

# Nurses Knowledge on Management of Patient Receiving Spinal Anaesthesia in a Government Hospital

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## ABSTRACT

**Introduction:** Spinal Anaesthesia (SA) is a form of regional anaesthesia involving injection of a local anaesthetic into the subarachnoid space. SA is directly related to nervous system, so its mismanagement may cause various complications hence, prevention and management of complication is a vital and complex aspect of critical nursing care. Therefore, the objective of this study was to assess the nurse's knowledge on the management of patient receiving spinal anaesthesia.

**Methodology:** A cross-sectional descriptive study was conducted among nurses of Koshi Zonal Hospital of Province no. 1, Biratnagar, Nepal from May to June 2017. Non-probability purposive sampling method was used where self-administered questionnaire was administered among 67 working nurses in the hospital.

**Results:** The majority of the respondents (77.6%) belonged to 20-30 years of age group, nearly half (44.8%) of the respondents had completed PCL nursing. Only 67.2% explained the meaning of anaesthesia, and 58.2% had knowledge on physiological changes after SA. Regarding ambulation and cause of backache, 29.9% had knowledge whereas only 20.9% had knowledge about management of post spinal backache. Respondents facing problem to manage the complication after SA was 13.4%. This study also found that the overall knowledge regarding SA was adequate among 80.6% respondents.

**Conclusion:** Nurses as the key personnel in management and prevention of complication, the obtained result was below the desired competence level among working nurses as it is the vital aspect of critical nursing care.

**Keywords:** Knowledge, Nurses, Management, Spinal anaesthesia, Hospital

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Access this article online	
Quick Response Code  	Website: <a href="http://www.jkahs.org.np">www.jkahs.org.np</a>  DOI: <a href="http://doi.org/10.3126/jkahs.v2i2.25179">http://doi.org/10.3126/jkahs.v2i2.25179</a>

Article Info.
<b>How to cite this article?</b>  Rijal E, Silwal S, Thapa S, Basnet S, Bhagat S. Nurses Knowledge on Management of Patient Receiving Spinal Anaesthesia in a Government Hospital. Journal of Karnali Academy of Health Sciences. 2019;2(2):127-133
Received: 1 April, Accepted: 15 May, Published: 30 August 2019
Conflict of Interest: None, Source of Support: None

## INTRODUCTION

Spinal anesthesia (SA) is also called spinal analgesia or subarachnoid block. It is a form of regional anesthesia involving injection of a local anesthetic into the subarachnoid space. Anesthesia allows invasive and painful procedure to be performed with little distress to the patient<sup>1</sup>. Regardless of the anesthetic agent (drug) used, the desired effect is to block the transmission of afferent nerve signals from peripheral nociceptors, sensory signals from the site are blocked there by eliminating pain. Anaesthesia is now much safer and more pleasant for the patient than it was 50 years ago<sup>2</sup>. An estimated 63 million people a year undergo surgical treatment for traumatic injuries, 31 million for malignancies and 10 million for obstetric complications<sup>3</sup>. Post-operative period begins immediately after surgery and continues until the patient is discharged from medical care. Post-anesthesia recovery is a continuous process that cannot be considered complete until the patient returns to their preoperative physiological state; this may take several days. Early recovery lasts from discontinuation of anesthesia until patients have recovered their protective reflexes and motor function. This is the time when complications are most likely to occur and need to be detected and treated<sup>4</sup>. SA is the mainstay of anesthesia in countries like India, Nepal and a part of Africa excluding the major countries. Administering spinal anesthetics to higher levels may affect the ability to breath by paralyzing the intercostal respiratory muscles, even the diaphragm in extreme cases.

