

CHEPTER IV

RESULTS

This research project was a cross-sectional, descriptive study with the aim to study the prevalence rate and factors affecting nosocomial urinary tract infection among the patients with indwelling urinary catheters, Thungsong Hospital, Nakhon Si Thammarat Province. The data were collected through interviewing 300 patients with indwelling urinary catheters, in the In-patient Department of Thungsong Hospital, during, 1 April-30 June, 2003. The results of the study were presented as the followings:

- Part 1. General characteristics of the patients, data regarding medical treatment and the prevalence rate of the urinary tract infection of the patients with indwelling urinary catheters.
- Part 2. Factors relating urinary tract infection of the patients with indwelling urinary catheters.
- Part 3. General information of the hospital, self-education and observation data regarding nursing procedures in urinary catheterization and nursing care for the patients with indwelling urinary catheters.
- Part 4. Data of disinfectant and sterilization procedures of urinary catheterization set and flush set of the Central Supply Unit.

Part 5 Conclusions of the comparison analysis between nurses' self-evaluation and observation data regarding urinary catheterization and nursing care provided.

PART 1. GENERAL CHARACTERISTICS OF THE PATIENTS

Table 1: Percentage of the patients with indwelling urinary catheters in Thungsong Hospital classified by general characteristics

General characteristics	Number (n = 300)	Percentage
Sex		
Male	77	25.7
Female	223	74.3
Age		
< 20 Years	21	7.0
20-29 Years	99	33.0
30-39 Years	77	25.7
40-49 Years	28	9.3
50-59 Years	18	6.0
60-69 Years	15	5.0
≥ 70 Years	42	14.0
\bar{X} = 39.44 Years, SD = 19.28 Years, Min = 1 Year, Max = 91 Years		
Marital status		
Single	20	6.7
Married	272	90.6
Widowed, Divorced	8	2.7

From Table 1, it was found that most of 300 patients (74.3 %) with indwelling urinary catheters in Thungsong Hospital during April-June, 2003, were females. About one third of them aged between 20-29 years, followed by the age group of 30-39 years

(25.7 %) and the group of 70 years old and over (14.0 %). The average age was 39.44 years, with the standard deviation of 19.28, the minimum age was 1 year and the maximum age was 91 years. The high percentage of them (90.6 %) were married whereas 6.7 percent were single.

Table 2: Percentages of the patients with indwelling urinary catheters in Thungsong Hospital classified by factors relating urinary tract infections

Factors	Number (n = 300)	Percentage
Department		
I.C.U	25	8.3
Med-Surg male	55	18.3
Obstetric	173	57.7
Special	2	0.7
Med-Surg female	41	13.7
Pediatric	4	1.3
Underlying disease		
No	251	83.7
Yes	49	16.3
Antibiotics received		
Yes	282	94.0
No	18	6.0
The person who inserted the urinary cathete		
Technical nurse	19	6.3
General nurse	281	93.7
Indication for having indwelling urinary catheter		
Dysuria	57	19.0
Major surgery	223	74.3
Other	20	6.7



Table 2: (Cont.) Percentages of the patients with indwelling urinary catheters in Thungsong Hospital classified by factors relating urinary tract infections

Factors	Number (n = 300)	Percentage
Have over been diagnosed or treated by inserting any medical instrument into urinary tract?		
Never	297	99.0
Ever	3	1.0
Bladder irrigation		
No	298	99.3
Yes	2	0.7
Urine measurement per day (24hours)		
Every hour	2	0.7
Every 2 hour	1	0.3
Every 8 hour	297	99.0
Type of the Urine bag		
Without valve	0	0.0
With a valve	300	100.0
Change of the urine bag		
No	293	97.7
Yes	7	2.3
Catheter size		
8 F	2	0.7
12 F	2	0.7
14 F	179	59.6
16 F	117	39.0

Table 2: (Cont.) Percentages of the patients with indwelling urinary catheters in Thungsong Hospital classified by factors relating urinary tract infections

