Results

The results of the study were presented in the following sequences.

Part I **:-** Characteristics of the studied nurses. Table (1)

Part II **:-** Knowledge of nurses about urinary catheterization and catheter care. Table (2, 3)

Part III **:-** The relation between nurses experience in relation to level of education. Table (4)

Part IV **: -** Nurse's practice on caring for patients with urinary catheter. Table (5, 6, 7, 8, 9, 10)

Part V **:-** The relation between nurses knowledge and practice regarding patients with urinary catheterization and catheter care. Table (11)

Part VI **:-** The relation between nurses knowledge and practice in relation to their characteristics. Table (12, 13, 14, 15, 16)

Part VII **:-** The correlation between knowledge and practice age and experience. Table (17)

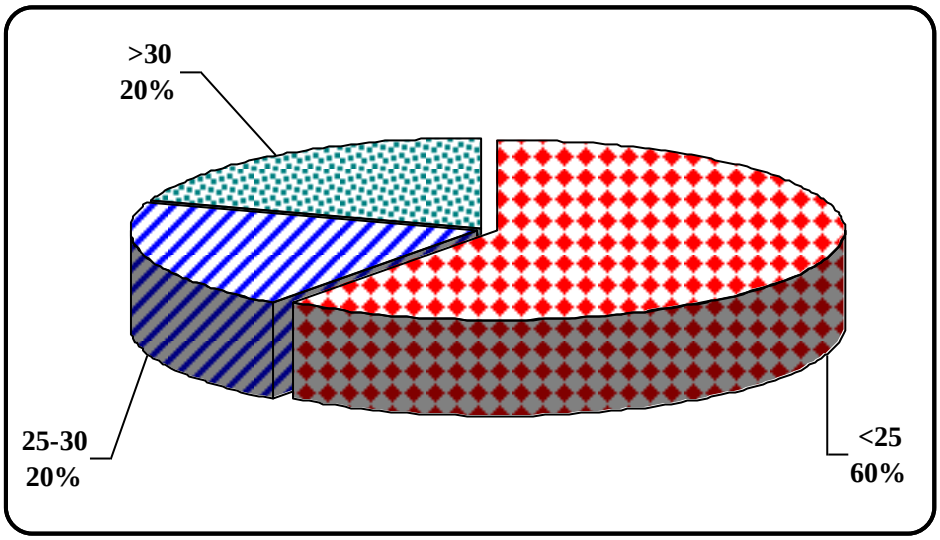
Part I:- Characteristics of the studied nurses

Table No. (1) : Number and percentage distribution of the studied nurses according to their characteristics

Nurse's character	Number (100)	Percentage %
Age in years.		
<25	60	60.00
25 – 30	20	20.00
> 30	20	20.00
Level of education.		
Diploma in nursing.	90	90.00
Diploma in nursing with specialty.	10	10.00
Marital status.		
Single.	0	0
Married.	100	100.00
Years of experience.		
<5	48	48.00
5-10	22	22.00
>10	30	30.00
Attending previous training programs.		
Yes	-	-
No	100	100.00

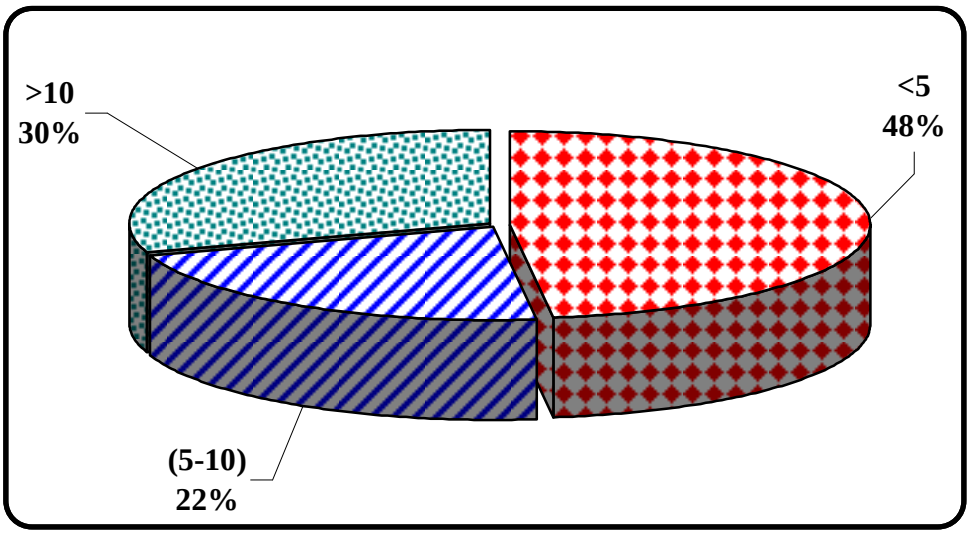
This table shows that, the majority of nurses were at the age of (<25 years). In relation to level of education, it was found that the majority of nurses were having diploma in nursing. According to years of experience, it was found that (48%) had <5 years. with regard to their marital status it was found that all of them were married. All the studied nurses did not receive previous training programs.

Figure (1) : The percentage distribution of the studied nurses according to their ages



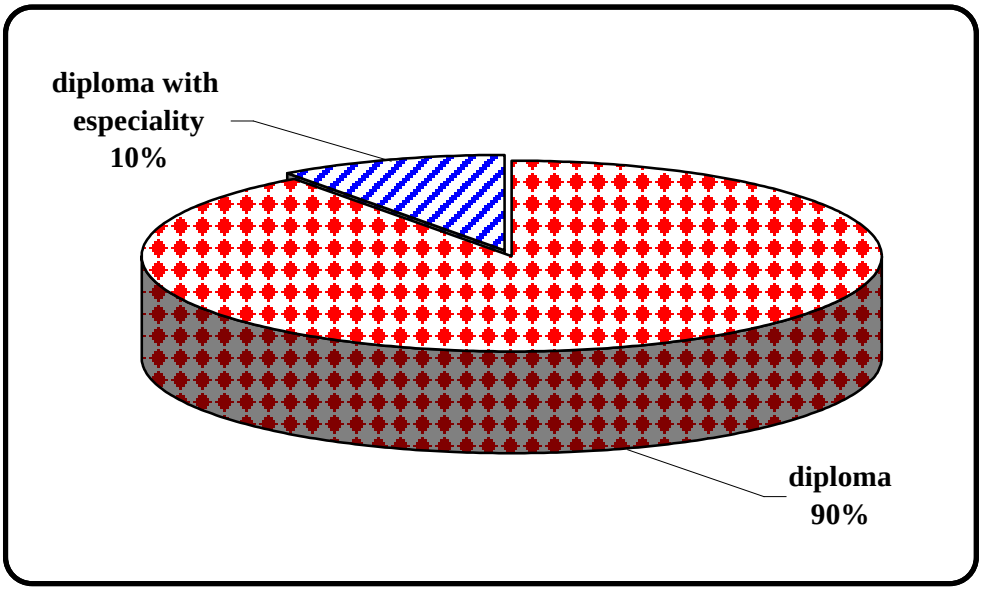
This figures shows that 20% of the samples have > 30 years, 20% with ages 25 – 30 years and 60% of them < 25 years.

Figure (2) : The percentage distribution of the studied nurses according to their years of experience



This figure shows that 30% of samples have > 10 years of experience, 22% have 5 - 10 of experience, while 48 % of them < 5years of experience.

