LEARNING NEEDS ASSESSMENT FOR PATIENTS UNDERGOING PERCUTANEOUS NEPHROLITHOTOMY

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Abstract:

Background: Learning needs during hospitalization differ from that during discharge and those during self-caring at home. Assessment of learning needs can help in responding such needs and affects patients' lifestyle. ***Aim of the study:*** Assess learning needs for patients undergoing percutaneous nephrolithotomy. ***Study design:*** A descriptive research design was followed in this study. ***Study subjects:*** A convenient sample composed of 106 adult patients who met inclusion criteria were included in this study. ***Setting:*** The study was carried out at Urology and Nephrology Center- Mansoura University. ***Tool of the study:*** One tool was used for data collection. A structured questionnaire was developed by the researcher included two parts socio-demographic data and disease history and learning needs assessment section in four categories (Patients' knowledge regarding nature of the disease,Patients knowledgebefore percutaneous nephrolithotomy, Patient knowledge after percutaneous nephrolithotomy and Post discharge patients' knowledge). ***Results:*** The result revealed that (38.7 %) of patients' were in age group from 51 to 60 years, (67.0 %) were females and (43.4 %) were illiterate. Result also showed that all studied percutaneous nephrolithotomy patients had poor knowledge in all investigated domains. ***Conclusions:*** All studied percutaneous nephrolithotomy patients have learning needs in all investigated domains. ***Recommendations:*** Patients learning needs should be assessed by nurses constantly and progressively. Simple booklet written in Arabic language should be available for all percutaneous nephrolithotomy patients included all needed information.

Keywords: Renal stones, Percutaneous Nephrolithotomy, Learning needs, Assessment

Introduction:

Percutaneous nephrolithotomy (PCNL) is awidely accepted and utilized operation for renal stonesremoval[1].Today, PCNL is the best management for large renal stones, staghorncalculi, stones resistant to extracorporeal shock wave lithotripsy (ESWL)or stones occurring in kidneys with an abnormal anatomy. Increasing the use of PCNL for stone management over the last 10 years isexplained by thesafety and efficacy of PCNL for the treatment of more complex stones and its use in more diverse patients, combined with thegrowing incidence of stone disease[2].

Advantages of PCNL include less tissue trauma and patient morbidity than open surgery,short hospital stay and decreased loss of working days for the patients. Patient is discharged on the second or third daypost- operatively, and back to work in a week [3].

The nurse is responsible for patientsteaching in the preoperative period, butlearning needs vary

depending on patients'condition and compliance. So nurses need to individually assess their patients and establish an open relation with them as learning needs during hospitalization differ from learning needs during discharge and those during self-caring period at home. Such needs should be assessed correctly in order to establish proper plans to respond them.Learning needs assessment can be helpful in responding such needs and can affect patients' lifestyle. For this purpose, all influential factors should be investigated and learning content should be designed based on learning needs'considering patients ability[4].

Aim of study:

The aim of the study was to assess learning needs for patients undergoing percutaneousnephrolithotomy.

Research question:

What are the learning needs of patients undergoing PCNL at urology and nephrology center at Mansoura University?

Operational definition

The learning needs for patients undergoing percutaneous nephrolithotomy means knowledge related to renal stone disease, knowledge before, during and after percutaneous nephrolithotomy, and patient knowledge post discharge.

Materials & Method:
Study Design:

A descriptive research design was used in this study.

Setting:

The study was carried out at Urology and Nephrology Center-Mansoura University.

Subjects:

The study was conducted on all available adult patients (106) who were admitted to Urology and Nephrology Center with renal stone and scheduled for PCNL during 6 months.

Inclusion criteria:

* Both sexes.
* Age ranging from20 -60 years.
* Diagnosed renal stone and scheduled for PCNL procedure.
* Able to communicate verbally.
* Willing to participate in the study.

Exclusion criteria:

* Patients insert percutaneous nephrostomy catheter for other purposes.
* Psychiatric patients.
* Patients with chronic complicati ons as cancer patient.

Tool:

One tool was used for data collection:-
Percutaneous nephrolithotomy patient learning needs structured interview questionnaire

This tool was constructed by the researcher after extensive review of related literatures. It was developed in Arabic language to accomplish the purpose of this study. Tool consists of two main parts:

Part I: Patients socio-demographic data, and disease history:

i. Patients' sociodemographic data : it includes information about patients' age, sex, marital status, occupation, educational level.

ii. Patients' disease history: it includes information about duration of the disease, data related to previous hospitalization, sign & symptoms, methods of treatment, family history and stone analysis test.

