates the distribution of the studied children's mothers according to their practice regarding post-diaper care for children undergoing hypospadias surgery in both groups. It was observed that there were statistically and highly statistically significant differences between the study and control groups during post-diaper care (**p-value less than 0.05* and 0.005****) respectively, except in the step of noting any signs of discomfort or skin irritation (**p-value 0.059**).

Figure (2): Illustrates the total mother's practice levels of both groups. It was observed that 70% of mothers in the study group had a satisfactory level of practice, while 73.3% of

mothers in the control group had an unsatisfactory level of practice.

Figure (3): Demonstrates the occurrence of postoperative complications in both groups. It was noticed that complications occurred in 80% of children in the control group and did not occur in 63.3% of children in the study group.

Table (6): Describes the distribution of postoperative hypospadias complications in both groups. There was a statistically and highly statistically significant difference

between the study and control groups (**p-value less than 0.05* and 0.005****) respectively.

Table (7): Clarifies the correlation between the mother's knowledge, practice, and occurrence of postoperative complications. It was detected that there was a positive correlation between mother's knowledge and their reported practices ($r=0.866^{**}$) and there was a negative correlation between mother's knowledge and practices and the occurrence of postoperative complications ($r=-0.503^{**}$ and -0.460^{**}) respectively.

Table (1): Distribution of the studied children according to their personal and medical data in both groups (N=60)

groups (14-66)					
Variable	Study group (N=30)		Control group (N=30)		p-value
	No.	%	No.	%	
Child age					0.407
• Less than 2 yrs	18	60	20	66.7	
• 2<4 yrs	10	33.3	6	20	
• 4-6 yrs	2	6.7	4	13.3	
Mean ± SD	2.5 ±3.5		2.02±3.7		
Birth order					0.439
• First	12	40	16	53.3	
• Second	4	13.3	2	6.7	
• Third	2	6.7	4	13.3	
• Fourth and more	12	40	8	26.7	
Degree of hypospadias					0.130
• First degree	24	80	26	86.7	
• Second degree	6	20	2	6.7	
• Third degree	0	0	2	6.7	
Circumcision					0.488
• Done	4	13.3	6	20	
• Not done	26	86.7	24	80	

Chi-square test

Table (2): Distribution of the studied children's mothers according to their personal data in both groups (N=60):

Groups (7-8%)						
Variable		Study group (N=30)		control group (N=30)		p-value
		No.	%	No.	%	
Age						0.466
•	Less than 25 years	6	60.0	4	40.0	
•	25 < 30 years	12	20.0	14	26.7	
•	30< 35 years	8	6.7	6	13.3	
•	35 years or more	4	13.3	6	20.0	
Mean ± SD		24.1 ±3.5		24.02±3.7		
Residence						0.573
•	Urban	10	33.3	8	26.7	
•	Rural	20	66.7	22	73.3	
Education						0.744
•	Don't read and write	6	20	4	13.3	
•	Basic education	12	40	14	46.7	
•	Secondary	8	26.7	6	20	
•	University	4	13.3	6	20	
Occupation						0.091
•	House wife	24	80	18	60	
•	Employee	6	20	12	40	
Consanguineous marriage						0.206
•	yes	22	73.3	18	60	
•	No	8	26.7	12	40	

Chi-square test

Table (3): Distribution of the studied children's mothers according to their knowledge regarding hypospadias in both groups (N=60):