Figure (3): The percentage distribution of the studied nurses according to their level of education



This figure shows that only 10% of the present sample have diploma with specialty

Part II:- Knowledge of nurses about urinary catheterization and catheter care

Table No. (2): The number and percentage distribution of the nurse's knowledge about care for patient with urinary catheter

Items	Nurse's number = 100					
	Satisfied		Unsatisfied		X^2	P-value
I- The anatomical parts of urinary system:	No.	%	No.	%		
The difference between the male and female urethra.	35	35.00	65	65.00	9.000	0.003
The structures of the urinary system.	20	20.00	80	80.00	36.000	0.000
II- Analysis related to urine:						
The laboratory test done on urine.	17	17.00	83	83.00	43.560	0.000
A urine culture and sensitivity test.	61	61.00	39	39.00	4.840	0.028
Indicators of urinary tract infection (UTI).	85	85.00	15	15.00	49.000	0.000
Amount of urine has accumulated within the bladder.	40	40.00	60	60.00	4.000	0.046
Characteristics of normal urine.	90	90.00	10	10.00	64.000	0.000
III- Indications for urinary catheter use:						
Indications for long-term catheter use.	6	6.00	94	94.00	77.440	0.000
Requirements for patients with rhabdomyolysis.	57	57.00	43	43.00	1.960	0.162
The cause that interferes with the drainage of urine in patients with bladder papilloma.	70	70.00	30	30.00	16.000	0.000
IV- Contraindication for use of urinary catheter						
patients who contraindicated the use of catheter:	42	42.00	58	58.00	2.560	0.110
V- Catheter materials:						
Type of catheter used when inserting a catheter for less than 7 days.	85	85.00	15	15.00	49.000	0.000
Type of catheter used when inserting a catheter for more than 7 and up to 28 days.	58	58.00	42	42.00	2.560	0.110
Type of catheter do you use when inserting a long term catheter (up to 12 weeks).	90	90.00	10	10.00	64.000	0.000
VI- Size of catheter:	No.	%	No.	%		
The larger catheter size.	31	31	69	69.00	14.440	0.000
The smallest catheter size.	82	82	18	18.00	40.960	0.000

N.B. Numbers are not mutually exclusive.

Table No. 2: (contin.)

Items	Nurse's number = 100					
	Satisfied		Unsatisfied		X^2	P-value
VII- Complication associated with urinary catheter:	No.	%	No.	%		
Potential complications of a long-term catheter.	19	19	81	81.00	38.440	0.000
A complication that is not minimized with proper technique.	88	88	12	12.00	57.760	0.000
The leakage evidence.	34	34	66	66.00	10.240	0.001
The best defense against urethra trauma.	17	17	83	83.00	43.560	0.000
Action done for vaginal catheterization.	56	56	44	44.00	1.440	0.230
Complications associated with improperly inflated retention catheter balloons.	10	10	90	90.00	64.000	0.000
Potential complications associated with not securing the catheter.	27	27	73	73.00	21.160	0.000
VIII- Use of aseptic technique:						
Instrument is considered sterile.	93	93	7	7.00	73.960	0.000
A principle of surgical asepsis.	60	60	40	40.00	4.000	0.046
Products used for meatal cleansing.	44	44	56	56.00	1.440	0.230
Change gloves after emptying catheter bags.	59	59	41	41.	3.240	0.072
Type of container for emptying urinary bag.	90	90	10	10.00	64.000	0.000
Prevention of infection when inserting a urinary catheter.	49	49	51	51.00	0.040	0.841
IX- Procedure of urinary catheter:	.					
Getting ready to perform catheterization.	55	55.00	45	45.00	1.000	0.317
Amount of lubrication of catheter in male and female patients.	20	20.00	80	80.00	36.000	0.000
The female patient's labia must be retracted with the non-dominant hand throughout the entire process of urinary catheterization.	75	75.00	25	25.00	25.000	0.000
The patient is asked to bear down when resistance is met during inserting catheter.	47	47.00	53	53.00	0.360	0.549
Use the dominant hand.	30	30.00	70	70.00	14.430	0.000
Inflate the balloon.	12	12.00	88	88.00	57.760	0.000
Size of balloon used.	40	40.00	60	60.0	4.000	0.046
Position of the drainage bag.	10	10.00	90	90.00	64.000	0.000
The recommendations for securing catheters.	39	39.00	61	61.00	4.840	0.028

N.B. Numbers are not mutually exclusive.

Table No. 2: (contin.)

Items	Nurse's number = 100					
	Satisfied		Unsatisfied		X^2	P-value
X- Nursing care for patient with urinary catheter:						
Management of indwelling catheter.	38	38.00	62	62.00	5.760	0.016
The nurse's role in caring for a patient with Long-term catheter.	36	36.00	64	64.00	7.840	0.005
Nursing interventions to prevent catheter associated UTIs.	38	38.00	62	62.00	5.760	0.016
Assessment of patients with recurrent UTIs.	31	31.00	69	69.00	14.440	0.000
Use a catheter maintenances solution.	93	93.00	7	7.00	73.960	0.000
Frequency of emptying catheter drainage bags.	79	79.00	21	21.00	33.640	0.000
Frequency of changing drainage bags.	49	49.00	51	51.00	0.040	0.841
The optimal drainaging system.	84	84.00	16	16.00	46.240	0.000
Consideration taken for patients with long-term catheters when selecting a drainage bag.	44	44.00	56	56.00	1.440	0.230
The product used to clean the sampling port prior to taking a sample.	43	43.00	57	57.00	1.960	0.162
The place where a catheter specimen of urine can be taken.	63	63.00	37	37.00	6.760	0.009
The need for catheter specimen of urine.	39	39.00	61	61.00	4.840	0.028
The necessity to clamp a catheter tube.	50	50.00	50	50.00	0.000	1.000
Type of catheter irrigation.	22	22.00	78	78.00	31.360	0.000
The action taken before removing an indwelling catheter.	5	5.00	95	95.00	81.000	0.000

P< 0.05 Significant or P> 0.05 Insignificant

This table shows that, there were 90% who have satisfied knowledge regarding characteristics of normal urine, materials of catheter inserting for long term period, the type of container used for emptying urinary drainage bag, and 70% who have satisfied knowledge of disease that obstruct the normal flow of urine. But there were (94%) of nurses have unsatisfied knowledge of indication of long term catheter use. (83%) of nurses have unsatisfied knowledge regarding laboratory test done in urine and (80%) that have unsatisfied knowledge in structure of urinary

system, (93%) of nurses have satisfied knowledge regarding the determination of sterile instrument, and 88% of them have satisfied knowledge regarding the complication that is not related to the technique of catheterization. But (90%) of nurses have unsatisfied knowledge regarding the complications associated with improperly inflated retention catheter balloon. There were (83%) of nurses who have unsatisfied knowledge regarding the prevention of urethral trauma, and (81%) who have unsatisfied knowledge regarding complication of long term catheter use, (75%) of nurses have satisfied knowledge about the reason of using the non dominant hand throughout of the entire process of urinary catheter, but (90%) of nurses have unsatisfied knowledge regarding the position of urinary drainage bag, and (88%) of nurses have unsatisfied knowledge about when to inflate the catheter balloon, and the table also indicates that, (93%) of nurses have satisfactory knowledge regarding indication for use of catheter maintenance solution, (84%) of nurses have satisfactory knowledge about the optimal drainage system But (95%) of nurses have unsatisfied knowledge regarding the actions taken before removing the urinary catheter .

Table No: (3) Number and percentage distribution of nurses regarding the unsatisfied result of knowledge

Items	Unsatisfied	
	No.	**%**
Use a catheter maintenances solution.	**93**	**93.0**
Instrument that is considered sterile.	**93**	93.00
The characteristics of normal urine	90	90.00
Type of catheter that is used when inserting long term catheter (up to 12 weeks.	90	90.00
Type of container for emptying the urinary bag.	90	90.00
Complications that are not minimized with proper technique.	88	88.00
Indicators of urinary tract infection (UTI).	85	85.00
Type of catheter used when inserting a catheter for less than 7 days.	85	85.00
The smallest catheter size.	82	82.00
The optimal drainage system.	84	84.00
Frequency of emptying Catheter drainage bags.	79	79.00
The cauase that interferes with the drainage of urine in patients with bladder papilloma.	70	70.00
The female patient's labia must be retracted with the non-dominant hand throughout the entire process of urinary catheterization.	75	75.00
The place where a catheter specimen of urine can be taken.	63	63.00
Principle of surgical asepsis.	60	60.00
change gloves after emptying catheter bags.	59	59.00
Type of catheter used when inserting a catheter for more than 7 and up to 28 days.	58	58.00
Requirements for patients with rhabdomyolysis.	57	57.00
Action done for vaginal catheterization.	56	56.0
Getting ready to perform catheterization.	55	55.00
The importance of clamping a catheter tube.	50	50.00
Prevention of infection when inserting a urinary catheter.	49	49.00
Frequency of changing drainage bags	49	49.00
The patient is asked to bear down when resistance is met during inserting the catheter.	47	47.00
Products used for meatal cleansing.	44	44.00
The product used to clean the sampling port prior to taking a sample.	43	43.00
The patients who contraindicated the use of catheter.	42	42.00
Size of balloon used.	40	40.00
Amount of urine has accumulated within the bladder.	40	40.00
The difference between the male and female urethra.	35	35.0
The recommendations for securing catheters.	39	39.0
The need for catheter specimen of urine.	39	39.00
Nursing interventions to prevent catheter associated UTIs.	38	38.00
Management of indwelling catheter.	38	38.00

Table No. 3 :(contin.)