Factors	Number (n = 300)	Percentage
Duration of catheterization		
1-2 days	188	62.7
3-4 days	41	13.7
5-6 days	20	6.7
≥7 days	51	17.0
$\bar{x} = 4.10$ days, SD = 5.56 days, Min = 1 days , Max = 60 days		

The data, from Table 2 showed that more than half (57.7 %) of 300 patients with indwelling urinary catheters were in the Obstetric & Gynaecology Ward, followed by 18.3 percent in the Medical and Surgical (Male) Ward, and 13.7 percent in the Medical and Surgical (Female) Ward, respectively. There were 49 patients who indicated that they had underlying diseases. Most of the patients (94.0 %) have received antibiotics. The insertion of urinary catheters was done by general nurses (93.7 %) and indications for urinary catheterization were for operation (74.3 %) and for assessing kidney function (19.0%). The high percentage of the patients (99.0 %) had the first experience of getting urinary catheterization and among this group only 1 case (0.7 %) had continuous bladder irrigation. Regarding the frequency of measuring urine, 99.0 percent have urine measured every 8 hours. Most of the patients had the closed-valve urine bag whereby the change of urine bag does not need because most of the patients used the short term catheterization. Regarding the size of the catheters used, catheters size 14 F. were used with more than half of the patients (59.6 %) and size 16 F. were used with 39.6 percent of the patients. The highest percentage of the patients (62.7 %) had indwelling urinary catheters for 1-2 days followed by 17.0 percents who had the

catheters for 7 days or longer, and the average period of catheterization was 4.10 days with the standard deviation of 5.56 days. The shortest day of having catheters was 1 day and the maximal day was 60 days.

Table 3: Percentages of the patients with indwelling urinary catheters in Thungsong Hospital classified by underlying diseases

Factors	Number (n = 49)	Percentage
Underlying disease		
- Diabetes	13	26.5
- Hypertension	13	26.5
- COPD.	10	20.4
- Heart disease	8	16.3
- Other	5	10.3
Total	49	100.0

There were 49 patients who indicated that they had underlying diseases, which include diabetes and hypertension (26.5 %), chronic obstructive pulmonary disease (20.4 %) and heart disease (16.3%).

Table 4: Percentages of sex of patients with indwelling urinary catheters classified by underlying disease (n = 300)

Underlying disease	Male		Female	
	Number	Percentage	Number	Percentage
No	50	64.1	201	90.5
Yes	28	35.9	21	9.5
Total	78	100.0	222	100.0

From Table 4 showed that among 300 patients with indwelling urinary catheters there were 35.9 percent of the male patients had underlying disease more than female patients whereby 9.5 percent had underlying disease.

Table 5: Nosocomial urinary tract infection rate of catheterized patients in Thungsong Hospital during April-June 2003

Result of infection	Number (n = 300)	Percentage
Non UTI	256	85.3
UTI	44	14.7
Asymptomatic	36	81.8
Symptomatic	8	18.2

Table 5 showed that among 300 patients with indwelling urinary catheters there were 44 cases (14.7 %) who had urinary tract infection whereby 81.8 percent had asymptomatic urinary tract infection and 18.2 percent had symptomatic urinary tract infection.

Table 6: Prevalence rate of nosocomial urinary tract infection of patients with indwelling urinary catheters in Thungsong Hospital classified by department

Department	Number of patients (n = 300)	Number of infection	Infection rate (%)
I.C.U	25	8	32.0
Med-Surg (Male)Ward	55	16	29.1
Obstetric & Gynae Ward	173	2	1.2
Special Ward	2	2	100.0
Med-Surg (Female)Ward	41	16	39.0
Pediatric Ward	4	0	0.0
Total	300	44	14.7

Data from Table 6, revealed that among 300 patients with indwelling urinary catheters there were 44 cases (14.7 %) who had urinary infection. Among these urinary tract infection patients, there were 2 patients admitted in Special Ward and both of them had urinary tract infection, where by 39.0 percent and 32.0 percent of infected patients were found in the Medical and Surgical (Female) Unit and Intensive Care Unit (ICU) respectively.