Knowledge regarding hypospadias	Study group		Control group		p- value
	N(30)	%	N(30)	%	
Definition of hypospadias					
Wrong answer or don't know	7	23.3	12	40	0.021*
Incomplete correct answer	10	33.3	14	46.7	
Complete correct answer	13	43.4	4	13.3	
Common symptoms of hypospadias					
Wrong answer or don't know	3	10	10	33.3	0.001**
Incomplete correct answer	9	30	18	60	
Complete correct answer	18	60	2	6.7	
Common causes of hypospadias					
Wrong answer or don't know	3	10	14	46.7	0.001**
Incomplete correct answer	8	26.7	16	53.3	
Complete correct answer	19	63.3	0	0.0	
Diagnosis of hypospadias					
Wrong answer or don't know	7	23.3	14	46.7	0.001**
Incomplete correct answer	8	26.7	14	46.7	
Complete correct answer	15	50	2	6.7	
The associated problems with hypospadias					
Wrong answer or don't know	4	13.3	20	66.7	0.001**
Incomplete correct answer	7	23.4	4	13.3	
Complete correct answer	19	63.3	6	20	
The treatment options for hypospadias					
Wrong answer or don't know	6	20	14	46.7	0.002**
Incomplete correct answer	7	23.3	12	40	
Complete correct answer	17	56.7	4	13.3	
The potential complications of hypospadias surgery					
Wrong answer or don't know	3	10	8	26.7	0.027*
Incomplete correct answer	6	20	14	46.7	
Complete correct answer	21	70	8	26.7	
Postoperative care for a child with hypospadias					
Wrong answer or don't know	7	23.3	10	33.3	0.001**
Incomplete correct answer	5	16.7	12	40	
Complete correct answer	18	60	8	26.7	
The importance of follow-up appointments after hypospadias surgery					
Wrong answer or don't know	6	20	18	60	0.004**
Incomplete correct answer	8	26.7	6	20	
Complete correct answer	16	53.3	6	20	
The psychological or emotional impacts of hypospadias on the child and family.					
Wrong answer or don't know	5	16.7	22	73.3	0.001**
Incomplete correct answer	3	10	4	13.3	
Complete correct answer	22	73.3	4	13.3	

Chi- square test

(*) Statistical significant difference

(**) Highly statistical significant difference

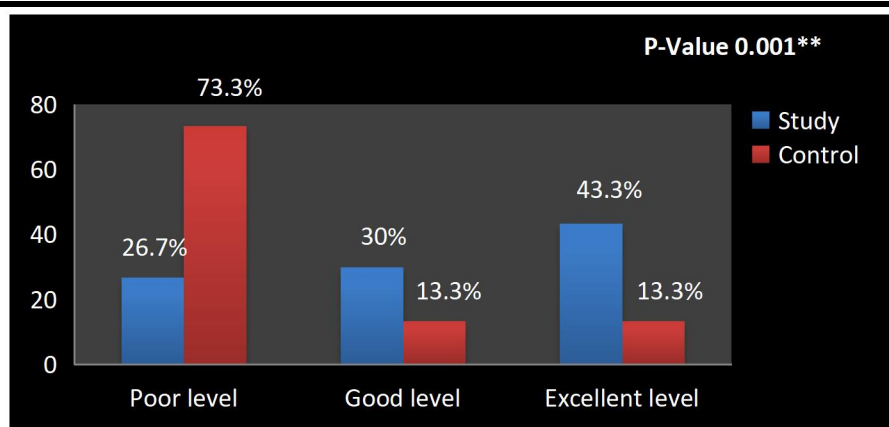


Figure (1): Total mother's knowledge levels of both groups N= (60)

Table (4): Distribution of the studied children's mothers according to their practice regarding diaper care for children undergoing hypospadias surgery in both groups (N=60):

Care for children undergoing hypospadias surgery in both groups (N=60).					
Practices regarding diaper care for child undergoing hypospadias surgery	Pretest		Posttest		p- value
	N(30)	%	N(30)	%	
Preparation					
Gather supplies.					0.002**
• Not done	2	6.7	12	40	
• Done	28	93.3	18	60	
Wash hands thoroughly before starting.					0.142
• Not done	5	16.7	6	20	
• Done	25	83.3	24	80	
Changing Diaper					
Lay child on a safe, flat surface.					0.003**
• Not done	3	10	14	46.7	
• Done	27	90	16	53.3	
Unfasten diaper and fold down front.					0.018*
• Not done	9	30	18	60	
• Done	21	70	12	40	
Use wipes to clean diaper area gently.					0.018*
• Not done	13	43.3	22	73.3	
• Done	17	56.7	8	26.7	
Check for redness, rash, or irritation.					0.001**
• Not done	7	23.3	20	66.7	
• Done	23	76.7	10	33.3	
Apply diaper rash cream if needed.					0.035*
• Not done	10	33.3	18	60	
• Done	20	66.7	12	40	
Lift child's legs to slide out dirty diaper.					0.043*
• Not done	17	56.7	24	80	
• Done	13	43.3	6	20	
Slide clean diaper under child.					0.001**
• Not done	0	0	18	60	
• Done	30	100	12	40	
Fasten diaper securely but not too tight.					0.001**
• Not done	2	6.7	16	53.3	
• Done	28	93.3	14	46.7	
Disposal					
Seal dirty diaper in a plastic bag for disposal.					0.167
• Not done	4	13.3	8	26.7	
• Done	26	86.7	22	73.3	
Wash hands after disposing of the diaper.					0.004**
• Not done	11	36.7	22	73.3	
• Done	19	63.3	8	26.7	