Items	Unsatisfied	
	No.	%
The nurse's role in caring for a patient with Long-term catheter.	36	36.00
Assessment of patients with recurrent UTIs.	31	31.00
Use the dominant hand.	30	30.00
Potential complications associated with not securing the catheter.	27	27.00
Type of catheter irrigation.	22	22.00
The structures of the urinary system.	20	20.00
amount of lubrication of catheter in male and female patient.	20	20.00
Potential complications of long-term catheter.	19	19.00
The laboratory test done on urine.	17	17.00
The best defense against urethra trauma.	17	17.00
Inflate the balloon.	12	12.0
Position of the drainage bag.	10	10.00
The indications for long-term catheter use.	6	6.00
The actions taken before removing an indwelling catheter.	5	5.00

This table indicates that, there were93% of nurses who have unsatisfied knowledge regarding use of a catheter maintenance solution, instruments that are considered sterile and 90% of them had satisfied knowledge regarding the characteristics of normal urine.

Figure (4): The distributions of studied nurses according to satisfied knowledge

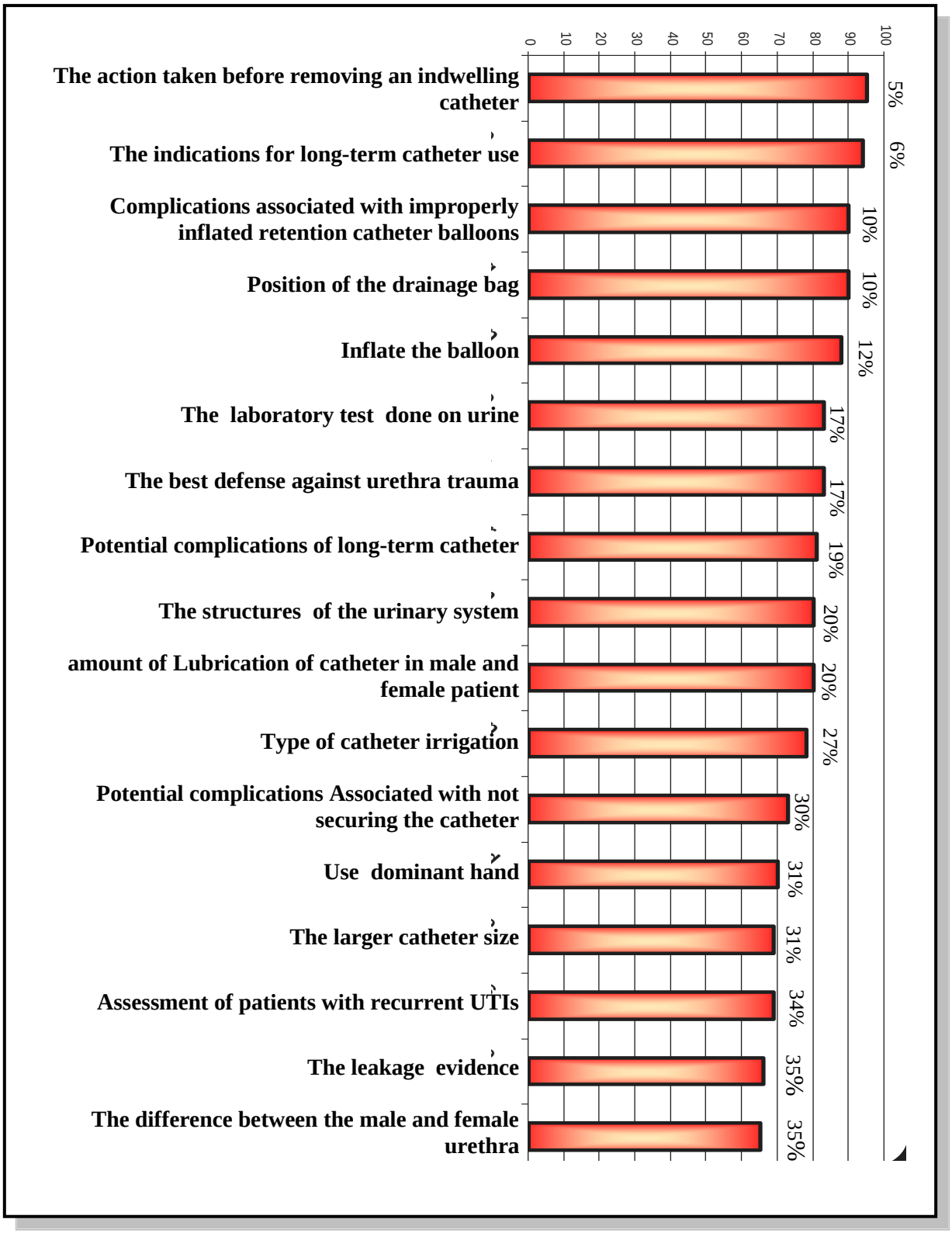


Figure 5: (contin.)