Table 7: Prevalence rate of nosocomial urinary tract infection of patients with indwelling urinary catheters classified by admission time in Thungsong Hospital (collected data 3 month) (n = 300)

Month	Number	Number of infection	Percentage
April	119	19	16.0
May	92	12	13.0
June	89	13	14.6
Total	300	44	14.7

From Table 7 it was found that the high prevalence rate was found in April (16.0 %), followed by June (14.6 %) and May (13.0 %).

PART 2. ANALYSIS OF FACTORS RELATING TO URINARY TRACT INFECTION OF THE PATIENTS WITH INDWELLING URINARY CATHETERS

Table 8: Percentages of patients who have not infection and have infection of the urinary tract classified by factors of general characteristics of the patients (n = 300)

Factors of general characteristics	Non UTI		UTI		χ^2	p
	Number	Percentage	Number	Percentage		
Sex					13.153	<.001
Male	56	72.7	21	27.3		
Female	200	89.7	23	10.3		
Age					77.166	<.001
< 40 Years	191	97.0	6	3.0		
40-59 Years	36	78.3	10	21.7		
≥ 60 Years	29	50.9	28	49.1		
Underlying disease					75.787	<.001
No	234	92.3	17	6.8		
Yes	22	44.9	27	55.1		

Data from Table 8 showed that among the male patients with indwelling urinary catheters, 27.3 percent of them had urinary tract infection whereas 10.3 percent of female patients with indwelling urinary catheters had urinary tract infection. Among the patients aged 60 years and older there were 49.1 percent had urinary tract infection, whereby 21.7 percent were found with the patients aged 40-59 years. About half of the patients (55.1 %) who had underlying diseases had urinary infection compared to 6.8 percent of the infected patients who did not have underlying diseases. It was found that there was the significant relationship between urinary tract infection and personal characteristics regarding sex, age and underlying diseases ($p < 0.001$).

Table 9: Percentages of the patients with indwelling urinary catheters who have nosocomial urinary tract infection Classified by factors of treatment and nursing care (n = 300)

Factors of treatment and nursing care	Non UTI		UTI		χ^2	p
	Number	Percentage	Number	Percentage		
Antibiotic received					0.061 ¹	.735
- No	15	83.3	3	16.7		
- Yes	241	85.5	41	14.5		
Diagnosed or treated by inserting any medical instrument into urinary tract					17.631 ¹	<.01
- Never	256	86.2	41	13.8		
- Ever	0	0.0	3	100.0		
Indication for having indwelling urinary catheter					65.775	<.001
- For evaluate kidney function	44	57.1	33	42.9		
- For major surgery	212	95.1	11	4.9		
Duration of indwelling urinary catheter					79.480	<.001
- < 7 days	233	93.6	16	6.4		
- ≥ 7 days	23	45.1	28	54.9		
Changing of the urine bag during catheterization					18.451 ¹	<.01
- No	254	86.7	39	13.3		
- Yes	2	28.6	5	71.4		
Size of the catheter					58.402 ¹	<.001
- 8-14 F	179	97.8	4	2.2		
- 16 F	77	68.8	40	34.2		