Chi- square test (*) Statistical significant difference (**) Highly statistical significant difference

Table (5): Distribution of the studied children' mothers according to their practice regarding post-diaper care for child undergoing hypospadias surgery in both groups (N=60):

Diaper care for child undergoing hypospadias surgery in both groups (N= 60).					
Practices regarding diaper care for child undergoing hypospadias surgery	Pretest		Posttest		p- value
	N(30)	%	N(30)	%	
Post-Diaper Care					
Dress child in clean clothes.					0.000***
• Not done	6	20	22	73.3	
• Done	24	80	8	26.7	
Clean up diaper changing area.					0.001**
• Not done	11	36.7	24	80	
• Done	19	63.3	6	20	
Wash hands again after completing the process.					0.001**
• Not done	13	43.3	26	86.7	
• Done	17	56.7	4	13.3	
Observations					
Note any signs of discomfort or skin irritation.					0.059
• Not done	13	43.3	20	66.7	
• Done	17	56.7	10	33.3	
Monitor diaper wetness and frequency of diaper changes.					0.001***
• Not done	6	20	24	80	
• Done	24	80	6	20	
Document any unusual observations for future reference.					0.001**
• Not done	13	43.3	26	86.7	
• Done	17	56.7	4	13.3	
Ensure proper ventilation during diaper changing.					0.004**
• Not done	11	36.7	22	73.3	
• Done	19	63.3	8	26.7	
Use a diaper changing station or a safe, clean surface.					0.000***
• Not done	4	13.3	24	80	
• Done	26	86.7	6	20	
Check diaper size for proper fitness					0.035*
• Not done	10	33.3	18	60	
• Done	20	66.7	12	40	

Chi- square test

(*) Statistical significant difference

(**) Highly statistical significant difference

(***) Highly highly statistical significant difference

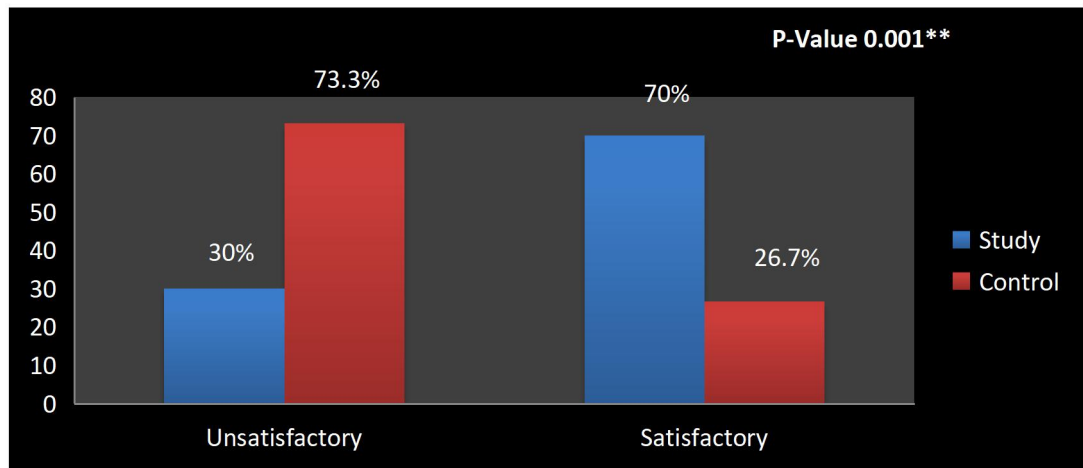


Figure (2): Total mother's practice levels of both groups N= (60)