There are lots of complications faced by patient due to mismanagement of SA either by anesthetist or by nursing personnel<sup>2</sup>. Complications of anaesthesia also remain a substantial cause of death during surgery globally, despite safety and monitoring standards which have reduced the numbers of unnecessary deaths and disabilities in industrialized countries. Unfortunately, the rate of avoidable death associated with anaesthesia in developing countries is 100–1000 times high. The rate of major complications has been documented to occur in 3-22% of inpatient surgical procedures, and death rate 0.4-0.8%. Studies in

developing countries suggest a death rate of 5-10% associated with major surgery<sup>3</sup>. An Intervention Study to Enhance Postoperative Pain Management in the nurses of anesthesia, and surgery departments identified a lack of knowledge and skills among nurses in assessing and managing pain effectively because of the absence of nursing guidelines and pain treatment protocols<sup>5</sup>. Similar study conducted at Kathmandu University School of Medical Science, Dhulikhel Hospital among paramedical staff shows that 26.7% had no idea about the complications<sup>6</sup>. Likewise, study conducted at Nepalgunj Teaching Hospital Kohalpur on nurses to assess the knowledge regarding SA found to be unsatisfactory and indicate the need of essential training on management of spinal anesthesia<sup>7</sup>. Early recognition of complications, timely interventions and masterly monitoring is the key to avoid unfavorable outcome. Unfavorable outcome can be prevented with more knowledge regarding pre and post anesthetic care, techniques and monitoring equipment. So, it is necessary for nurses to have knowledge on spinal anesthesia to understand the pharmacological and kinetic effect of anesthetic agents to provide better nursing care to prevent the arising complication after SA<sup>8</sup>. With the advent of anaesthesia becoming more 'high tech' the skill required to look after patient has increased and with scarce research on the issues, the researcher aimed to study the knowledge regarding SA among the working nurses.

## METHODOLOGY

Quantitative descriptive cross-sectional research design was used to assess the knowledge on management of patient receiving spinal anaesthesia among the nurses of the Koshi Zonal Hospital of Biratnagar Metropolitan city, Province no.1 of Morang district. Biratnagar ranks second in population density after Kathmandu where there are more than 21 hospitals and approximately 1,000 cases are operated annually in surgery department of this hospital where approximately 80 nurses are working. The time duration for the data collection took about 2 months. Formal permission was taken prior to study

from the ethical committee from the academic institute and the setting i.e. hospital. Written informed consent was taken from each respondent. Non probability purposive sampling method was used to select registered nurses working in various departments. The sample size was 67 which was calculated as per the formula,  $n=Z^2pq/d^2$  where prevalence was 77.5%.<sup>6</sup> Self-administered questionnaire was used which consisted of three parts; Part A-Demographic Characteristics of the Respondents, Part B-Questionnaire regarding Knowledge on SA, and Part C-Questionnaire regarding Knowledge on Complications and Management of SA. Pretesting was done in 10% of sample size and those participants were not included in the actual study. Data was entered in Microsoft Excel and analyzed by using

Statistical Package for Social Science (SPSS) version 17 and descriptive statistics was used to calculate frequencies, percentage and median.

## RESULTS

Out of 67 respondents, majority of them (77.6%) belongs to 20-30 years of age group. Regarding qualification nearly half (44.8%) of the respondents had completed PCL nursing followed by BN/Bsc Nursing (35.8%), ANM (16.4%), and only (3%) MN. Concerning work experience, nearly half (44.8%) of respondents had 2-4 years of job experience and (23.9%) had less than 1-year experience. Almost all (98.5%) of the respondents had not attained any training related to spinal anaesthesia (table 1).

**Table 1:** Demographic Characteristics of the Respondents (n=67)

Variables	Frequency (f)	Percentage (%)
<b>Age group of respondents</b>		
<20yrs	3	4.5
20-30yrs	52	77.6
30-40yrs	8	11.9
>40yrs	4	6.0
<b>Qualification</b>		
MN	2	3
BN	24	35.8
PCL	30	44.8
ANM	11	16.4
<b>Work experience</b>		
Up to 1 years	16	23.9
2-4 years	30	44.8
5-9 years	12	17.9
10 years and above	9	13.4
<b>Training on Spinal Anaesthesia</b>		
Taken	1	1.5
Not taken	66	98.5