¹ Fisher's Exact test

From Table 9, it was found that there were 16.7 percent of the patients, who received antibiotics, had urinary tract infection, compared with 14.5 percent of those who did not received antibiotics. No significant relationship was found between the use of antibiotics and urinary tract infection. All of those patient who indicated that they ever had experience of inserting instruments into the urethra, had urinary tract infection. Among those patients who had indwelling urinary catheters to assess kidney function, 42.9 percent was found to have urinary tract infection compared to 4.9 percent of infected patients who had urinary catheterization for pre-operation preparation. Regarding the duration of catheterization, the urinary tract infection was found with 54.9 percent of those who had indwelling urinary catheters for 7 days and longer compared with 6.4 percent of those who had indwelling urinary catheters less than 7 days. More than half of the patients (71.4 %) whose urine bags were changed during catheterization, were infected with urinary tract infection whereas 13.3 percent of those whose urine bags have not been changed were infected. About 34 percent of urinary tract infection were found with the patients who have inserted catheter size 16 F. and for those who have inserted catheter size 8-14 F., 2.2 percent were found infected of the urinary tract. Significant relationship was found between nursing care factors and urinary tract infection ($p < 0.01$) but no significant relationship was found between urinary tract infection and the use of antibiotics.

**PART 3. DATA OF CHARACTERISTICS, SELF-ASSESSMENT AND
OBSERVATION OF NURSES FOR INSERTING AND NURSING
CARE OF PATIENTS WITH INDWELLING URINARY
CATHETERS**

Table 10: Percentages of nurses in Thungsong Hospital classified by personal characteristics

General Characteristics	Number (n = 87)	Percentage
Age		
20-29 Years	36	41.1
30-39 Years	38	43.7
≥ 40 Years	13	14.9
\bar{X} = 33.98 Years SD = 7.19 Years Min = 20 Years Max = 52 Years		
Education		
Diploma	23	26.4
Bachelor Degree	64	73.6
Position		
Technical nurse	24	27.6
Professional nurse	63	72.4
Years of work experience		
< 5 Years	21	24.2
6-10 Years	19	21.8
11-15 Years	15	17.2
16-20 Years	20	23.0
≥ 21 Years	12	13.8
\bar{X} = 12.21 Years SD = 7.28 Years Min = 1 Year Max = 30 Years		

Table 10, presented the general characteristics of the 87 nurses who provided nursing care for the patients who had indwelling urinary catheters. All of the nurses were females, 43.7 percent of them aged 30-39 years and 41.4 percent aged 20-29

years. The average age was 33.98 years, with the standard deviation of 7.19 years. The high percentage of them received Bachelor Degree (73.6 %) and 26.4 percent received Diploma in Nursing, 72.4 percent were professional nurses while 27.6 percent were technician nurses. Regarding year of working experience, 24.1 percent have worked for 1-5 years, followed by 16-20 years (23.0 %), with the average year of 12.21 years.

Table 11: Percentage of nurses classified by department (n =87)

Department (work site)	Number (n=87)	Percentage
ICU	12	13.8
Med-Surg (Male)	12	13.8
Obstetric-Gynae	12	13.8
Special	4	4.6
Med-Surg (Female)	14	16.1
Pediatric	9	10.3
Emergency Room	11	12.6
Operation Room	13	14.9

From Table 11 There were the highest number of nurses working at Medical and Surgical (Female) Ward 16.1 %), followed by the Operation Room (14.9 %), and ICU, Medical and Surgical (Male) Ward, Obstetric-Gynecology ward (13.8 %). The least number of nurses worked in the Special Ward (4.6 %).

Table 12: Percentages of self-evaluation for inserting urinary catheter classified by nursing activity (n = 87)