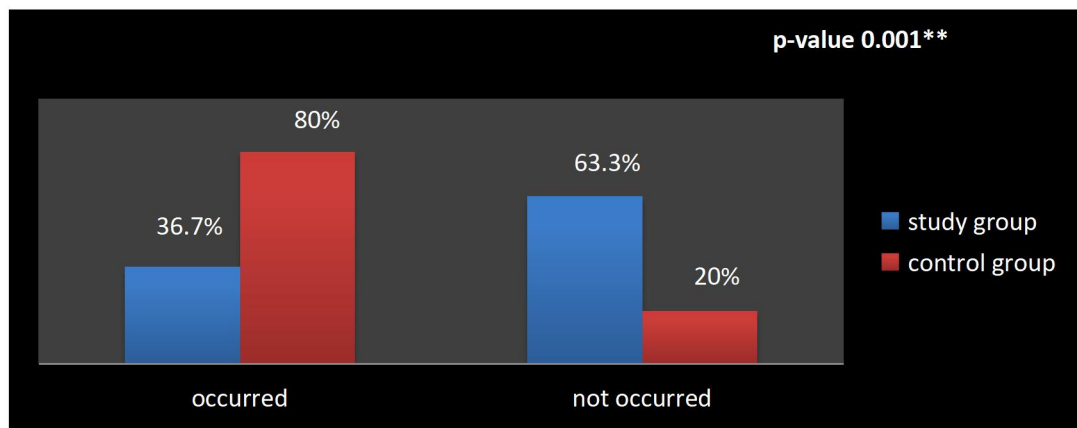


Figure (3): Occurrence of postoperative hypospadias complications in both groups (N=60)

Table (6): Distribution of postoperative hypospadias complications in both groups (N=60):

Postoperative complications	Study group		Control group		p-value
	No	%	No	%	
Bleeding (N=28)	8	28.6	20	71.4	0.002**
Wound infection (N=26)	9	34.6	17	65.4	0.034*
Urinary retention (N=20)	5	25	15	75	0.004**
Swelling of the genital area (N=18)	5	27.8	13	72.2	0.024*
Urethral injury (N=13)	2	15.4%	11	84.6	0.005**
Pain and discomfort (N=35)	11	31.4	24	68.6	0.001**
Bruising (N=24)	7	29.2	17	70.8	0.008**
Fever (N=24)	6	25	18	75	0.002**

Chi- square test

(**) Highly statistical significant difference

(*) Statistical significant difference

Table (7): Correlation between mother's knowledge, practice, and the occurrence of postoperative complications (N=60):

		Knowledge	Practice	Postoperative complications
Knowledge	Pearson Correlation Sig. (2-tailed)	1	0.866** 0.000	-0.503** 0.000
Practice	Pearson Correlation Sig. (2-tailed)	0.866** 0.000	1	-0.460** 0.000
Postoperative complications	Pearson Correlation Sig. (2-tailed)	-0.503** 0.000	-0.460** 0.000	1

** Correlation is significant at the 0.01 level (2-tailed).

Discussion:

Hypospadias is a birth defect, and surgery is the only option for correction, which includes challenges and complications. To minimize the occurrence of complications after urethroplasty for hypospadias, preoperative education of mothers and postoperative care of boys are essential. Preoperative instructions improve the knowledge and practice of caregivers after urethroplasty (WANG et al., 2024). So, this study aimed to investigate the effect of predesigned instructions for mothers of children with hypospadias on their knowledge, practices, and early postoperative complications.

The current study results indicated that the mothers who received predesigned instructions showed improvement in their knowledge in the study group compared with the control group, which reflects to what extent the instructions were very effective and useful to mothers and helps the researchers the strong desire of mothers to learn more knowledge about their children's condition.

