



Clinical Audit of Assisting Renal Biopsy Procedure Performed in Nephrology Unit of a Tertiary Care Hospital with a View to Develop Standard Nursing Procedure Protocol

Abstract

Background: Renal biopsy is one of the most commonly performed diagnostic procedures in the nephrology unit. Nurses play a very important role in pre-biopsy preparation, assisting during procedure and post-biopsy care. Nursing care provided during or after renal biopsy is of utmost importance in reducing complications. The study aims to perform a clinical audit of nursing practices to find the gaps in existing practices for the procedure of assisting renal biopsy and to develop standard protocol. **Materials and Methods:** This descriptive observational study was conducted on 19 nurses who were working in the nephrology unit of the tertiary care center. They were enrolled through total enumerative sampling. Sociodemographic profile and clinical profile were collected. The observation checklist was formed based on standard nursing practices, which included three dimensions for the procedure of assisting renal biopsy. Based on the gaps identified, a standard protocol was developed. Nurses were observed during two shifts and each nurse was observed once. Scoring of items was done in each dimension and for acceptable practices, nurses have to score $\geq 80\%$ in each dimension. Data were analyzed using descriptive statistics. **Results:** The majority of nurses (73.7%) have not undergone any special training in nephrology. None (100%) showed an acceptable level of nursing practices for all the dimensions of assisting renal biopsy procedure. Standard protocol was developed by the researcher following a rigorous process. **Conclusion:** The clinical audit found that there were gaps in the existing nursing practices for the procedure of assisting renal biopsy and these gaps have been addressed by the development of a standard protocol.

Keywords: Renal biopsy, Nursing practice, Standard protocol

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Introduction

Kidney biopsy is an important diagnostic tool in the nephrologists' armamentarium. Nurses play an important role in pre-biopsy preparation, assist during the procedure, and provide post-biopsy care. The practice being followed, however, is not protocolized, leading to major variation between centers and even between different nurses at the same center. There is a need for uniform standards for nursing practice to provide quality nursing care for better patient outcomes with minimal complications during kidney biopsy.¹

We conducted this audit to gather information about existing practices around nursing care during kidney biopsy, with a view to map the gaps in the existing practices and help develop a standard nursing procedure protocol that will be

developed to guide practice for care in accordance with standard guidelines.²

Materials and Methods

This descriptive observational was conducted from September 1, 2022, to November 15, 2022, among 19 nurses working in the nephrology ward of a tertiary care center where 2–3 patients were undergoing renal biopsy daily. Nurses were recruited using a total enumerative sampling technique. The study was approved by the Institutional Review Board at Ethics Committee for Post Graduate Research, number IEC PG-234/24.03.2022, dated March 25, 2022.

The researcher developed two structured tools. The first one included the demographic profile of nurses and the clinical profile. The demographic profile of nurses had six items,



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including age, gender, qualification, total years of work experience, experience in the nephrology unit, and any special training in nephrology. The clinical profile had items including the site of renal biopsy, which included two items, namely, native renal biopsy and transplant renal biopsy. We used the observation checklist for assisting renal biopsy procedure under three dimensions: procedure preparation, during-procedure care, and post-procedure care.

In the dimension of procedure preparation, there are a total of 43 items for native renal biopsy. Out of these, 38 items were scored. There are a total of 42 items for transplant renal biopsy. Out of these, 37 items were scored. In the dimension of during-procedure care, there are a total of five items for native renal biopsy. Out of these, four items were scored. There are a total of four items for transplant renal biopsy. Out of these, three items were scored.

In the dimension of post-procedure care, there are a total of 21 items for native renal biopsy. Out of these, 19 items were scored. There are a total of 20 items for transplant renal biopsy. Out of these, 18 items were scored.

The checklist took 30–40 min to complete. The acceptable score for satisfactory practices of procedure of assisting renal biopsy was taken as $\geq 80\%$.³

Tools were validated by two medical and three nursing experts. Necessary changes were made in the tools according to suggestions given by the experts. The reliability of the checklist was established by the inter-rater reliability method and found to be 0.89 representing strong agreement.