Activity	Never N (%)	Sometime N (%)	Every time N (%)	Level
1. Explaining objectives of having indwelling urinary catheter	0 (0.0)	5 (5.7)	82 (94.3)	Good
2. Preparing proper urinary catheterization set	0 (0.0)	0 (0.0)	87 (100.0)	Good
3. Preparing container/bin for waste disposal	0 (0.0)	0 (0.0)	87 (100.0)	Good
4. Preparing the patient by closing the curtain and closing patients' eyes	0 (0.0)	4 (4.6)	83 (95.4)	Good
5. Washing hands by using antiseptic solution (pevidine scrub) and drying hands with disposal cloth	18 (20.7)	45 (51.7)	24 (27.0)	Need improvement
6. Unpacking the urinary catheterization set with aseptic technique	1 (1.1)	1 (1.1)	85 (97.7)	Good
7. Choosing the appropriate size of the catheters	0 (0.0)	0 (0.0)	87 (100.0)	Good
8. Wearing globes with aseptic technique	1 (1.1)	3 (3.4)	83 (95.4)	Good
9. Pull out the plastic that covered the end of the catheter	1 (1.1)	22 (25.2)	64 (73.6)	Fair
10. Cleansing the genital organs by sterile water	26 (29.9)	10 (11.4)	51 (58.6)	Need improvement
11. Putting the sterile sheet cover the surrounding area of the genital organs	0 (0.0)	10 (11.4)	77 (88.6)	Fair
12. Changing the globes before inserting the urinary catheter	27 (31.0)	20 (23.0)	40 (46.0)	Need improvement
13. Cleansing the opening part of the urethra by pevidine solution	4 (4.6)	4 (4.6)	79 (90.8)	Fair
14. Inserting the urinary catheter gently into the urethra while taking off the plastic that covered the catheter	0 (0.0)	0 (0.0)	87 (100.0)	Good
15. Hanging the urine bag kept below the level of the bladder	0 (0.0)	0 (0.0)	87 (100.0)	Good
16. Using plasters to prevent the contraction of the urinary catheter	0 (0.0)	1 (1.1)	86 (98.9)	Good
17. During inserting the catheter, if the catheter can't get in or bleeding occurs, stop and consult the physician	0 (0.0)	1 (1.1)	86 (98.9)	Good
Total	78 (5.3)	126 (8.5)	1275 (86.2)	Good

Data in Table 12, There were eleven of good level, three of fair and three of need improvement revealed that 86.2 percent of the nurses evaluated their procedures performed for urinary catheterization as good and evaluated that they performed at good level of patient preparation. The techniques that needed to be improved were povidine scrub and dry hands (20.7 %), flushing with sterile water (58.6 %), and the change of globes before inserting urinary catheters (46.0 %).

Table 13: Percentage of self-evaluation for nursing care of the patients with urinary catheter classified by nursing activity (n = 87)

Activity	Never N (%)	Sometime N (%)	Every time N (%)	Level of Practice
1. Keeping the catheter fared from moving or contracting by putting the plasters at the correct part	0 (0.0)	4 (4.6)	83 (95.4)	Good
2. Cleansing the genital organs by soap and water and drying every-time	6 (6.9)	15 (17.2)	66 (75.9)	Fair
3. Washing hands before and after pouring urine of the individual patient	14 (16.1)	26 (29.9)	47 (54.0)	Need improvement
4. Cleansing the outlet of the urine bag with Alcohol 70% before and after opening-closing the urine bag	21 (24.1)	27 (31.0)	39 (44.8)	Need improvement
5. Using the clean vessel to measure the urine	2 (2.3)	30 (34.5)	55 (63.2)	Need improvement
6. Clipping/closing the urinary catheter every-time after the urine measurement	2 (2.3)	4 (4.6)	81 (93.1)	Good
7. Checking for the right condition of the catheter (looking for the conditions as broken, folds etc.)	0 (0.0)	16 (18.3)	71 (81.6)	Fair
8. Not placing the urinary catheter on the floor	0 (0.0)	20 (23.0)	67 (77.0)	Fair
Total	45 (6.5)	142 (20.4)	509 (73.1)	Fair

Table 13 presented the data regarding self-evaluation of nurses who provided nursing care for the patients with indwelling urinary catheters. There were two on good level, three on fair level and three on need improvement. The average level of performance was fair (73.1 %). But the nursing care activities that should be improved were: hand-washing before and after pouring the urine of each individual patient (54.0%), the using of Alcohol 70% before and after opening and closing the urine bag (44.8%).

