

Research Article

Knowledge Regarding Kidney Stone Disease Among Student Nurses

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Abstract

Renal stone disease is a most common and considerable burden on the Indian population. This study aimed to evaluate the effectiveness of a structured teaching programme on knowledge regarding kidney stone disease among student nurses by using a self-administered knowledge questionnaire. The simple random technique was used to collect the sample ($n = 50$). The study shows that the knowledge of student nurses was not satisfactory ($X_1 = 14.2$) before the introduction of the structured teaching programme (STP). The post-test knowledge score showed a significant increase in the knowledge of student nurses ($X_2 = 25.16$). The structured teaching programme helped student nurses to learn more about kidney stone disease. The difference between the mean post-test and the mean pre-test scores was found to be statistically significant ($t_{49} = 25.24$) at the 0.05 level of significance, as the calculated t-value was greater than the table value and the p-value was less than 0.05 ($p < 0.05$). The structured teaching programme is an effective strategy for providing information and improving the knowledge of subjects.

Keywords: Kidney Stone, Knowledge, Disease, Effectiveness, Student Nurses.

Introduction

“When you can't solve the problem, manage it” – Robert Schuller

Health is wealth may be a common proverb which reveals a really simple meaning by comparing the worth of health with wealth. It is said in this proverb that the health of a person is the most important because wealth is to measure a healthy, peaceful, and prosperous life. Everyone knows that nothing is vital in life than great health. Nobody is happy and peaceful without honest health. There is no success in people's life if they suffer from bad health. According to WHO, health is defined as a state of complete physical, mental, social, and spiritual well-being, not merely the absence of disease [1]. Health is not only the absence of disease; it is being completely free from any diseases or illness. Being healthy should be an integral part of your overall lifestyle. Renal stone disease is a considerable burden on public health worldwide [2, 3]. Kidney stones can cause extreme pain and urinary blockage in severe cases [4, 5]. Renal stones increase the risk of chronic kidney disease and end-stage renal disease. Chronic kidney disease can cause high blood pressure and diabetes [6]. It is estimated that the risk of chronic kidney disease is twice as high in stone formers compared with non-stone formers [7].

Each year, more than half a million people go to emergency rooms for kidney stone problems. It is estimated that one in ten people will have a kidney stone at some time in their lives. The prevalence of kidney stones in the United States increased from 3.8% in the late 1970s to 8.8% in the late 2000s. This increase was seen in both men and women, and in both whites and blacks. The lifetime risk of kidney stones is about 19% in men and 9% in women. In men, the first episode is most likely to occur after age 30, but it can occur earlier. Other diseases such as high blood pressure, diabetes, and obesity may increase the risk for kidney stones [8]. The lifetime incidence of kidney stones is nearly 13 percent in men and 7 percent in women [9, 10]. Once an individual has formed a stone, the likelihood of recurrence is 50 percent or greater at five years and up to 80 percent at 10 years [11]. Because of high temperature and excessive exposure to sunshine, the prevalence of kidney stones was much higher in South Asia and Southeast Asia, such as Pakistan (16%) [12] and Thailand

(16.9%) [13]. In India and Malaysia, the incidence was lower than 40/100,000 in the 1960s, but three decades later it grew dramatically to 930/100,000 and 442.7/100,000, respectively [14-16]. As for West Asia, due to its high temperature and semi-arid climate, a high prevalence rate of urinary tract stones was also documented [17].

Problem Statement

A study to evaluate the effectiveness of a structured teaching programme on knowledge regarding kidney stone disease among student nurses of selected nursing colleges at Vijayapur, Karnataka, India.

Objectives

- 1) To assess the level of knowledge on kidney stone disease among student nurses.
- 2) To evaluate the effectiveness of a structured teaching programme on knowledge regarding kidney stone disease among student nurses by comparing pre-test and post-test scores.
- 3) To find out the association between the level of knowledge and selected socio-demographic variables.

Hypothesis

The hypotheses were tested at the 0.05 level of significance.

H₀₁: There is no significant difference between pre-test and post-test knowledge scores among student nurses.

H₁: There is a significant difference between pre-test and post-test knowledge scores among student nurses.

H₀₂: There is no significant association between the knowledge level and selected socio-demographic variables.

H₂: There is a significant association between the knowledge level and selected socio-demographic variables.