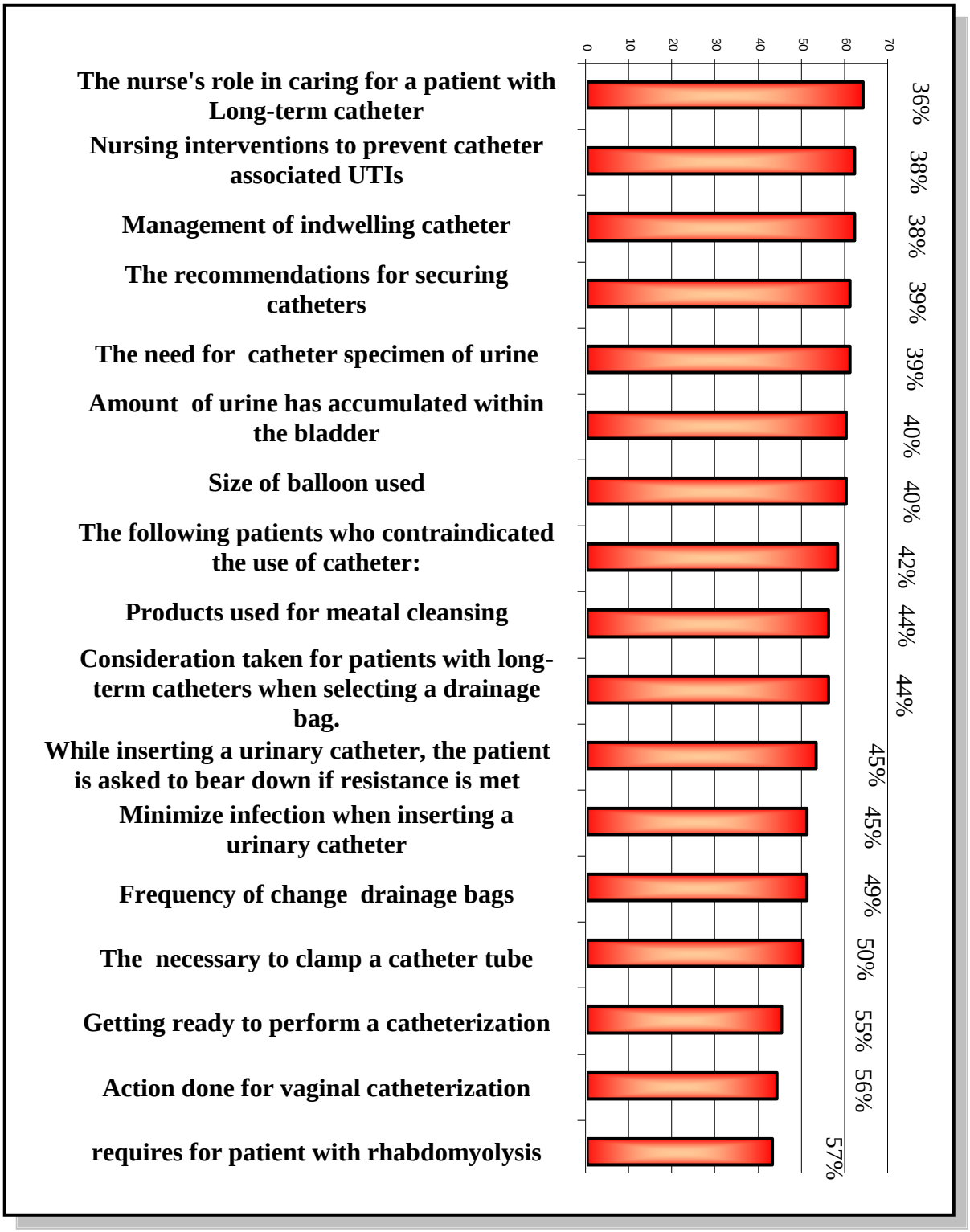
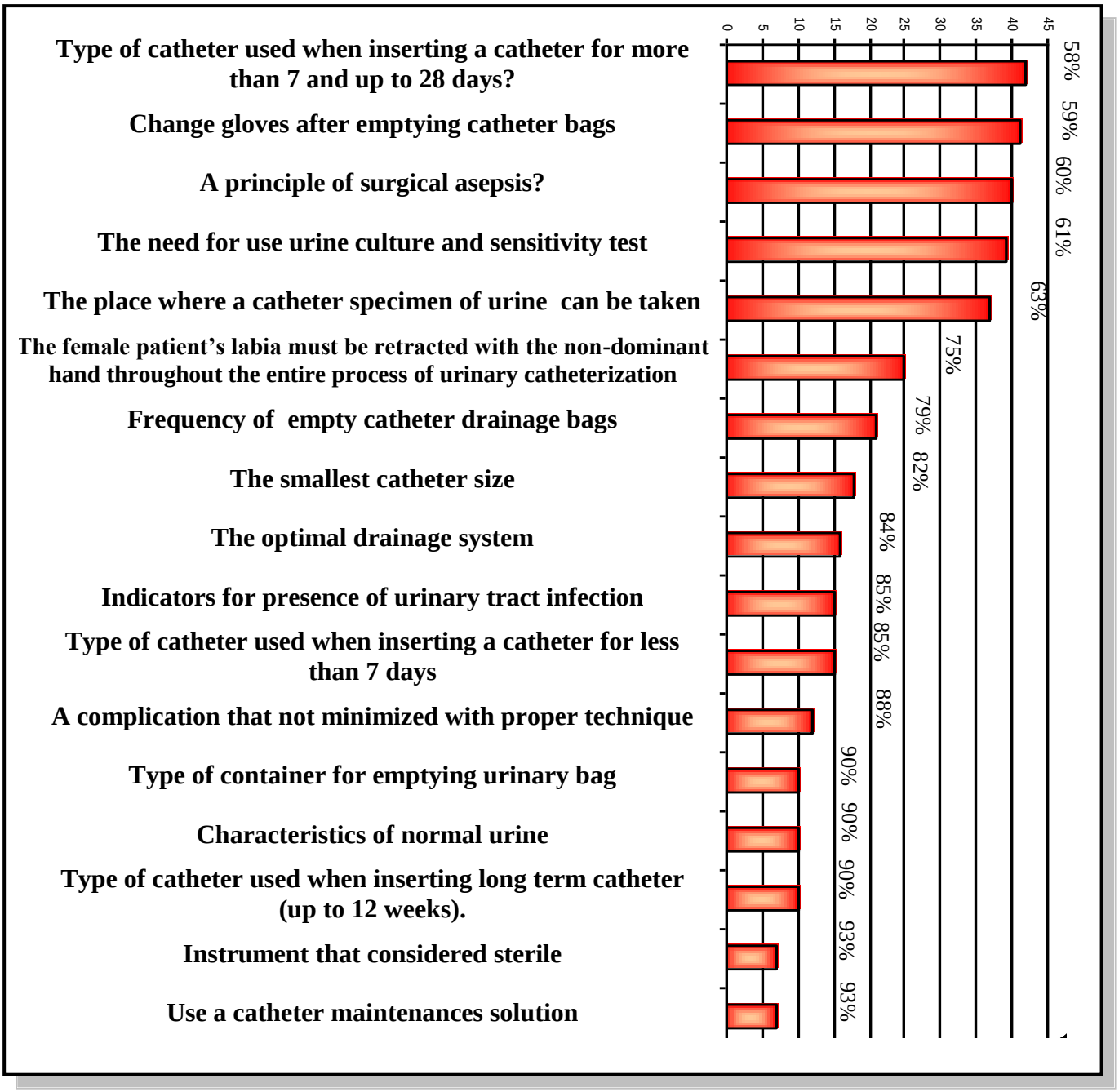


Figure 6: (contin.)



Part III: The relation between nurses experience and level of education.

Table No. (4): The relationship between experience and level of education.

Level of education		Experience			
		<5	5-10	>10	Total
Diploma	N	38	22	30	90
	%	38.00	22.00	30.00	90.00
Diploma with especiality	N	10	0	0	10
	%	10.00	0.00	0.00	10.00
Total	N	48	22	30	100
	%	48.00	22.00	30.00	100.00
Chi-square	X^2	12.037			
	P-value	< 0.002			

P< 0.05 Significant or P> 0.05 Insignificant
X^2=12.037 and p-value=0.002*

This table shows that, there was statistically significant differences between experience and level of education.

Part IV: Nurse's practices for caring for patients with urinary catheters.

Table No. (5) : Number and percentage distribution of nurse's practice regarding catheter insertion:

Items	Number of nurse's = 100					
	Satisfied		Unsatisfied		Poor	
	No.	%	No.	%	No.	%
1- Check the order.	100	100.00	0	-	0	-
2- Hand washing.	0	-	43	43.00	57	
3- Select specific type and size of catheter.	0	-	42	42.00	58	58.00
4- Collect appropriate equipment, including:						
a- Normal saline.	33	33.00	67	67.00	0	-
b- Sterile catheter,	40	40.00	60		0	
c- sterile urinary drainage bag,	100	100.00	0	-	0	-
d- 10ml syringe,	100	100.00	0	-	0	-
e- 10ml sterile water,	0	-	31	31.00	69	69.00
f- Incontinence sheet.	30	30.00	70	70.00	0	-
g- Lubricant.	44	44.00	56	56.00	0	-
h- Disposable gloves.	41	41.00	59	59.00	0	-
i- Sterile scissors.	0	-	100	100.00	0	-
j- Light source.	30	30.00	70	70.00	0	-
k- Adhesive tape.	0	-	59	59.00	41	41.00
5- Explain the procedure	0	-	100	100.00	0	-
6- Draw bed curtains	0	-	51	51.00	49	49.0
7-Place the patient in a recumbent position, knee flexed and wide apart with incontinence sheet under the patient.	49	49.00	51	51.00	0	-

N.B. Numbers are not mutually exclusive.

Table No. 5: (contin).

Items	Number of nurse's = 100					
	Satisfied		Unsatisfied		Poor	
	N0.	%	No.	%	No.	%
8- Set up the equipment;						
a- Arrange the lamp.	0	-	100	100.00	0	-
b- Open disposable catheter pack.	30	30.00	70	70.00	0	-
c- Wash hands.	0	-	0	-	100	100
d- Arrange sterile field.	0	-	30	30.00	70	70.0
e- Saturation cotton wool balls with normal saline.	0	-	100	100.00	0	-
f- Put on gloves.	0	-	100	100.00	0	-
9- Hold labia apart with gloved hand and clean, with cotton wool balls, the patient's labia minora and urethral opening (meatus).	0	-	20	20.00	80	80.0
10- Slowly insert lubricant into urethral opening.	0	-	100	100.00	0	-
11- Discard one glove and syringe	0	-	100	100.00	0	-
12- Position the sterile towel between the patient legs.	0	-	31	31.00	69	69.00
13- Pick up the catheter and connect it to the drainage bag.	100		0	-	0	-
14- Fill the syringe with the required amount of sterile water.	0	-	59	59.00	41	41.00
15- Inflate the catheter balloon and check for leaks.	70	70.00	30	30.00	0	-
16- Deflate the balloon and leave the syringe attached.	50	50.00	50	50.00	0	-
17- Remove the proximal end of the catheter sheath.	40	40.00	60	60.00	0	-
18- Lubricate the catheter tip with the gloved hand.	0	-	100	100.00	0	-
19- Separate the patient's labia and gently insert the catheter directly into the patient's urethra.	0	-	100	100.00	0	-

N.B. Numbers are not mutually exclusive.