Table 14: Percentages of observation for inserting urinary catheter classified by nursing activity (n = 87)

activity	Did not Practice	Practiced	Level of practice
	N (%)	N (%)	
1. Explaining objectives of having indwelling urinary catheter	45 (51.7)	42 (48.3)	Need improvement
2. Preparing proper urinary catheterization set	0 (0.0)	87 (100.0)	Good
3. Preparing the container/bin for waste disposal	0 (0.0)	87 (100.0)	Good
4. Preparing patient by closing the curtain and closing patients' eyes	2 (2.3)	85 (97.7)	Good
5. Washing hands by using antiseptic solution (pevidine scrub) and drying hands with disposal cloth	65 (74.7)	22 (25.3)	Need improvement
6. Unpacking the urinary catheterization set with aseptic technique	0 (0.0)	87 (100.0)	Good
7. Choosing the appropriate size of the catheter	0 (0.0)	87 (100.0)	Good
8. Wearing gloves with aseptic technique	0 (0.0)	87 (100.0)	Good
9. Pull out the plastic that covered the end of the catheter	1 (1.1)	86 (98.9)	Good
10. Cleansing the genital organs by sterile water	60 (69.0)	27 (31.0)	Need improvement
11. Putting the sterile sheet cover the surrounding area of the genital organs	13 (14.9)	74 (85.1)	Good
12. Changing the gloves before inserting the urinary catheter	73 (83.9)	14 (16.1)	Need improvement

Table 14: (Cont.) Percentages of observation for inserting urinary catheter classified by nursing activity (n = 87)

activity	Did not Practice	Practiced	Level of practice
	N (%)	N (%)	
13. Cleansing the opening part of the urethra by povidine solution	1 (1.1)	86 (98.9)	Good
14. Inserting the urinary catheter gently into the urethra while taking off the plastic that covered the catheter	0 (0.0)	87 (100.0)	Good
15. Hanging the urine bag kept below the level of the bladder	3 (3.4)	84 (96.6)	Good
16. Using plasters to prevent the contraction of the urinary catheter	0 (0.0)	87 (100.0)	Good
17. During inserting the catheter, if the catheter can't get in or bleeding occurs, stop and consult the physician	0 (0.0)	87 (100.0)	Good
Total	263 (17.8)	1216 (82.2)	Good

Table 14 presented the data from observation regarding nursing procedures of urinary catheterization performed by the nurses. There were thirteen on good, noted on fair and four on need improvement. It was found that 82.2 percent of them performed urinary catheterization at the good level. The activities that needed to be improved were:- explaining objectives of having indwelling urinary catheters (48.3%), hand washing with povidine scrub and drying hands (25.3%), cleansing the genital organs by sterile water (31.0%) and the change of globes before inserting urinary catheters (16.1%).

Table 15: Percentage of observation for nursing care of the patients with urinary catheter classified by nursing activity (n = 87)

activity	Did not Practice	Practiced	Level of practice
	N (%)	N (%)	
1. Keeping the catheter fared from moving or contracting by putting the plasters at the correct part	2 (2.3)	85 (97.7)	Good
2. Cleansing the genital organs by soap and water and drying every-time	21 (24.1)	66 (75.9)	Fair
3. Washing hands before and after pouring urine of the individual patient	55 (63.2)	32 (36.8)	Need improvement
4. Cleansing the outlet of the urine bag with Alcohol 70% before and after opening-closing the urine bag	70 (80.5)	17 (19.5)	Need improvement
5. Using the clean vessel to measure the urine	5 (5.7)	82 (94.3)	Good
6. Clipping/closing the urinary catheter every-time after the urine measurement	1 (1.1)	86 (98.9)	Good
7. Checking for the right condition of the catheter (looking for the conditions as broken, folds etc.)	1 (1.1)	86 (98.9)	Good
8. Not placing the urinary catheter on the floor	15 (17.2)	72 (82.8)	Good
Total	170 (24.4)	526 (75.6)	Fair

The data on nursing activities collected through observation were presented in Table 15, There were five on good level, one on fair and two on need improvement. It was found that the over-all nursing activities were performed at the fair level (75.6%).