Part II: Learning needs assessment sheet: this part constructed of forty six multiple-choice questions arranged on four categories:

1- Patients' knowledgeregarding nature of the disease (renal stone):it included assessment of patients' learning needs related to nature of the disease, meaning of renal stone, possible causes and risk factors, foods contribute to renal stone, types of renal stone, sign & symptoms of renal stone, and different methods of treatment.

2- Patientsknowledge before PCNL:it included assessment of patients'knowledge and actuallearning needs related to preparation for PCNL procedure such as (laboratory investigations, radiological studies, stopping anticoagulant drugs, fasting time before the procedure, preoperative medications, skin preparation, types of anesthesia, allergy from any drug or dye, explanation of the procedure). Assessment of patient's intraoperative learning needs that include (duration of the procedure, position during procedure, and site of endoscope insertion).

3- Patients'knowledge after PCNL:it included assessment of patients' knowledge and actuallearning needs related to post PCNL procedure and knowledge was divided into:

i. Postoperative food and fluids"when he /she to start food & fluid intake, amount of fluid intake, intake and output measurement".

ii. Postoperative medications"types of postoperative medications and postoperative usage of anticoagulants".

iii. Postoperative activities and exercise"when to start movement after surgery, movement pattern, and breathing and coughing

exercises and their importance".

iv. Postoperative drains and catheters "expected postoperative drains and catheters, importance and care of urinary catheter and nephrostomy tube, time of its removal, care after percutaneous nephrolithotomy catheter removal and time of stopping urine drainage from its site".

4- Post discharge patients' knowledge:it included assessment of patients' knowledge and actual learning needs related topost discharge such as " presence of blood in urine, possible complications after procedure, sign and symptoms of urinary tract infection, symptoms of stone recurrence, methods to prevent it, time of resuming normal activities, and follow up visits".

Scoring system:

A score of one was given for each correct answer or answer YES, and zero for answers NO or did not know. A total score of each area was calculated which summed together to give total score. Total learning needs scorewas transformed into categories as follow:

Poor: score % < 50%

Fair: score % 50% - 75%

Good: score % $\geq$ 75%

Method:

1. An official permission to conduct the study was obtained from the faculty of nursing - Mansoura University to carry out the study.

2. An official letter to conduct the study was obtained from the hospital (Urology and Nephrology Center- Mansoura University) administrative authority after sending official letter from the faculty and explanation of the aim and nature of the study.

3. The assessment tool of learning needs was developed by the researcher after extensive review of relevant literature. Initially, very broad questions were asked then became progressively more focused.

Validity:

4. The tool was tested for content-related validity by 6 experts (jury) from Mansoura University, two specialist professors of urology from faculty of medicine- Mansoura University, three assistance professor of medical- surgical nursing, and one specialist in biostatistics from faculty of medicine- Mansoura University, who reviewed the tool for clarity, relevance, understanding, and applicability for implementation. All comments and suggestions were considered and rewording, and

revising of the tool was carried out.

Reliability:

5. Reliability of the developed tool was estimated using cronbach's alpha reliability test, showed a strong positive significance with (r =.79%) for all competencies of the tool.

Pilot study:

6. A pilot study was conducted on 10 patients (10% of sample size) fulfilling the research criteria in order to assess the feasibility, clarity and applicability of the developed tool, and the necessary modification were done prior to data collection. Those patients were excluded from the study sample.

7. Patients were informed verbally about the aim and nature of the study, in addition, it is written at the beginning of the tool. They were asked if they were agreed to participate or not.

8. Each patient was interviewed individually before the procedure in order to collect the necessary data using the study tool.

Ethical consideration:

9. The researcher emphasized participation is absolutely and confidential.

10. Anonymity, privacy, safety and confidentiality absolutely were assured throughout the study.

11. Each patient has the right to withdraw from the study at any time.

12. Patients were given the opportunity to ask any questions regarding the study. In addition, for educated patients they were asked to read the instruction given carefully and answer the questionnaire. For illiterate patients the researcher read the questionnaire and was marked on the answers that choose it.

13. Data was collected using interview questionnaire during a period of 6 months from the beginning of September to the end of February.

14. The researcher started data collection following certain schedule of three days /week, from 9 am to 1pm.

Statistical analysis:

After data were collected it was revised, coded and fed to statistical software IBM SPSS version 20. The given graphs were constructed using Microsoft excel software. All statistical analysis was done using two tailed tests and alpha error of 0.05. P value less than or equal to 0.05 was considered to be statistically significant.