Table No. 5: (contin.)

Items	Number of nurses = 100					
	Satisfied		Unsatisfied		Poor	
	N0.	%	No.	%	No.	%
20- Check for flow of urine.	0	-	100	100.00	0	-
21- Inflate the catheter and gently withdraw the catheter until resistence is felt.	0	0	0	-	100	100.00
22- Dry the patient.	0	0	0	-	100	100.00
23- Secure the catheter.	40	40.00	60	60.00	-	-
24- Hang the catheter bag below the level of the patient's bladder	0	-	100	100.00	-	-
25- Ensure the patient is comfortable.	0	0	-	-	100	100.00
26- Clear the area.	0	0	-	-	100	100.00
27- Gather and discard equipment.	0	-	100	100.00	-	-
28- Wash hands.	0	-	100	100.00	-	-
29- Evaluate catheter draining properly.	0	0	-	-	100	100.00
30- Evaluate the patient comfort.	0	-	100	100.00	-	-
31-Document the reason for catheterization.	100	10.00	0	-	-	-
32- Document catheter size and type.	100	100.00	0	-	-	-
33- Document balloon inflation size.	100	100.00	-	-	-	-
34- Document ease of insertion	0	-	100	100.00	0	-
35- Document urine characteristics.	0	-	100	100.00	100	100.00
36 - If specimen was obtained						
a- Record date and time.	98	98.00	0	-	2	2.00
b- Record amount of urine.	100	100.00	0	-	0	-
37- Patient response to procedure.	0	-	0	-	100	100.
Mean ± SD	**54.130 ± 2.929**					

N.B. Numbers are not mutually exclusive.

This table illustrates that, all nurses have unsatisfied level of practice regarding the use of appropriate sterile instrument in the procedure, but all of them have satisfied level of practice regarding check the order, using of sterile urinary drainage bag, all of them have unsatisfied level of practice regarding the explanation of the procedure to

the patient, arranging the lamp needed for procedure and preparing cotton balls with normal saline, also (70%) of nurses have unsatisfied practice in following of aseptic technique on opening catheter pack, all of them have unsatisfied practice regarding lubricating of catheter tip with gloved hand, and Separating the patient's labia and gently inserting the catheter directly into patient's urethra, also they have unsatisfied practice regarding checking for flow of urine. But all of them have satisfied level of practice regarding inflation of the catheter, and connection of urinary drainage bag and all of them have satisfied practice regarding, recording amount of urine and recording date and time of catheterization. But all of them have poor practice regarding, the catheter draining properly, clear the area and the patient's response to procedure.

Table No. (6) Numbers and percentage distribution of nurses' practice regarding catheter irrigation

Items	Nurses' number = 100					
	Satisfied		Unsatisfied		Poor	
	No.	%	No.	%	No.	%
1- Check the order.	100	100.00	0		0	-
2- Hand washing.	0	-	0	-	100	100.00
3- Collect appropriate equipment including;						
a) Disposable catheter pack.	0	-	0	-	100	100.00
b) Sterile area towel.	0	-	0	-	100	100.00
c) 50ml catheter tip syringe.	0	-	49	49.00	51	51.00
d) 2 Liters sterile jugs.	40	40.00	60	60.00	0	-
e) 30 ml normal saline.	0	-	0	-	100	100.00
f) Incontinence sheet.	0	-	100	100.0	0	-
g) 1 pair sterile gloves.	0	-	100	100.0	0	-
h) 1 alcohol wipes.	0	-	0	-	100	100.00
i) Irrigation solution 100 ml	100	100.00	0	-	0	-
j) Sterile forceps.	0	-	100		0	-
4- Explain the procedure to the patient.	0	-	58	58	42	42.
5- Draw bed curtains	50	50.00	50	50.	0	-
6- Position and drape the patient.	50	50.00	50	50.	0	-
7- Open the catheter pack	0	-	100		0	-
8- Setup the equipment.	0	-	100		0	-
9- Pour the normal saline into the catheter pack to soak cotton balls	50	50.0	50	50.	0	-
10- Prepare the irrigation fluid in a sterile jug.	50	50.0	50	50.	0	-
11- With cotton balls, clean the patient's meatus and the whole catheter.	0	-	100	100.	0	-
12- Use alcohol to wipe and disinfect the catheter end	0	-	60	60.	40	40.0
13- disconnect the catheter then place it on the sterile towel	0	-	60	60.0	40	40.0
14- Wrap the drainage bag in the second sterile towel and place it a side.	0	-	60	60.0	40	40.0
15- Wash hands	0	-	0	-	100	100.
16- Put on gloves.	0	-	100	100.	0	-
17- Fill 50 ml syringe with irrigation fluid and connect the syringe nozzle to the catheter end.	0	-	100	100.	0	-

N.B. Numbers are not mutually exclusive.

Table No. 6: (contin.)

Items	Nurses' number = 100					
	Satisfied		Unsatisfied		Poor	
	No.	%	No.	%	No.	%
18- Insert the irrigation fluid and aspirate fluid continuously.	100	100.00	0	-	0	-
19- Assess the amount of force required.	100	100.00	0	-	0	-
20- Continuous aspiration until the required fluid is clear.	0	-	100		0	-
21- Wipe the end of the urinary drainage bag with alcohol swab.	50	50.00	50	50.	0	-
22- Reconnect the catheter.	100	100.00	0	-	0	-
23- Dry the patient.	0	-	100	100.00	0	-
24- Secure the catheter on the patient's thigh.	50	50.00	50	50.00	0	-
25- Hang catheter bag below the level of patient's bladder.	0	-	100	100.00	0	-
26- Ensure the patient is comfortable Position.	0	-	100	100.00	0	-
27- Wash hand.	0	-	100	100.00	0	-
28- Ensure indwelling catheter draining properly.	0	-	100	100.00	0	-
29- Color of the drainage bag	0	-	100	100.00	0	-
30- Ensure that there is more fluid draining out than being infused.	0	-	100	100.00	0	-
31- Ensure that there is no leakage around the catheter.	0	-	100	100.00	0	-
32- Patient's comfort.	0	-	100	100.00	0	-
33- Record amount of fluid inserted.	100	100.00	0	-	0	-
34- Record amount of fluid retained.	100	100.00	0	-	0	-

N.B. Numbers are not mutually exclusive.

This table shows that, all nurses have unsatisfied level of practice regarding preparation of incontinent sheet and use of sterile gloves.

But all of them have satisfied level of practice regarding check the order and the amount of irrigation solution that is used for procedure, and all of them have unsatisfied level of practice regarding opening the catheter pack, setup equipment , use of sterile forceps , use of gloves and cleaning the patient meatus and whole catheter. Also they have

unsatisfied level of practice regarding continuous aspiration until the fluid becomes clear. They also have unsatisfied level of practice regarding drying the patient, and hanging the catheter bag below the patient's bladder and poor practice regarding hand washing. But all of them have satisfied level of practice regarding the assessment of the amount of forces required in irrigation technique. Also all of them have satisfied practice regarding record the amount of fluid inserted and amount of fluid retained.

Table No. (7) Number and percentage distribution of nurses' practice regarding emptying the urine drainage bag.

Items	Nurse's number = 100					
	satisfied		unsatisfied		Poor	
	No.	%	No.	%	No.	%
1- Check if bag is filled.	61	61.	39	39.0	0	-
2- Wash and dry hands.	0	-	0	-	100	100.00
3- Collect appropriate equipment including:						
a) Plastic Apron.	0	-	0	-	100	100.00
b) Gloves.	0	-	100	100.	0	-
c) Suitable receptacle	0	-	100	100.00	0	-
d) Alcohol Swab.	0	-	0	-	100	100.00
4- Apply apron and gloves.	0	-	100	100.00	0	-
5- Place receptacle under drainage bag outlet.	100	100	0	-	0	-
6- Drain urine into receptacle.	100	100	0	-	0	-
7- Close drainage outlet and wipe with alcohol Swab.	0	-	100	100.00	0	-
8- Dispose of urine.	100	100	0	-	0	-
9- Wash and dry receptacle	0	-	0	-	100	100.00
10- Remove gloves and apron,	0	-	100	100.	0	-
11- Wash and dry hands.	0	-	100	100.00	0	-
12- Ensure the catheter is draining	0	-	100	100.00	0	-
13- Record the output in patient’s notes.	100	100	0	-	0	-

N.B. Numbers are not mutually exclusive.