The activities of the nursing procedures that should be improved were:- hand washing before and after pouring the urine of each individual patient (36.8 %) and cleansing the outlet with Alcohol 70 % before and after opening-closing the urine bag (19.5 %).

Table 16: A comparison of self-evaluation and observation to inserting urinary catheterization, classified by level (n = 17)

Level	Self-evaluation		Observation	
	No	Percent	No	Percent
Good	11	64.6	13	76.5
Fair	3	17.7	0	0.0
Need improvement	3	17.7	4	23.5
Total	17	100.0	17	100.0

The data from Table 16, showed that a comparison of Self-evaluation and Observation to inserting urinary catheterization. The good level on Observation was 76.5 % and on Self-evaluation was 64.6 % fair level on Self-evaluation was 17.7 % and level need improvement on Observation was 23.5 % on Self-evaluation was 17.7 % of 17 activities

Table 17: A comparison of self-evaluation and observation to nursing care for the patients with indwelling urinary catheters, classified by level (n = 8)

Level	Self-evaluation		Observation	
	No	Percent	No	Percent
Good	2	25.0	5	62.5
Fair	3	37.5	1	12.5
Need improvement	3	37.5	2	25.0
Total	8	100.0	8	100.0

The data from Table 17 was a comparison of Self-evaluation and Observation to nursing care for the patients with indwelling urinary catheters, the good level on Observation was 62.5% and on Self-evaluation was 25.0%, fair level on Self-evaluation was 37.5% and on Observation was 25.0% and need improvement level on Self-evaluation was 37.5% and on Observation was 25.0% of 8 activities

Table 18: Percentage of the level from self-evaluation to inserting urinary Catheterization, classified by Department

Department	Good		Fair		Need improvement	
	Number	%	Number	%	Number	%
ICU	15	88.2	2	11.8	0	0.0
Med-Surg (Male)	8	100.0	0	0.0	0	0.0
Obstetric - Gynae	6	54.5	2	18.2	3	27.3
Special	3	75.0	1	25.0	0	0.0
Med - Surg (Female)	13	92.9	1	7.1	0	0.0
Pediatric	6	66.7	0	0.0	3	33.3
Emergency Room	11	100.0	0	0.0	0	0.0
Operation Room	13	100.0	0	0.0	0	0.0
Total	75	86.2	6	6.9	6	6.9

The data distribution on self-evaluation of nurses regarding procedures of urinary catheterization by the wards presented in Table 18. The wards that all nurses (100.0 %) assessed themselves that their performance was good were: Medical and Surgical (Male), Emergency Room, and Operating Room, followed by Medical-Surgical (Female) Ward, (92.9 %) and ICU. (88.2 %). For all of the wards, 86.2 percent of the nurses thought that their performance was good while 6.9 percent thought that their performance was fair and need improvement.

Table 19: Percentage of the level from self-evaluation of nursing care for the patients with indwelling urinary, classified by Department

Department	Good		Fair		Need improvement	
	Number	Percent	Number	Percent	Number	Percent
ICU	7	41.2	3	17.6	7	41.2
Med - Surg (Male)	5	62.5	2	25.0	1	12.5
Obstetric - Gynae	3	27.3	4	36.4	4	36.4
Special	2	50.0	2	50.0	0	0.0
Med - Surg (Female)	10	71.4	3	21.4	1	7.1
Pediatric	4	44.4	3	33.3	2	22.2
Emergency Room	6	54.5	5	45.5	0	0.0
Operation Room	11	84.6	2	15.4	0	0.0
Total	48	55.2	24	27.6	15	17.2

The data distribution on score level of self-evaluation of nurses regarding the quality of nursing care procedures provided for the patients with indwelling urinary catheters by wards was presented in Table 19. The percentages of the nurses that evaluated their performance as good were the nurses from the following wards: Operation Room (84.6 %), followed by the Medical and Surgical (Female) (71.4 %) and the Medical and Surgical (Male) (62.5 %). For all wards, 55.2 percent of all nurses assessed themselves as good performance, whereas 27.6 percent and 17.2 percent thought that their performance was moderate and need to be improved respectively.

