

Assessment of Maternity Nurses' Practices of Infection Control Measures during Insertion and Removal of Intrauterine Devices

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Abstract: Infection is a process by which an organism establishes a relationship with host. The process begins with transmission of an infectious organism and it may end in infectious disease, a condition that depends on the response of the host to the invader. The entire process and its outcome hinge on a complex interaction of the infectious agent, an environmental conducive transmission of the organism and a susceptible host. The host and their environmental interactions are prerequisites to infectious disease. Purpose of the study was to assess maternity nurses' practices of infection control measures during insertion and removal of IUDs Design: A descriptive study design. A convenient sample (including all maternity nurses at the selected family planning centers). The instrument of the present study included an Interviewing Questionnaire about assessment of socio-demographic and nurses practices of infection control measures. The result of the present study revealed that 41.7% of studied sample has satisfactory practice regarding IUD insertion and 48.3% for IUD removal. Conclusion: The present study showed that, the majority of studied sample has satisfactory practice regarding IUD insertion and removal and there was statistical significant association between characteristics of studied sample and total level of knowledge. Recommendations: It is recommended that 1-Replication of the study on larger set to widen knowledge based on infection control measures during insertion and removal of IUDs. 2-Nurses must understand and apply evidence-based measures to prevent and control transmission of microorganisms that are likely to cause infection. 3-Establishing polices to reflect government directives related to infection control and ensuring resources are available to follow infection control directives.

Keywords: Intrauterine Devices, maternity nurses and infection control

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I. Introduction

Hemorrhoids also called piles are swollen and inflamed veins in the anus and lower rectum. Infection is a process by which an organism establishes a relationship with host. The process begins with transmission of an infectious organism and it may end in infectious disease, a condition that depends on the response of the host to the invader. The entire process and its outcome hinge on a complex interaction of the infectious agent, an environmental conducive transmission of the organism and a susceptible host. The host and their environmental interactions are prerequisites to infectious disease [1].

Infection control measures provide recommendations that outline the critical aspects of infection prevention and control. These measures include: 1-routine hand hygiene which must be performed before and after every episode of patient contact, 2- wearing personal protective equipment (as aprons or gowns, surgical mask and protective eyewear and gloves), 3-handling and disposal of sharps, 4- routine cleaning of surfaces, cleaning of shared clinical equipment, 6- keep sterile field dry, 7- keep sterile field above waist level, 8- don't cross over sterile field [2].

'Sexual transmitted infections are the major complication resulting from poor insertion techniques and presence of sexually transmitted infection (STI) at the time of insertion. The infection is greatest in the first 20 days after insertion (range 1.4 to 10 per 1000 women undergoing insertion. PID following insertion is due to Polymicrobial infection usually involving anaerobic bacteria from the cervix and vagina [3].

Sufficient physical and human resources are essential to develop and maintain infection prevention. This includes the availability of equipment and supplies necessary for the consistent observation of standard precaution [4].

II. The purpose of the study:

Assess maternity nurses' practices of infection control measures during insertion and removal of IUDs

III. Research Questions:

Are maternity nurses practicing infection control measures during insertion of IUDs?

Are maternity nurses practicing infection control measures during removal of IUDs?

IV. Material and Method

Research Design: A descriptive study design was used .

Setting: The present study was carried out at 8 family planning centers at the representative randomly selected hospitals at Menoufiya governorate (Shebien El-Kom Educational Hospital, Menouf General Hospital, El-Shohada Hospital, Manshyit Soltan University Hospital, Health Insurance in Menouf, Health Institute in Menouf, and Bercket El-Sabh Hospital).

Sample: A convenient sample (including all maternity nurses at the selected family planning centers).

Inclusion criteria of the sample nurses working at the selected family planning centers.

Sample size Based on past review of literature [5] that demonstrated assessment of maternity nurses practices of infection control guidelines during insertion and removal of IUDs to be 51,1% among nurses, sample size has been calculated using the following equation: $n = (z^2 \times p \times q) / D^2$ at power 80% the sample size will be 91 nurses. A convenient sample of 91 maternity nurses coming to previously stated settings (16 from Shebien El-Kom Teaching Hospital, 11 from El-Shohada Hospital, 10 from Manshyit Soltan University Hospital, 8 from Health Insurance at Menouf, 16 from Shebien El-Kom University Hospital, 10 from Health Institution in Menouf, and 8 from Bercket El-Sabh Hospital).