This table illustrates that, all nurses have unsatisfied practice regarding equipment (gloves and suitable respectable), and closing drainage outlet and wiping with alcohol swab. They also have unsatisfied practice regarding washing hands and ensuring draining of catheter. But all of them have satisfied practice regarding placing the respectable under drainage bag outlet and recording output in patient's notes.

Table No. (8) Number and percentage distribution of nurses regarding the change of catheter drainage bag.

Items	Nurses' number = 100					
	satisfied		unsatisfied		poor	
	No.	%	No.	%	No.	%
1- Check for presence of accumulation of sedimentation or leakage.	100	100.00	0	-	0	-
2- Wash and dry hands.	0	-	0	-	100	100
3- Collect appropriate equipment including:						
a) Gloves	100	100.00	0	-	0	-
b) Plastic apron	0	-	0	-	100	100.0
c) Sterile urine drainage bag	100	100.00	0	-	0	-
d) Alcohol Swab.	0	-	0	-	100	100
4- Protect bed/chair	0	-	100	100.0	0	-
5- Apply a plastic apron	0	-	0	-	100	100
6- Apply gloves	100	100.00	0	-	0	-
7- Loosen the cover from the end of new tubing	100	100.00	0	-	0	-
8- Disconnect the old drainage bag,	50	50.00	50	50.00	0	-
9- Lowering the end of tubing to drain residue urine into bag.	50	50.00	50	50.00	0	-
10- Wipe the open end of catheter with Alcohol Swab.	0	-	0	-	100	100
11- Connect the new tube to the catheter	0	-	100	100.00	0	-
12- Remove the used bag.	100	100.00	0	-	0	-
13- Wash hands.	0	-	100	100	0	-
14- Measure and record the volume of content.	100	100.00	0	-	-	-

N.B. Numbers are not mutually exclusive.

This table shows that all nurses have unsatisfied level of practice regarding protecting bed/ chair and using of alcohol swap and connecting new tube to the catheter. But all of them have satisfied practice regarding the check for accumulation of sedimentation and leakage, use of gloves, sterile urinary drainage bag and removing the used bags.

Table No. (9) : Number and percentage distribution of Nurses' practice regarding removing catheter;

Items	Number of nurse's = 100					
	Satisfied		Unsatisfied		Poor	
	No.	%	No.	%	No.	%
1- Verify the order.	100	100.0	0	-	0	-
2-Obtain necessary equipment:						
a) Paper towels.	0	-	0	-	100	100.00
b) A syringe	100	100.0	0	-	0	-
c) A small container	0	-	100	100.0	0	-
d) Clean gloves.	0	-	100	100.0	0	-
3- Explain the procedure to the patient.	0	-	100	100.0	0	-
4- Place the container between the patient's thighs.	0	-	100	100.0	0	-
5- Hand washing.	0	-	0	-	100	100.00
6- Put on clean gloves.	0	-	100	100.0.	0	-
7- Withdraw the entire contents of the balloon by the syringe.	100	100.0	0	-	0	-
8- Remove the catheter and place in the container.	0	-	100	100.0	0	-
9- Ensure the patient is comfortable	0	-	100	100.0	0	-
10- Measure any remaining urine in the urine collection bag.	100	100.0	0	-	0	-
11- Dispose of catheter equipment in an appropriate infectious waste bin.	0	-	100	100.0	0	-
12- Hand washing.	0	-	100	100.0	0	-
a) Ensure the catheter is removed without difficulty.	0	-	100	100.0	0	-
b) Patient's voiding adequate amounts at regular intervals.	0	-	100	100.0	0	-
c) The patient is continuing to increase fluid intake.	0	-	100	100.0	0	-
13- Record time of catheter removal.	100	100.0	0	-	0	-
14- Recording urine output and patient response.	0	0	100	100.0	0	-

N.B. Numbers are not mutually exclusive.

This table indicates that, all nurses have unsatisfied practice regarding obtain necessary equipment (small container and clean gloves) ,explaining the procedure to the patient, and placing the container between the patient's thighs, all of them have unsatisfied practice regarding dispose of catheter equipment, ensuring that catheter is

removed without difficulty and patient's voiding an adequate amount at regular interval and all of them have poor practice regarding hand washing, and all of them have unsatisfied practice regarding evaluation of patient response. But all of them have satisfied practice regarding measuring any remaining urine in the urine collection bag, verifying the order and withdrawing the entire contents of the balloon by the syringe and recording time of the catheter removal.

Table No. (10): Number and percentage distribution of nurses with unsatisfactory practice regarding urinary catheterization and catheter care.

Items	unsatisfied	
	No.	%
I- **Catheter insertion:**		
Collect equipment .	100	100.0
Explain the procedure.	100	100.0
Put on gloves.	100	100.0
Wash hands.	41	41.00
Open disposable catheter pack.	70	70.00
Draw bed curtains.	51	51.00
Place the patient in a recumbent position, knee flexed and wide a part with incontinence sheet under the patient.	51	51.00
Position the sterile towel between the patient's legs.	31	31.00
Arrange a sterile field.	30	30.00
Fill the syringe with the required amount of sterile water.	59	59.00
Inflate the catheter balloon and check for leaks.	30	30.00
Deflate the balloon and leave the syringe attached.	50	50.0
Hold labia apart with gloved hand and cleanse with cotton wool balls the patient's labia minora and urethral opening (meatus).	20	20.00
Slowly insert lubricant into urethral opening.	100	100.0
Using gloved hands, lubricate the catheter tip.	100	100.0
Separate the patient's labia and gently insert the catheter directly into patient's urethra.	100	100.0
Check for the flow of urine.	100	100.0
Hang the catheter bag below the level of patient's bladder.	100	100.0
Secure the catheter on patient's thigh.	60	60.00
Ensure the patient is comfortable.	100	100.0
Gather and discard equipment, clean the non disposable equipment.	100	100.0
Document urine characteristics.	100	100.0
Clear the area.	50	50.00
Hand washing.	43	43.00
II- Catheter irrigation:		
Setup the equipment.	100	100.0
Explain the procedure to the patient.	58	58.00
Draw bed curtains.	50	50.00
Position and drape the patient.	50	50.00
Pour the normal saline into the catheter pack to soak cotton balls.	50	50.00

Table No. 10: (contin.)

Items	unsatisfied	
	No.	%
Prepare the irrigation fluid in a sterile jug.	50	50.00
Disconnect the catheter then place on the sterile towel	60	60.00
Fill 50 ml syringe with irrigation fluid and connect the syringe nozzle to the catheter end.	100	100.0
Continuous aspiration until the required fluid is clear.	100	100.0
Dry the patient	100	100.01
Wash hands.	100	100.0
Place catheter bag below the level of patient's bladder.	100	100.0
Secure the catheter on the patient's thigh.	50	50.00
Ensure indwelling catheter draining properly	100	100.0
Color of the drainage bag	100	100.0
Ensure that there is more fluid draining out than being infused.	100	100.0
Ensure that there is no leakage around the catheter	100	100.00
III- emptying the urine drainage bag		
Check if bag is filled.	39	39.00
Apply apron and gloves	100	100.0
A suitable receptacle	100	100.0
Ensure the catheter is draining	100	100.0
Close the drainage outlet and wipe with alcohol Swab.	100	100.0
Wash and dry hands.	100	100.0
IV- Change urinary drainage bag		
Wash hands.	100	100.
Disconnect the old drainage bag,	50	100.
Lowering the end of tubing to drain residue urine into bag.	50	100.
Connect a new tub to the catheter	100	100.
V- Removing catheter		
A small container	100	100.0
Clean gloves	100	100.
Explain the procedure to the patient.	100	100.
Place a container between the patient's thighs.	100	100.
Put on clean gloves.	100	100.
Remove the catheter and place in the container.	100	100.
Dispose of catheter equipment in an appropriate infectious waste bin.	100	100.
Hand washing.	100	100.