Methodology

The research design used for this study is a pre-experimental (one group pre-test and post-test) design. The independent variable is the structured teaching programme, and the dependent variable is the knowledge of the student nurses regarding kidney stone disease. The setting of the study is selected nursing colleges at Vijayapur, Karnataka. A simple random sampling technique is used to select the subjects. The sample size is 50 student nurses. The tool used for the study is a self-administered knowledge questionnaire to assess the knowledge of the student nurses on kidney stone disease. Content validity of the tool is given by experts, and the tool is found to be reliable and feasible.

Results and Discussion

The data were analyzed and interpreted in terms of the objectives formulated. Descriptive and inferential statistics were used for data analysis. The difference between the mean pre-test and post-test scores was found to be statistically significant ($t_{49} = 25.24$) at the 0.05 level of significance, as the calculated t-value was greater than the table value and the p-value was less than 0.05 ($p < 0.05$). The mean difference between the pre-test and the post-test knowledge score was a true difference and not a chance difference. This indicates that the STP was significantly effective in increasing the knowledge of student nurses on kidney stone disease.

The findings of the present study are consistent with previous studies that reported a significant improvement in knowledge following structured teaching programmes among nursing students regarding kidney-related disorders. Similar effectiveness of educational interventions on kidney stone disease and other renal problems has been documented in earlier studies, indicating that structured teaching programmes are an effective strategy for enhancing knowledge and awareness among healthcare students [8, 18].

Table 1. Paired ‘t’ test showing the significance of mean difference between pre-test and post-test knowledge score of the student nurses regarding kidney stone disease (n = 50).

Group	Knowledge	Mean	SD	t-value	P-value	Result
Student nurses	Pre-test	14.2000	2.65729	25.24	P < 0.05	Sig.
	Post-test	25.1600	2.00367			

Maximum score = 30

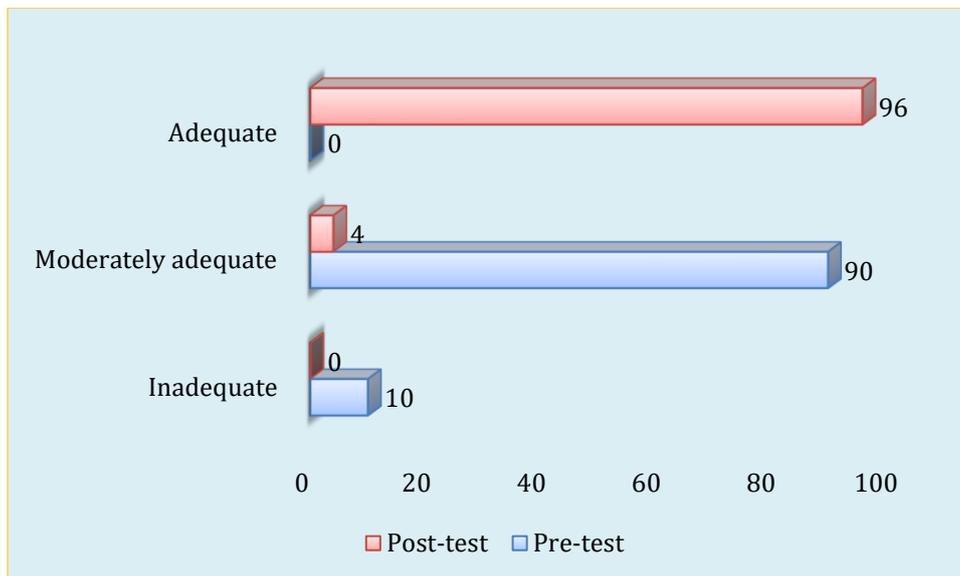


Figure 1. Comparison of pre- and post-test knowledge score of student nurses on kidney stone disease.

Interpretation and Conclusions

The finding of this study reveals that the structured teaching programme will increase the knowledge [19] of the student nurses. The STP helped them to learn more about kidney stone disease. Hence, the structured teaching programme is an effective strategy for providing information and improving the knowledge of subjects. Educating the student nurses would help them to handle the problems by supporting them as a counsellor as well as an educationist.

Declarations

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Author Contributions: SG: Definition of intellectual content, implementation of study protocol, design of study, statistical analysis and interpretation, literature survey, data collection, data analysis, manuscript preparation, editing, and review manuscript; MP: Concept, design, literature survey, prepared first draft of manuscript, data collection, data analysis; MM: Concept, literature survey, manuscript revision.