Data Collection Instruments:

First Instrument: Socio-Demographic Data Questionnaire. This instrument was devoted to obtain complete data about maternity nurses.

Second Instrument: Nurses practices of infection control measures

Validity of First Instrument: The validity of the instrument was ascertained by five experts (four experts with DNSc in maternal and new born health nursing, and one expert have doctorate degree in obstetric medicine) who reviewed it for the content accuracy and internal validity. They also were asked to judge the items for completeness and clarity. Suggestions were incorporated into the instrument.

Reliability of First Instrument: Test – retest reliability was applied by the researcher for testing the internal consistency of the instrument. It was done through the administration of the same instrument to the same participants under similar conditions on two or more occasions. Scores from repeated testing were compared.

Scoring system of instrument: Each item was scored 3 for complete answer and 2 for not complete and 1 for wrong. The total score of all questions will be represented in 100% and categorized into three levels, unsatisfactory (<60%) and average from 60% to less than 75% and satisfactory ($\geq 75\%$).

Administrative Approval: A formal letter from Faculty of Nursing, Menoufia University was submitted to (Shebien El-Kom Educational Hospital, Menouf General Hospital, El-Shohada Hospital, Manshyit Soltan University Hospital, Health Insurance in Menouf, Shebien El-Kom University Hospital, Health Institution in Menouf, and Bercket El-Sabia Hospital). An official permission was obtained to carry out the study from the directors of the above-mentioned settings.

Ethical Considerations: Official steps were taken to obtain a permission to conduct the research, with explanation of the aim and the importance of the study to hospital authorities. An informed verbal consent was obtained from all nurses before participation in the study and they were assured that their information would be confidential and only used for research process.

Pilot Study: Piloting was conducted to test the applicability of the instruments, the feasibility of the study and estimate the time needed for data collection. It was conducted on 10 % of the total sample (10 nurses). Based on the pilot study results; the researcher rephrased some questions and sentences then set the final fieldwork schedule. Sample of the pilot study was excluded from the main sample.

Study Maneuver: The current study was carried out in two phases, namely preparatory and implementation phases.

1. The Preparatory Phase: An extensive review related to the study area was done including electronic dissertations, available books and articles. A review of literature to formulate knowledge base relevant to the study area also was done. The review of literature was tested by plagiarism checker software and the result was "low probability of plagiarism in paper: only Percentage 6.7 %"

2. The Implementation Phase: (Data Collection): The data collection started in 1 January 2017 and ended in 18 March 2017. The researcher applied the implementation phase in the following steps:

The 1st step: The researcher introduced herself to the convenient participants and provided verbal explanation of the study. Informed consent was obtained from all participants. Each participant was informed that participation in the study was voluntary and she can withdraw at any time.

The 2nd step: The researcher went to family planning clinic in Shebien El-Kom Teaching Hospital (Shebien El-Kom Teaching Hospital 9am:11am, Menouf General Hospital and Health Institute at Menouf one day weekly (Sunday) from 9 am to 2 pm (Menouf General Hospital 9am:11am, Health Institute at Menouf 12pm:2pm), Health Insurance in Menouf one day weekly (Monday) from 9am to 12 pm, El-Shohada Hospital one day weekly (Tuesday) from 9 am to 12 pm, Manshyit Soltan University Hospital one day weekly (Wednesday) from 9am to 12pm and also Bercket El-Sabh Hospital one day weekly from 9 am to 12 pm .

The 3rd step: The researcher used questionnaires to assess maternity nurses' practices of infection control measures during insertion and removal of IUDs. Each nurse was handed the questionnaire and answer it under observation of the researcher. Their answers took about 7-10 minute.