Table No. 10: (contin.)

Items	unsatisfied	
	No.	%
Ensure the catheter is removed without difficulty.	100	100.
Patient's voiding adequate amounts at regular intervals.	100	100.

This table indicates that all nurses have unsatisfied practice regarding catheter insertion(e.g collecting equipment, slowly insert lubricant into urethral opening, check for flow of urine and hanging the catheter bag below the level of patient's bladder.

Also the table indicates that all nurses have unsatisfied practice regarding catheter irrigation (e.g setup equipment and with cotton balls, cleansing the patient meatus and the whole catheter).

Also the table illustrates that all nurses have unsatisfied practice regarding emptying the urine drainage bag (e.g. applying an apron and gloves, ensuring the catheter is draining and closing the drainage outlet and wiping with alcohol swab).

Also the table indicates that all nurses have unsatisfied practice regarding change urine drainage bag and removing the catheter.

Figure (7) distribution of studied nurse according to their satisfied practice regarding to urinary catheterization and catheter care.

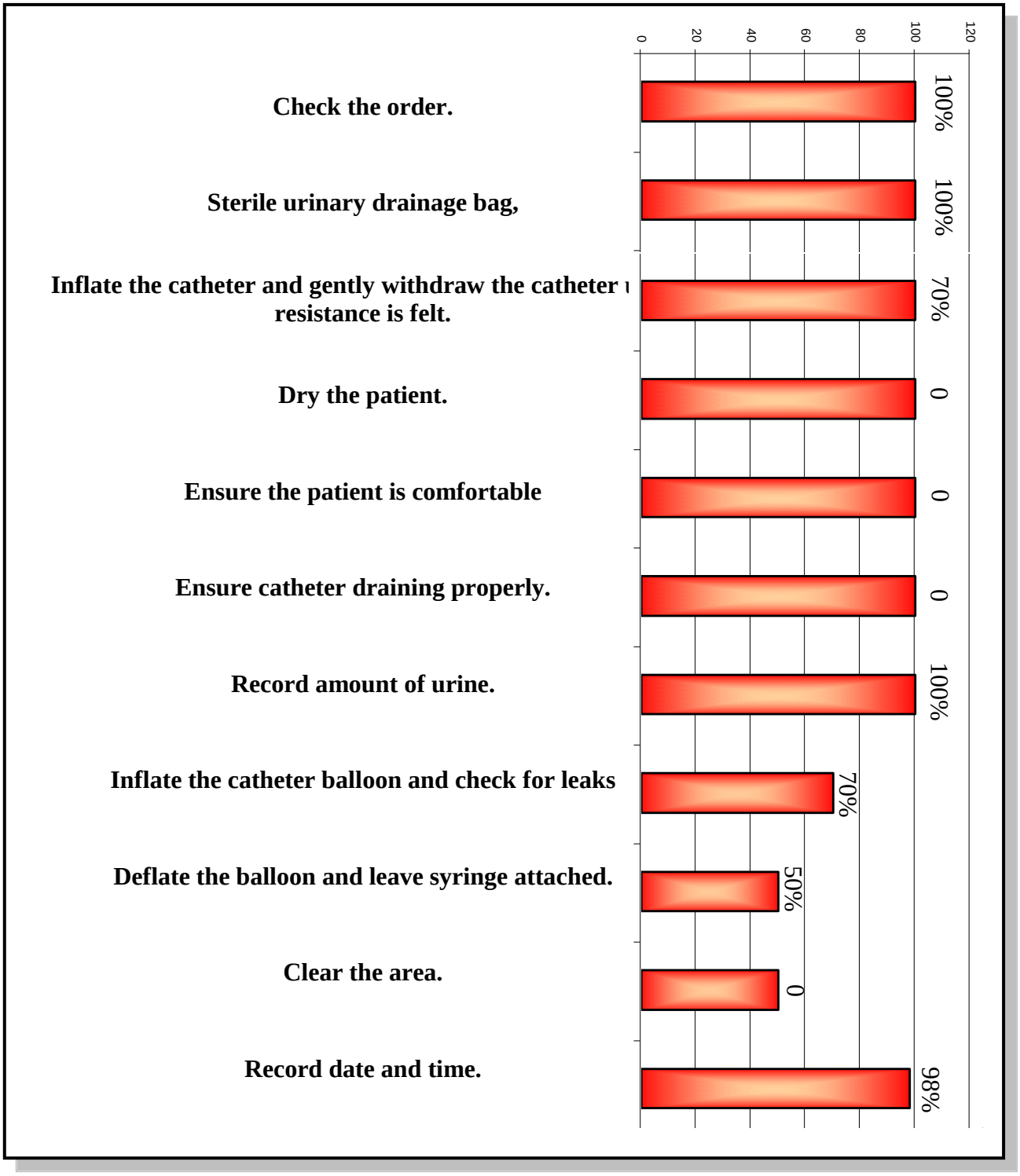


Figure 8 : (contin)