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Informed Consent Statement: Informed written consent was obtained from all participants involved in the study after explaining the purpose of the research, and confidentiality and anonymity were assured.

Research Content: The research content of this manuscript is original and has not been published elsewhere.

References

1. Park, K. 2007. Park's textbook of preventive and social medicine (19th ed.). Banarsidas Bhanot.
2. Koeppen, B.M. 2009. The kidney and acid–base regulation. *Advances in Physiology Education*, 33(4): 275–281.
3. Lewis, J.L. 2013. Acid–base regulation. In: *MSD Manual Professional Version*. <https://www.msdmanuals.com/professional/endocrine-and-metabolic-disorders/acid-base-regulation-and-disorders/acid-base-regulation>
4. University of Maryland Medical Center. 2015. Kidney stones. *Health Information: Medical Reference Guide*. <http://umm.edu/>

5. Singh, K.J. and Kaur, J. 2011. Comparison of three different endoscopic techniques in management of bladder calculi. *Indian Journal of Urology*, 27(1): 10–13.
6. Frassetto, L. and Kohlstadt, I. 2011. Treatment and prevention of kidney stones: An update. *American Family Physician*, 84(11): 1234-1242.
7. Keddis, M.T. and Rule, A.D. 2013. Nephrolithiasis and loss of kidney function. *Current Opinion in Nephrology and Hypertension*, 22(4): 390-396.
8. Scales, C.D., Jr., Smith, A.C., Hanley, J.M. and Saigal, C.S. 2012. Urologic diseases in America project: Prevalence of kidney stones in the United States. *European Urology*, 62(1): 160–165.
9. Pearle, M.S., Calhoun, E.A., Curhan, G.C. and Urologic Diseases of America Project. 2005. Urologic diseases in America project: urolithiasis. *The Journal of urology*, 173(3): 848-857.
10. Stamatelou, K.K., Francis, M.E., Jones, C.A., Nyberg Jr, L.M. and Curhan, G.C. 2003. Time trends in reported prevalence of kidney stones in the United States: 1976–1994. *Kidney International*, 63(5): 1817-1823.
11. Uribarri, J., Oh, M.S. and Carroll, H.J. 1989. The first kidney stone. *Annals of Internal Medicine*, 111(12): 1006-1009.
12. Memon, A., Anwar, K., Orakzai, N., Ather, M.H., Biyabani, S.R., et al. 2012. Epidemiology of stone disease in Pakistan. In: Talati, J.J., Tiselius, H.G., Albala, D. and Ye, Z., (Eds.), *Urolithiasis: Basic science and clinical practice* (pp. 21–38). Springer.
13. Yanagawa, M., Kawamura, J., Onishi, T., Soga, N., Kameda, K., et al. 1997. Incidence of urolithiasis in northeast Thailand. *International Journal of Urology*, 4(6): 537-540.
14. Kale, S.S., Ghole, V.S., Pawar, N.J. and Jagtap, D.V. 2014. Inter-annual variability of urolithiasis epidemic from semi-arid part of Deccan Volcanic Province, India: Climatic and hydrogeochemical perspectives. *International Journal of Environmental Health Research*, 24(3): 278-289.
15. Sreenevasan, G. 1981. Incidence of urinary stones in the various states of mainland Malaysia. *Medical Journal of Malaysia*, 36(3): 142-7.
16. Sreenevasan, G. 1990. Urinary stones in Malaysia--its incidence and management. *The Medical Journal of Malaysia*, 45(2): 92-112.
17. Abdel-Halim, R.E., Al-Hadramy, M.S., Hussein, M., Baghlaf, A.O., Sibaai, A.A. and Noorwali, A.W. 1989. The prevalence of urolithiasis in the western region of Saudi Arabia: A population study. In: Walker, V.R., Sutton, R.A.L., Cameron, E.C.B., Pak, C.Y.C. and Robertson, W.G., (Eds.), *Urolithiasis* (pp. 711–712). Springer.
18. Saigal, C.S. and Joyce, G. 2014. Urologic diseases in America. *Urologic Clinics of North America*, 41(1): 1–10.
19. Gulaganji, S. 2016. Knowledge regarding needle stick injury among student nurses. *Journal of Nursing Science and Practice*, 6(1): 39–42.

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