V. Figures And Tables

Table1: Studied sample according to their socio-demographic data

Personal characteristics	No	%
1- Age (years):		
20+	31	34.1
30+	35	38.4
40+	25	27.4
Mean ±SD	29.3±3.2	
2- qualification:		
Diploma in nursing	59	64.8
Technical institute	21	23.1
Bachelorette degree in nursing	11	12.1
3- residence:		
Rural	80	87.9
Urban	11	12.1
4- Experience: (years)		
Less than 10 y	48	52.7
10-20	33	36.2
+20	10	10.9
5- attending training courses:		
Yes	60	65.9
No	31	34.1
Duration of courses		
Less than 5 days	46	50.5
More than 5 days	14	49.5

Table (1) shows the distribution of socio-demographic characteristics of studied sample. The table shows that, the mean age of the studied sample was 29.3±3.2. Related to the educational level, about two thirds of the studied sample have diploma in nursing, while only 12.1% have university education. The majority (87.9%) of the studied sample live in rural area. The half of the studied sample has experience less than 10 years and 10.9 % have experience over 20 years. Related to the training courses, about two thirds of the studied sample attended training courses

Table2: Studies sample regarding their knowledge about infection control measures during insertion and removal of IUD

Items	No	%
1-Definition of infection control		
Complete answer	24	26.3
Not complete answer	46	50.5
Incorrect answer	21	23.1
2- Importance of hand washing		
Complete answer	33	36.2
Not complete answer	31	34.1
Incorrect answer	27	29.6
3-Types of hand washing techniques		
Complete answer	26	28.5
Not complete answer	34	37.3
Incorrect answer	31	34.1
4- List personal protective equipments		
Complete answer	29	31.8
Not complete answer	36	39.5
Incorrect answer	26	28.5

5- importance of PPE		
Complete answer	34	37.3
Not complete answer	38	41.7
Incorrect answer	19	20.8
6- Guide lines of opening IUD package		
Complete answer	27	29.6
Not complete answer	33	36.2
Incorrect answer	41	45.1
7- infectious diseases during insertion		
Complete answer	23	25.2
Not complete answer	40	43.9
Incorrect answer	28	30.7
8- Instrument processing and waste disposal		
Complete answer	25	27.4
Not complete answer	36	39.5
Incorrect answer	30	32.9
9 steps of instrument sterilization		
Complete answer	36	39.5
Not complete answer	23	25.2
Incorrect answer	32	35.1

Table 2 reveals knowledge of studied nurses about infection control measures during insertion and removal of IUD. About the half of the studied sample reported not complete answer about the definition of infection control and about the third (36.2%, 28.5%, 31.8%) has complete answer about important of hand washing, techniques of hand washing and personal protective equipment respectively. Regarding importance of PPE 41.7 % have not complete answer and about the half (45.1 %) have incorrect answer about opening the IUD package. More than one third (39.5%) has not complete answer about waste disposal and the same percentage has complete answer about steps of sterilization.

Figure 1: Studied sample according to their total level of knowledge

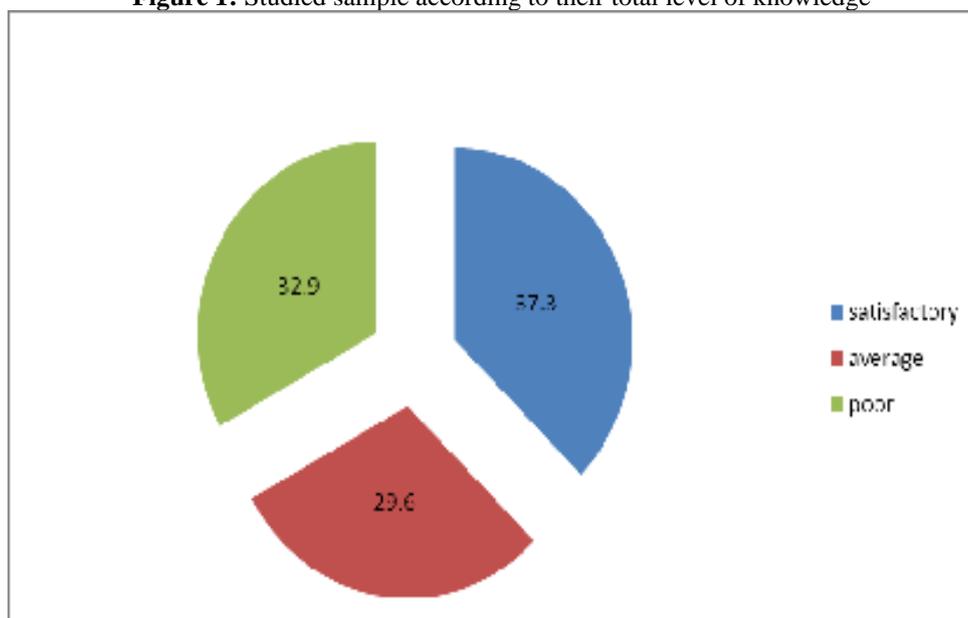


Figure 1 reveals Frequency distribution of studied sample according to their total level of knowledge and shows that 37.3% of studied sample has satisfactory level of knowledge and 32.9% has poor level.