The study results were consistent with El-Salam et al., 2022, in their study about the impact of pre-operative instructions regarding hypospadias repair on mothers' knowledge, practices, and selected post-operative outcomes, who discovered that the vast majority of mothers in the study group had a satisfactory level of knowledge of hypospadias repair compared to a minority in the control group, with highly statistically significant differences (P-value at 0.001**).

In addition to the study made by Mohamed, 2019, about the effect of pre-designed instructions for mothers of children with hypospadias on postoperative complications, who indicated that 86.7% of mothers in the control group had an inadequate level of knowledge while 86.6% of the mothers in the study group had a high and adequate level of knowledge about hypospadias. Poor mothers' level of knowledge before instructions reflects their lack of awareness about this congenital anomaly and reflects their need to know more about their children problem.

The results of the present study showed that there were highly statistically significant differences (p-value 0.001**) between the practices of mothers in the study and control groups. These results were in agreement with El-Salam et al., 2022 & Mohamed, 2019 who found the same result in their study also, WANG , et al., 2024 in their study about preoperative parent education and postoperative nurse-led care for boys versus routine hospital care for urethroplasty for hypospadias in western China, found that preoperative instructions enhance caregivers' knowledge and practices following urethroplasty.

From the researchers' point of view, it reflected the good impact of the predesigned instructions on improving practices. These confirmed the significant modifications in the mothers' practice that reflected the main goals of the implementation of the predesigned

instructions. These results confirmed our first hypothesis, which stated that mothers of children who received predesigned instructions had a higher level of knowledge and practices than mothers who didn't receive instructions.

Regarding the distribution of postoperative hypospadias complications in both groups, there was a significant difference between the study group and the control group. This finding is in line with **WANG et al., 2024** who found that the provision of Chinese illustrated preoperative instructions to parents and postoperative care to boys likely contributed to decreased postoperative complications and improved favorable postoperative functional outcomes. From the researchers' point of view, this significant difference reflects how much mothers play an important role in caring for their children after repairing hypospadias, and preparing mothers with sufficient knowledge and practice before the operation can help with a large degree in reducing complications.

The results of the current study discovered a negative correlation between the incidence of postoperative hypospadias complications and total mothers' knowledge and practices. This demonstrates that a decrease in the incidence of postoperative complications occurred when mother's practices improved.

These findings were consistent with the finding of a study done by **Mohamed, 2019** in his study about the effect of pre-designed instructions for mothers of children with hypospadias on reducing postoperative complications, who concluded that children with hypospadias will recover better with fewer complications when their mothers have been well informed by pre-designed instructions and have good knowledge on hypospadias and how to deal with those children. Moreover, these results supported our second hypothesis, which stated that the children whose mothers received pre-designed instructions had fewer complications than children whose mothers didn't receive instructions.

There was only a little research that studied the importance of predesigned instructions on mothers' knowledge and practices and its' effect on postoperative complications.

Conclusion:

The application of predesigned instructions for mothers of children with hypospadias resulted in a positive and significant decrease in the occurrence of postoperative complications. Following the adoption of predesigned instructions, mothers' knowledge and practices in the study group improved compared to the control group.

Recommendations:

1. More studies must be conducted with a larger sample in different settings.
2. The hospital policy must include an educator who is in charge of training and educating mothers.
3. A multidisciplinary team should create, carry out, and assess educational programs for mothers in order to sustain improved postoperative outcomes for children.

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References:

- Arnous, A. A., Taman, E. A., & Elsayaad, I. M. (2020).** Comparative study between Mathieu repair and Snodgrass repair in distal hypospadias. *International Journal of Medical Arts*, 2(3), 508-518.
- Biers, S., Armenakas, N., Lamb, A., Mark, S., Reynard, J., Sullivan, M., Turner, K., Turney, B. (2020).** Urological surgery ,oxford specialist hand books in surgery, chapter 14 ,pediatric urology ,p726.
- Cunha, G. R., Liu, G., Sinclair, A., Cao, M., Glickman, S., Cooke, P. S., & Baskin, L. (2020).** Androgen-independent events in penile development in humans and animals. *Differentiation*, 111, 98-114.