Table 20: Percentage of the level from observation of inserting urinary Catheterization, classified by Department

Department	Good		Need improvement	
	Number	Percent	Number	Percent
ICU	12	70.6	2	29.4
Med - Surg (Male)	4	50.0	4	50.0
Obstetric - Gynae	3	27.3	8	72.7
Special	3	75.0	1	25.0
Med - Surg (Female)	8	57.1	6	42.9
Pediatric	4	44.4	5	55.6
Emergency Room	7	63.6	4	36.4
Operation Room	13	100.0	0	0.0
Total	54	62.1	33	37.9

From Table 20, it was found that through observation all nurses of the Operating Room had performed the urinary catheterization, followed by the Special ward (75.0 %) and ICU (70.6 %). For overall, it was found that 62.1 percent performed the activities at the good level and 37.9 percent at need improvement. (It was no fair level on observation.)



Table 21: Percentage of the level from observation of nursing care for the patients with indwelling urinary catheters, classified by Department

Department	Good		Fair		Need improvement	
	Number	Percent	Number	Percent	Number	Percent
ICU	13	76.5	4	23.5	0	0.0
Med - Surg (Male)	0	0.0	2	25.0	6	75.0
Obstetric - Gynae	4	36.4	4	36.4	3	27.3
Special	0	0.0	2	50.0	2	50.0
Med - Surg (Female)	4	28.6	4	28.6	6	42.9
Pediatric	0	0.0	4	44.4	5	55.6
Emergency Room	11	100.0	0	0.0	0	0.0
Operation Room	13	100.0	0	0.0	0	0.0
Total	45	51.7	20	23.0	22	25.3

From Table 21, it was found that, through observation of the nursing activities provided by the nurses to the patients with indwelling urinary catheters, all of the nurses who provided the good level of nursing activities were from the Emergency Room and the Operation Room, followed by the ICU (76.5 %). The nurses that need to be improved their nursing activities were those from the Medical and Surgical (Male) ward (75.0 %), followed by the pediatric ward (55.6 %) and the Special Ward (50.0 %). For all nurses' performance of all wards, 51.7 percent performed at the good level while 23.0 and 25.3 percent performed at the moderate and need to be improved, respectively.

CONCLUSION OF THE RESEARCH RESULTS

The study of 300 patients with the indwelling urinary catheters in the In-patient Department, Thungsong Hospital, during April-June, 2003, can be concluded as follows:

The prevalence rate of the urinary tract infection was 14.7 percent whereby 81.8 percent were a symptomatic urinary tract infection and 18.2 percent were asymptomatic urinary tract infection. April was the month that the highest prevalence rate occurred (16.0 %), followed by June (14.6 %) and May (13.0 %) respectively. The special ward was the ward that the highest percent of the patients had urinary tract infection whereby there were 2 patients with indwelling urinary catheters and two of them had urinary tract infection (100.0 %), the next ward was the Medical and Surgical (Female) ward (39.0 %) and the ICU (32.0 %) respectively.

Regarding the factors affecting nosocomial urinary tract infection were the following factors: patients' sex, age and underlying disease; medical treatment regarding experience of having instruments inserted through urethra; indication for urinary catheterization, duration of catheterization; changing of urine bag; and the size of catheters used. Regarding nursing activities for inserting urinary catheters, 64.6 percent of nurses evaluated their performance a good while collected from observation, showed that 75.0 percent of the nurses performed at the good level. The activities of nursing care 25.0 percent of self-evaluation as good while 62.5 percent of observation as good. In regard to disinfectant and sterilization procedures of the urinary catheterization set and the flush set of the Central Supply Unit, it was found that all procedures were performed correctly.