Table 3: Infection control practice of maternity nurses during insertion of IUD

Items	DONE		INADEQUATE		NOT DONE	
	N	%	N	%	N	%
Routine hand washing	24	26.3	40	43.9	17	18.6
Wearing PPE	43	47.2	48	52.9	0	0
Routine cleaning of surfaces	32	35.1	29	31.8	30	32.9
Sterilization the body with adequate technique	21	23	42	46.1	28	30.7
Keeping sterile field dry	46	50.5	21	23	24	26.3
Keeping sterile field above waist level	35	38.4	35	38.4	21	23
Don't cross over sterile field	41	45	23	25.2	27	29.6
Safe handling of sharp equipment	42	46.1	31	34	18	19.7
Disposal of single use equipment	59	64.8	20	21.9	12	13.1
Cleaning of shared clinical equipment	34	37.3	28	30.7	29	31

Table 3 reveals infection control practice of maternity nurses during insertion of IUD. About the third of the studied sample have done routine hand washing while only 18.6% not done. About half of the studied sample has wearing PPE and the other half have inadequate technique in wearing them. About third of studied sample has done routine cleaning of surfaces and about third not done. Only 23% of studied sample has adequate technique in sterilization of the body and about third not done. Half of studied sample keep sterile field dry and about third not. About third keep sterile field above waist level and 23% not. About half have not cross over sterile field and about third have. About half of studied sample safely handle sharp equipment and 19.7% not. Majority of studied sample dispose the single use equipment and 13.1% not. About third of studied sample clean the shared clinical equipment and about third (31%) not.

Table 4: Infection control practice of maternity nurses during removal of IUD

Items	DONE		INADEQUATE		NOT DONE	
	N	%	N	%	N	%
Routine hand washing	29	31.8	44	48.3	8	8.7
Wearing PPE	39	42.8	52	57.1	0	0
Routine cleaning of surfaces	41	45	26	28.5	24	26.3
Sterilization the body with adequate technique	30	32.9	39	42.8	22	24.1
Keeping sterile field dry	41	45	29	31	21	23
Keeping sterile field above waist level	42	46.1	30	32.9	19	20.8
Don't cross over sterile field	53	58.2	19	20.8	23	25.2
Safe handling of sharp equipment	47	51.6	24	26.3	20	21.9
Disposal of single use equipment	61	67	26	28.5	4	4.3
Cleaning of shared clinical equipment	42	46.1	23	25.2	26	28.5

Table 4 reveals infection control practice of maternity nurses during removal of IUD. About the third of the studied sample have done routine hand washing while only 8.7% not done. About half of the studied sample has wearing PPE and the other half have inadequate technique in wearing them. About half of studied sample has done routine cleaning of surfaces and about third not done. About third of studied sample has adequate technique in sterilization of the body and 24.1% not done. About half of studied sample keep sterile field dry and about quarter not. About half keep sterile field above waist level and 20.8% not. More than half have not cross over sterile field and about quarter have. Half of studied sample safely handle sharp equipment and 21.9% not. Majority of studied sample dispose the single use equipment and 4.3% not. About half of studied sample clean the shared clinical equipment and about third (28.5%) not.

Figure 2: Studied sample according to their total level of practice

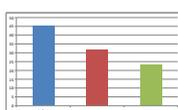


Figure 2 reveals that 41.7% of studied sample has satisfactory practice regarding IUD insertion and 48.3% for IUD removal. Regarding total practice 45.1% has satisfactory level of practice while 23.1% has poor level of practice.