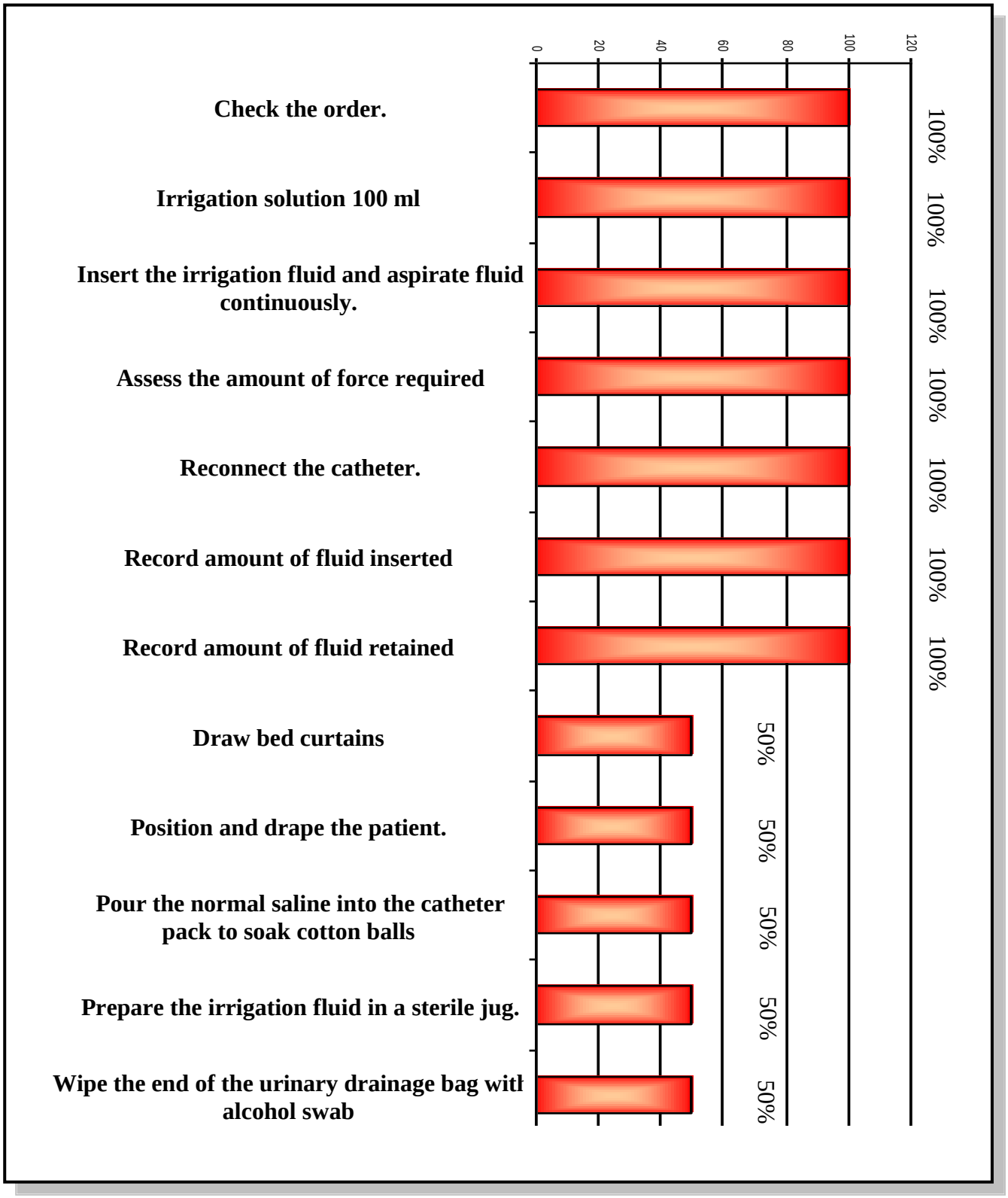
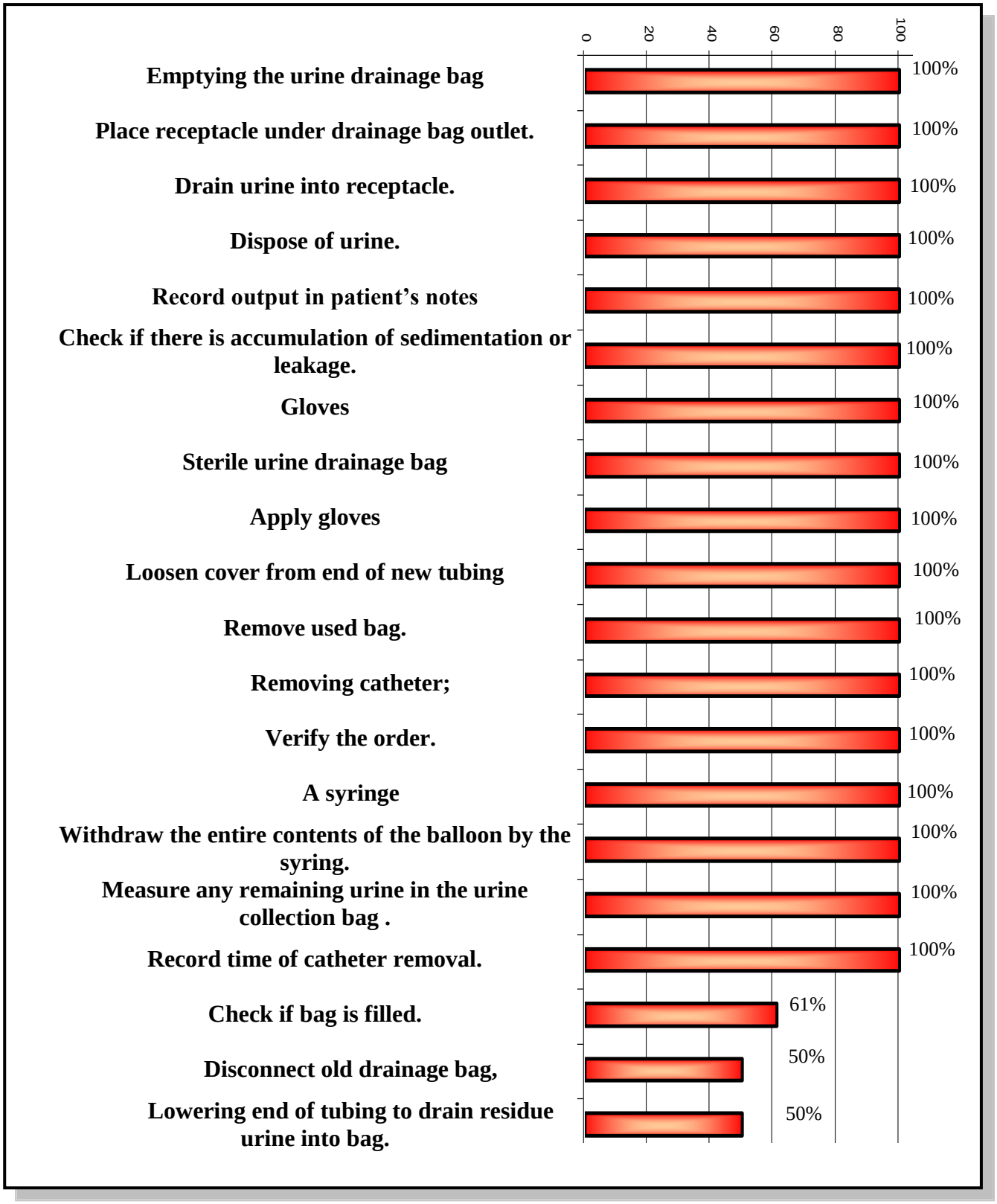


Figure 9 :(contin.)



Part V: The relation between nurses' knowledge and practice regarding patients with urinary catheterization and catheter care

Table No. (11) : The relation between nurses' knowledge and practice regarding patients with urinary catheterization and catheter care

	Range	**Mean±SD**
Knowledge	21-34	26.89±3.278
Practice	429-466	442.41±7.0239
r	– 0.065	
P-value	> 0.522	

P< 0.05 Significant or P> 0.05 Insignificant

(r = – 0.065), and (p-value= 0.522)

This table shows that, there is no significant difference between nurses' knowledge and practice.

Part VI: - The relation between nurses' knowledge and practice in relation to their characteristics.

Table No. (12):- The relationship between nurses' knowledge and age.

	Knowledge						ANOVA	
	Range			Mean	±	SD	f	P-value
<25	22.0	-	33.0	26.467	±	3.089	1.316	0.273
25-30	23.0	-	34.0	27.700	±	3.358		
>30	21.0	-	32.0	27.350	±	3.689		

P< 0.05 Significant or P> 0.05 Insignificant

f=1.316 and p-value=0.273

This table shows that, there is no statistical significant difference between age and knowledge.

Table No. (13):-The relationship between knowledge and experience.

Years of experience	Knowledge						ANOVA	
	Range			Mean	±	SD	f	P-value
<5	22.0	±	33.0	26.229	±	2.815	5.663	<0.005
5-10	22.0	±	34.0	28.864	±	3.496		
>10	21.0	±	32.0	26.500	±	3.340		
Tukey's test								
<5 & 5-10			**5-10 >10**			**5-10 & >10**		
0.004*			0.927			0.023*		

P< 0.05 Significant or P> 0.05 Insignificant

f=5.663 and p-value=0.005*

This table indicates that, there is a statistical significant relation between knowledge and experience

Table No. (14):- The relationship between practice and age.

Age	Practice						ANOVA	
	Range			Mean	±	SD	f	P-value
<25	429.0	-	458.0	442.733	±	7.145	1.304	> 0.276
25-30	436.0	-	450.0	443.600	±	6.636		
>30	431.0	-	466.0	440.250	±	6.912		

P< 0.05 Significant or P> 0.05 Insignificant

f=1.304 and p-value=0.276

This table reveals that, there are no statistical significant relation between age and practice

Table No. (15):- The relationship between practice and experience .

	Practice						ANOVA	
	Range			Mean	±	SD	f	P-value
<5	429.0	±	456.0	441.417	±	6.581	0.922	> 0.401
5-10	436.0	±	458.0	443.364	±	7.792		
>10	431.0	±	466.0	443.300	±	7.149		

P< 0.05 Significant or P> 0.05 Insignificant

f=0.922 and p-value=0.401

This table shows that, there is no statistical significant relation between practice and experience .

Table No. (16):- The relationship between knowledge and practice with Level of education.

	level of education							
	diploma			diploma with espe			T-test	
	Mean	±	SD	Mean	±	SD	t	P-value
Knowledge	26.956	±	3.382	26.300	±	2.163	0.598	>0.551
Practice	441.900	±	6.986	447.000	±	5.831	-2.221	<0.029*

P< 0.05 Significant or P> 0.05 Insignificant

This table shows that, there is no statistical significant difference between level of education and knowledge where t = 0.589 and p-value=0.551 but there is a significant relation between level of education and practice where t= -2.221 and p= value= 0.029.

Part VII: - The correlation among knowledge, age and experience:-

Table No. (17): The correlation between knowledge and practice, age and experience

	Age		**experience**	
	r	P-value		
Knowledge	– 0.005	> 0.957	0.002	0.988
Practice	0.175	> 0.791	0.0145	0.881

This table shows that, there are no correlations between Knowledge, practice, age and experience.