Regarding scoring system, the items discrete scores for each scale were summed together then the sum of scores for each dimension and total score was calculated by

summing the scores given for its responses. All scores were transformed into score % as follow: Score % = (the observed score / the maximum score) x 100. Then score % was transferred into categories as follow:

Poor: Score % < 50%
Fair: Score % 50% -<75%
Good: Score % ≥ 75%
The following statistical tests were used:

 a. Descriptive statistics: included the frequencies and percent to describe the categorical data.
 b. Analysis of categorical data
 i. Pearson's chi square test: it is a non-parametric statistic that is used to test for the association (or relationship) between the categories of two independent samples (Knowledge and practice categories with sample characteristics) to reflect a real association between these 2 variables in the population.
 ii-Mont Carlo exact test and Fishers exact test: they are alternatives for the Pearson's chi square test if there were many small expected values.

Limitations of the study:

The convenience sample used in the study, may not have been representative of all PCNL patients at large, and may diminish the applicability of the findings in general population. The relatively small sample size of 106 patients may have affected the ability to actualize statistical significance.

Results:

The data collected were analyzed statistically and the results are categorized into 2 main parts which are: Socio-demographic data and disease history, total score for different knowledge domains.

Table (1):Distribution ofpercutaneous nephrolithotomy patients regarding socio-demographic data.

The table shows that (38.7 %) of patients' were in age group from 51 to 60 years. In relation to sex, about two third of studied patients were females (67.0 %); while males represent one third only (33.0 %). As regards to marital status, the majority of the studied patients (89.6 %) were married. Concerning level of education, illiteracy was prevailing among (43.4 %) from the studied patients while university educated patients represent only (10.4%). Finally mostly of studied patients (70.8 %) were not work.

Table (1): Distribution of percutaneous nephrolithotomy patients regarding socio-demographic data

Socio demographic data	No (106)	Percent (%)
Age		
▪ 20 - 30	12	11.3
▪ 31 - 40	18	17.0
▪ 41 - 50	35	33.0
▪ 51 - 60	41	38.7
Total	106	100
Gender		
▪ Male	35	33.0
▪ Female	71	67.0
Total	106	100
Education		
▪ Illiterate	46	43.4
▪ Read and write	21	19.8
▪ Secondary education	28	26.4
▪ University education	11	10.4
Total	106	100
Job		
▪ Work	31	29.2
▪ Not work	75	70.8
Total	106	100
Marital status		
▪ Single	2	1.9
▪ Married	95	89.6
▪ Widow	9	8.5
Total	106	100

Table (2): Shows the frequency distribution of precut an eousnephro lithotomy patients regarding disease history.

This table demonstrates that (71.7%) of the studied patients knew having renal stone more than one year ago. Concerning signs and symptoms of renal stone, the majority of studied patients (89.6%) had renal colic. As regards to previous hospitalization, it was found that two thirds of studied patients (61.3%) were previously hospitalized. Concerning treatment methods, it was observed that more than half of the previously hospitalized patients (53.8%) were treated by extra corepal shock wave lithotripsy (ESWL), while (18.5%) treated by medications. The table shows also that no stone analysis was performed in the majority of the studied patients (91.5%). Concerning family history, more than half of studied patients (56.6%) had family history for renal stone, and the majority of them (98.3%) with a first degree relation

Table (2): Frequency distribution of percutaneous nephrolithotomy patients regarding disease history.

Disease history	No (106)	Percent (%)
Since when you know to have renal stone		
< 6 months	20	18.9
6 ms - 1 year	10	9.4
> 1 year	76	71.7
Total	106	100
Symptoms & signs		
Renal colic	95	89.6
Fever	21	19.8
Loss of appetite	16	15.1
Nausea	10	9.4
Vomiting	31	29.2
Dysuria	46	43.4
Oliguria	7	6.6
Hematuria	20	18.9
No signs	5	4.7
Others	21	19.8
Previous hospitalization		
Yes	65	61.3
No	41	38.7
Total	106	100
Treatment method in previous hospitalization		
Medications	12	18.5
Shock wave	35	53.8
Open surgery	17	26.2
Percutaneousnephrolithotomy	28	43.1
Previous stone analysis		
Yes	9	8.5
No	97	91.5
Family history of stones		
Yes	60	56.6
No	46	43.4
	106	100
If yes, degree of relation		
First degree	59	98.3
Second degree	1	1.7