Table 5: Association of socio-demographic characteristics of studied sample and their total level knowledge

Personal characteristics	Satisfactory		Average		Poor		X2	P
	N	%	N	%	N	%		
Qualification:							22.2	.0001
Diploma in nursing	12	20.3	23	38.9	24	40.6		
Technical institute	13	61.9	3	14.2	5	23.8		
Bachelorette degree in 1 nursing	9	81.8	1	9.1	1	9.1		
Attending training courses:	29	48.3	18	30	13	21.6	12.5	.001
Yes	60							
No	31		5	16.1	9	29.1	17	54.8

Table (5) reveals the relation between characteristics of studied sample and total level of knowledge. There were statistically significant differences between studied sample' educational level and level of total (p=0.0001). Regarding attending training courses and total level of knowledge the table shows that there were significant statistical differences (p=.001)

Table 6: Association of socio-demographic characteristics of studied sample and their total level of practice

Personal characteristics	Satisfactory 41		Average 29		Poor 21		X2	P
	N	%	N	%	N	%		
Qualification:								
Diploma in nursing	22	37.2	21	35.5	16	27.1		
Technical institute	11	52.3	6	28.5	4	19.1		
Bachelorette degree in 1 nursing	8	72.7	2	18.1	1	9.1		
attending training courses:	34	56.6	21	35	15	25	10.08	.006
Yes	60							
No	31		7	22.5	8	25.8	16	51.6

Table (6) reveals the relation between characteristics of studied sample and total level of practice. There were no statistically significant differences between studied sample' educational level and level of total practice (p=0.2). Regarding attending training courses and total level of practice the table shows that there were significant statistical differences (p=.006)

VI. Discussion

Infection control precautions have been strongly recommended by the Center for Disease Control and Prevention (CDC) for many decades as a mean of avoiding the spread of cross-infection, disease outbreaks and to ensure service provider occupational safety[5]. While IUDs is highly marketed and represent an important

contraceptive option for 150 million women worldwide, strict infection control practices is required during its insertion and removal [6]. The aim of this study was to assess maternity nurses' practices of infection control measures during insertion and removal of IUDs and to detect the determinants of poor practices. Previous

The study shows that, the mean age of the studied sample was 29.3 ± 3.2 . Related to the educational level, about two thirds of the studied sample have diploma in nursing, while one third have university education. The majority of the studied sample live in rural area. The half of the studied sample has experience less than 10 years and about one third have experience over 20 years. Related to the training courses, about two thirds of the studied sample attended training courses This finding was in accordance with finding of a study conducted by [7] who conducted that study to make an assessment of health team Knowledge and practices about Infection Control in Maternal Child Health Centers in Assiut City. This study however, stands in difference with the finding of a study [8] who studied knowledge and practices of dental health care providers toward cross infection control measures at Assiut city and found that about half of the respondents were in the age group of 22- 25 years.

The study reveals that about half of studied sample has satisfactory practice regarding IUD insertion and about half for IUD removal. Regarding total practice about one half has satisfactory level of practice while about one third has poor level of practice. In congruence with this current study findings were those by [9], who studied knowledge and practice of infection control measures during insertion and removal of IUDs in Saudi Arabia who reported that half of studied sample has satisfactory practice regarding IUD insertion and about half for IUD removal. This study however, stands in difference with the finding of a study [8] who studied knowledge and practices of dental health care providers toward cross infection control measures at Assiut city who studied that about two third of studied sample has satisfactory practice regarding IUD insertion and about two third for IUD removal.

VII. Conclusion

Based on the current findings the study succeeded to answer both research questions: Are maternity nurses practicing infection control measures during insertion of IUDs? The present study showed that, the majority of studied sample has satisfactory practice regarding IUD insertion. Are maternity nurses practicing infection control measures during removal of IUDs? The present study showed that, the majority of studied sample has satisfactory practice regarding IUD removal. Therefore this study succeeded in answering research questions.

VIII. Recommendations

Based on the findings of the present study, the following recommendations are suggested:

Replication of the study on larger set to widen knowledge based on infection control measures during insertion and removal of IUDs.

Nurses must understand and apply evidence-based measures to prevent and control transmission of microorganisms that are likely to cause infection.

Establishing awareness to maternity nurses to reflect government directives related to infection control and ensuring resources are available to follow infection control directives.

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