The tool was tried out on five nurses and was found to be feasible for data collection. The nurses were explained regarding the study and the participant information sheet was provided to them. Participant consent form was given to nurses and written consent was taken from the nurses to observe them while carrying out the procedure in the unit. The confidentiality of the information was assured. The subject data sheet was provided to nurses and collected after they fill in the details. Nurses were directly observed by the researcher for individual events for each nurse while performing the procedure of assisting in renal biopsy in the nephrology ward. Data were collected during the morning and evening shifts of nurses.

All data were coded and then entered in the master data sheet. Data analysis was done using descriptive statistics and data scoring. The data were described using frequency and percentage. Excel 2019 and SPSS 26.0 were used for data analysis.

Results

Baseline sociodemographic profile

Table 1a shows that the mean age of nurses working in the nephrology ward was 37.95 ± 10.02 years. The majority (84.2%) were female. Most of the nurses (52.6%) were

General Nursing and Midwifery (GNM) qualified and the majority (63.2%) had more than 6 years of experience in the nephrology ward. About 74% had not undergone any special training in nephrology.

Table 1b shows that the procedure for assisting renal biopsy was observed 15 times on the native kidney and 4 times on the transplanted kidney.

Table 2a shows that all the nurses (100%) provided position for patients. None of the nurses checked vital signs before the procedure. Only one nurse performed hand hygiene before the procedure.

Table 2b shows that all the nurses (100%) assisted the physician during the procedure. None of the nurses neither assessed nor monitored the patient during the procedure.

Table 2c shows that all the nurses (100%) documented the procedure. Only three nurses provided privacy. None of the nurses checked vital signs and also they did not assess the patient for pain and soakage at the biopsy site.

Table 3 shows that none (100%) showed an acceptable

Table 1a: Sociodemographic characteristics of nurses working in nephrology ward (n = 19)

Variable	Frequency (%)
Age (in years)	
Mean \pm SD	37.95 \pm 10.02
Gender	
Male	3 (15.8)
Female	16 (84.2)
Qualification	
GNM	10 (52.6)
B.Sc.	8 (42.1)
M.Sc.	1 (5.3)
Total years of work experience	
<10	6 (31.6)
10–20	8 (42.1)
>20	5 (26.3)
Experience in nephrology unit (years)	
<2	4 (21.0)
2–6	3 (15.8)
>6	12 (63.2)
Any special training in nephrology	
Yes	5 (26.3)
No	14 (73.7)

GNM: General Nursing and Midwifery, B.Sc.: Bachelor of science in Nursing, M.Sc.: Masters of science in Nursing.

Table 1b: Frequency and percentage showing site for renal biopsy (n = 19)

Variable	Frequency (%)
Site for renal biopsy	
Native	15 (78.9)
Transplant	4 (21.1)

Table 2a: Frequency and percentage showing procedure preparation for assisting renal biopsy (n = 19)

Components	Frequency (%)
Explains the reason and necessity of renal biopsy	0
Explains positioning during procedure	1 (5.26)
Explains how procedure will be done	1 (5.26)
Explains need to lie still at least 6 h after biopsy	0
Explains reporting of complications at earliest	0
Explains when results will be available	2 (10.52)
Obtains informed consent	18 (94.73)
Checks patient's investigations	3 (15.78)
Ensures patient is NPO/patient had light breakfast	3 (15.78)
Monitors blood pressure	3 (15.78)
Monitors heart rate	0
Monitors temperature	0
Monitors respiration rate	0
Advise patient to empty bladder before positioning	1 (5.26)
Performs hand hygiene	1 (5.26)
Native (n = 15)	Frequency (%)
Provides prone position	15 (100)
Advise patient to hold breath while biopsy needle is being released to take sample	6 (40)
Transplant (n = 4)	Frequency (%)
Provides supine position	4 (100)

NPO: Nil per oral.

Table 2b: Frequency and percentage showing during procedure care for assisting renal biopsy (n = 19)

Components	Frequency (%)
Assists physician during procedure	19 (100)
Assesses and monitors patient continuously during procedure	0
Provides supportive care during procedure	3 (15.78)
Native (n = 15)	
Ensures holding of breath by patient while taking biopsy	5 (33.33)

level of performance for all the dimensions of assisting renal biopsy procedure.