- Dale, J., Woodward, B., & Elagami, H. (2023).** Age-dependent early complications of hypospadias repair: a single institutional experience. *Pediatric Surgery International*, 39(1), 115.
- El-Salam, A., Atef, R., Mohamed, M., Abolwafa, N. F., & Mohamed, S. S. (2022).** Impact of Pre-Operative Instructions Regarding Hypospadias Repair on Mothers' Knowledge, Practices and Selected Post-Operative Outcomes. *Minia Scientific Nursing Journal*, 11(1), 80-89.
- Gabra, A., Beyari, B. M., AlNuwaiser, S. J., Allaf, S. M., Alghanmi, R., Alrayiqi, R., ... & Kurdi, M. (2024).** Outcomes of Hypospadias Repair Based on Surgical Techniques: A 4-Year Retrospective Study. *Research and Reports in Urology*, 79-87.
- Gaspari, L., Sampaio, D. R., Paris, F., Audran, F., Orsini, M., Neto, J. B., & Sultan, C. (2012).** High prevalence of micropenis in 2710 male newborns from an intensive-use pesticide area of Northeastern Brazil. *International journal of andrology*, 35(3), 253-264.
- Hadidi, A. T. (2022).** Classification and assessment of hypospadias. In *Hypospadias Surgery: An Illustrated Textbook* (pp. 237-248). Cham: Springer International Publishing.
- Hockenberry, M. J., & Wilson, D. (2018).** Wong's nursing care of infants and children.E-book., Elsevier Health Sciences. Chapter 24., the child with renal dysfunction, P .817.
- Kaefer, M., Rink, R., Misseri, R., Winchester, P., Proctor, C., Ben Maamar, M., & Skinner, M. K. (2023).** Role of epigenetics in the etiology of hypospadias through penile foreskin DNA methylation alterations. *Scientific reports*, 13(1), 555.
- Leunbach, T. L., Berglund, A., Ernst, A., Hvistendahl, G. M., Rawashdeh, Y. F., & Gravholt, C. H. (2024).** Prevalence, Incidence, and Age at Diagnosis of Boys With Hypospadias: A Nationwide Population-Based Epidemiological Study. *The Journal of Urology*, 10-1097.
- Mohamed, S. A. (2019).** Effect of Pre-designed Instructions for Mothers of Children with Hypospadias on Postoperative Complications. *MNJ*, 4 (1), 39-55.
- Renaux-Petel, M., Mure, P. Y., Gorduza, D. B., & Mouriquand, P. (2019).** Hypospadias. *Pediatric Surgery*, 549-560.
- Roychoudhury, A., Patra, R., Saha, S., Sinhababu, A., & Rangari, P. (2019).** A Clinical Study Of Complications Of Snodgrass Urethroplasty For Hypospadias. *International Journal Of Medical Science And Diagnosis Research*, 3(4).
- Sheng, X., Xu, D., Wu, Y., Yu, Y., Chen, J., & Qi, J. (2018).** The risk factors of Urethrocuteaneous fistula after hypospadias surgery in the youth population. *BMC urology*, 18, 1-6.
- Speedie, L., & Middleton, A. (2021).** *Wong's nursing care of infants and children Australia and New Zealand edition-E-book: For professionals*. Elsevier Health Sciences.
- Thompson, S. K. (2012).** Sample size, Sampling, 3rd ed., chapter (4), Wiley, p59-60.
- WANG, L., WANG, Z., MAO, X., FU, Y., LEI, Q., & LIAO, Q. (2024).** Preoperative parent education and postoperative nurse-led care for boys versus routine hospital care for urethroplasty for hypospadias in Western China: a retrospective study. *Turkish Journal of Medical Sciences*, 54(2), 459-470.
- Wood, D., & Wilcox, D. (2023).** Hypospadias: lessons learned. An overview of incidence, epidemiology, surgery, research, complications, and outcomes. *International Journal of Impotence Research*, 35(1), 61-66.