Figure (1): - Total knowledge score for the different domains among studied percutaneous nephrolithotomy patients.
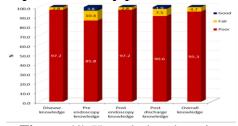

Figure (1) Knowledge domains

Figure (8.1)

The results show that patients' learning needs in all investigated domains were high as the total knowledge score <50 % in all domains. The highest learning needs was that of nature of disease and post endoscopy learning needs with knowledge score 2.8 %. Considering learning needs according to their importance, nature of disease and post endoscopy learning needs are the most important one

Discussion:

Sociodemographic characteristics of the present study have shown that female patients comprised higher proportion than males. This is supported by [5,6]who reported that the prevalence of kidney stones is increases over the last 30 years, especially in women in whom incidence is now almost equal to that of men. This is explained by frequent exposure of females to urinary tract infection than males and the percent of obesity is higher in females than males and both are a risk factor for renal stone. Also stone inhibitor levels tend to decline after the menopause, which may explain the equal incidence of stone formation in older people of both sexes.

The findingof our study shows a progressive increase of stone disease incidence with age. As the majority of studied patients were in the age group 41-60 years which

similar to findings of[7]who supported by the result of [8]who found that the majority of his patients were over 50 years, which also comes in line with [9]. Many recent literatures explained that prevalence of urolithiasis increased with aging, and discussed that the aged kidneys became less efficient in eliminating solutes from the blood, coupled with decreased total body fluid and physical activity putting older adults' atgreater risk for urinary tract stones formation than younger persons [10].

As regard patient education, in the present study, nearly half of them were illiterate. This was highly similar to findings of[11]who observed that illiteracy had the highest percentage in his studied sample represented.

Occupation can be helpful in identifying the specific risk factors for renal stone. working that lead to excessive sweating as lifeguard, machineoperators exposed to heat, and outdoor work in atropical environment can increase the risk of renal stone formation, other occupations limit the availability of water or of toiletfacilities (e.g: teachersand chauffeurs), leading patients to reduce fluid intake whichincreases nephrolithiasis risk. In this respect, the present study revealed that the majority of studied patients were working which agreed with [12,13].

Regarding to marital status the present study show that the majority of patients were married that is agreeing with [14]. This is clarified by the fact that high incidence of renal stone occurs in the reproductive period of age which is the same time of marriage.

This study showed that more than half of studied patients had a family history for renal stones which come in agreement with [15,16, 17, 18]who stated that either a genetic or an environmental factor is important in stone formers. Family studies have indicated an appreciable genetic contribution to the tendency to urolithiasis. Several disorders that cause renal stones are hereditary.

As regards to symptoms of stone, it is apparent that the majority of studied subjects mentioned acute renal colic followed by dysuria and vomiting. This is in line with[19, 20]and disagree with [21]who found that patient on his study have the following symptoms pain, burning urination followed by dysuria.

As regard to previous hospitalization more than half of studied patients were previously hospitalized and most of them previously underwent surgical procedures which include PCNL and open surgery. This result agreed with [22]who found that most patients on his study were recurrent stone formersand previously

underwent for surgical procedures to remove stones.

The present study showed that the total knowledge score for studied patients in all investigated domains was poor which agreed with[11]who found that the total knowledge score for their studied patients was poor before receiving an educational program. Also the most required learning needs by studied patients were that related to nature of disease and post endoscopy knowledge which comes with the result of [23]who found that knowledge related to nature of the disease is the most required learning needs by his studied patients.[24]reported thatthe most required learning needs among their studied patients were postoperative knowledge which agreed with the present study.

Conclusion:

Based on the findings of the present study the following can be concluded that:

1. Majority of studied PCNL patients have poor knowledge in all investigated domains.
2. All studied PCNL patients require learning needs in all investigated domains.

Recommendation:

In the light of the findings of the present study, the following recommendations are suggested:

1. Simple booklet written in Arabic language should be available for all PCNL patients

included all needed information.
2. Patients learning needs should be assessed by nurses constantly and progressively.
3. Designing a systematic program and investigating the clients before leaving the hospitals to ensure that such a basic need is fulfilled and patients have received the needed self-care programs.
4. Replication of the current study on larger probability sample and various setting in Egypt with inclusion of control group to examine the effectiveness of educational program for PCNL patients to understand their condition and to promote self-care level.

Conflict of interest:

The authors declare that they have no conflict of interests.

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