Development of standard nursing procedure protocol

After identifying gaps in the current practices of assisting in renal biopsy procedure, the protocol was developed by the researcher. A review of the literature was done from print and online sources, published national, and international literature and was supplemented by discussion with experts. The protocol includes the following domains: Introduction, purpose, and scope of protocol, definition of procedure, and procedure of assisting renal biopsy in native and transplant renal biopsy in detail. The procedure of assisting renal biopsy was divided under different headings and various steps were outlined which need to be followed as standard practices while carrying out the procedures. Protocol was finalized in consultation with

Table 2c: Frequency and percentage showing post procedure care for assisting renal biopsy (n = 19)

Components	Frequency (%)
Gives three labeled urine containers to patient and advice to collect three consecutive urine specimens following biopsy	0
Provides privacy while patient passes urine	3 (15.78)
Ensures biopsy form is filled completely by physician	18 (94.73)
Checks vital signs every 15 min for 1 st h	0
Checks vital signs every 30 min for next 2 h	0
Checks vital signs hourly for next 3 h	0
Assesses patient for pain	0
Observes biopsy site for any signs of soakage at each time when checking vitals	0
Ensures continuous pressure application for 45–60 min	4 (21.05)
Ensures sample has been sent to lab	17 (89.47)
Advise and ensure strict bed rest for 6 h	6 (31.57)
Documents the procedure	19 (100)
Encourages fluid intake of 2000–3000 ml unless Contraindicated	0
Advise to avoid sneezing and coughing for 24 h	0
Advise not to get up from bed except for passing urine that too after 6 h	3 (15.78)
Advise patient to avoid strenuous exercises and heavy lifting (>10 pounds) for approximately 2 weeks	0
Advise patient to resume normal diet after procedure is Done	2 (10.52)
Advise patient to report any unusual signs	0
Native (n = 15)	Frequency (%)
Changes patient position slowly to supine	3 (20)

Table 3: Frequency and percentage showing gap in current nursing practices for assisting in renal biopsy procedure (n = 19)

Current practices %	Procedure preparation f (%)	During procedure f (%)	Post-procedure care f (%)
0–19.99	0	0	11 (57.9)
20–39.99	0	12 (63.2)	6 (31.6)
40–59.99	16 (84.2)	6 (31.6)	2 (10.5)
60–79.99	3 (15.8)	1 (5.2)	0
80–100	0	0	0
Gaps	0 (100)	0 (100)	0 (100)

f: Frequency

the guide, coguides, and two medical and three nursing experts' opinions. A booklet and one poster were prepared from the protocol.

Discussion

In the present study, 63.2% of nurses had more than 6 years of experience in the nephrology unit. A study

conducted by McIntyre *et al.*⁴ reported that the audit done in the hemodialysis unit was completed by 79.4% of nurses with >5 years of experience in hemodialysis. This might be due to the absence of a staff rotation policy. In the present study, 10.52% of nurses explained the procedure of renal biopsy. A study done by Lin *et al.*⁵ reported that 83% of nurses explained the procedure to patients and provided education. These findings are incongruent with the present study findings. The reason might be that the hospital does not have an SOP of procedures and the role is not clearly defined. The procedure is explained to the patient by other members of the health-care team (nephrologist). In the present study, the documentation of procedure was 100% by the nurses. A study reported by Lin *et al.*⁵ reported that documentation is done by 24% of nurses. These findings are inconsistent with the present study findings. There is regular supervision of middle-level managers in recording and reporting in our setting which might be the reason for best practice in documentation.

To the best of our knowledge, this is the first of its kind of clinical audit done on nephrology nursing procedures. Protocol for assisting renal biopsy procedure was developed after the clinical audit of nursing practices and all the nurses in the setting were observed. After discussion with nurses working in the nephrology department, the SOP is made out of the protocol in the form of posters for implementation in the setting.

There were few limitations of this study. It was a single centre study furthermore the nursing practice for the procedure was observed only once for each nurse. Furthermore, the nurses were aware that they were being observed so they might be doing their best practice

rather than regular practice. Evaluation can be done to see the change in practices after the implementation of the protocol. A similar study can be done in different settings with a larger sample size and with multiple event observations. A similar study can be replicated for developing protocols for other nursing procedures in other departments.

Conclusion

Assisting in renal biopsy is routinely done in the nephrology unit. There are gaps in the existing nursing practices compared to the standardized nursing practices for the procedure of assisting renal biopsy. Standard nursing procedure protocol was developed by the researcher following a rigorous and this will reduce the gaps in the nursing practice.

Conflicts of interest

There are no conflicts of interest.

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