**Table 2:** Respondent`s Knowledge on Spinal Anaesthesia (n=67)

Variables	Frequency (f)	Percentage (%)
<b>Meaning of Anaesthesia</b>	45	67.2
<b>Meaning of Spinal Anaesthesia</b>		
Injecting local anaesthetic into arachnoid space	6	9.0
Subarachnoid space	52	77.6
Dural space	8	11.9
Subdural space	1	1.5
<b>Sequence of Nerve Block After SA</b>		
Sensory and motor nerves	36	53.7
Sensory and autonomic nerves	13	19.4
Motor and autonomic nerves	5	7.5
Autonomic sensory motor nerves	13	19.4
<b>Contraindication of SA</b>		
Raised intracranial pressure	51	76.1
Obesity	2	3.0
Hypertension	14	20.9

Table 2 represents that (67.2%) respondent had answered the meaning of anaesthesia. Majority of respondent (77.6%) answered the correct meaning of spinal anesthesia. Only (19.4%) had knowledge regarding the sequence of nerve block after SA. Majority of respondents (76.1%) had knowledge about the absolute contraindication of SA.

**Table 3:** Respondent`s Knowledge on Complication and Management of SA (n=67)

Variables	Frequency (f)	Percentage (%)
<b>Immediate physiological change after SA</b>		
Tachycardia	12	17.9
Headache	15	22.4
Hypotension	39	58.2
Hypertension	1	1.5
<b>Measures to avoid hypotension during SA</b>		
Give normal saline during SA	27	40.3
Lay down the patient in lateral position	9	13.4
Maintain the circulatory blood volume	30	44.8
Keep the patient NPO before SA	1	1.5
<b>Responsibility of nurse when the BP falls</b>		
Observe patient condition and recheck BP	18	26.9
Pressure will regain spontaneously	2	3.0
Start dopamine drip	6	9.0
Increase IV infusion rate and administer Oxygen	41	61.2

<b>Best position of patient after SA</b>		
Lateral	27	40.3
Supine	37	55.2
Prone	3	4.5
<b>Main cause of backache after SA</b>		
Anaesthetic drug used during SA	14	20.9
Ligament strain due to profound relaxation	20	29.9
Due to puncture in the lumbar side	30	44.8
Due to surgical procedure	3	4.5
<b>Management of post spinal backache</b>		
Keeping a small pillow under lumbar region	14	20.9
Encouraging for physical exercise	2	3.0
Hydrating the patient before SA	2	3.0
Avoiding pillow under head for 12 hours	49	73.1
<b>Patient can ambulate</b>		
After 2-4 hours of SA	5	7.5
After 6-12 hours of SA	20	29.9
After 24-48 hours of SA	42	62.7
<b>Ever faced problem to manage SA</b>		
Yes	9	13.4
No	58	86.6

Table 3 depicts that more than half of the respondents (58.2%) had knowledge on immediate physiological changes after SA. However, less than half (44.8%) of the respondents had knowledge about the measures to avoid hypotension during SA. Only (61.2%) of respondent gave correct answer regarding the responsibility of nurse when systolic BP falls. More than half (55.2%) of the respondents had knowledge about the best position to keep patient after SA. Less than half (44.8%) of the respondents had knowledge regarding the main cause of post spinal backache and only (20.9%) had knowledge about the management. Most of the respondents (62.7%) did not have knowledge regarding ambulation after SA. It also reveals that 13.4% of the respondents had faced problem to manage complications after SA.

**Table 4:** Respondent's Level of Knowledge on SA

<b>Variables</b>	<b>Frequency (F)</b>	<b>Percentage (%)</b>
Inadequate	13	19.4
Adequate	54	80.6
<b>Total</b>	<b>67</b>	<b>100</b>

Table 4 shows that among 67 respondents the overall knowledge level was adequate in (80.6%) of respondents but still (19.4%) had inadequate level of knowledge on SA.

## DISCUSSION

This study indicates that the age group of nurses was predominately young, with 77.6% in the 20-30 year age group and 11.9% in the 30-40 year age group which is similar to the finding of thestud<sup>7</sup> where 66% of nurses were from 20-30 years age group. Regarding academic qualification, the same study found that 64% of respondents had PCL and 30% had ANM qualification which is consistent to this study with the number of nurses having PCL nursing of 44.8% followed by BN/BSc Nursing 35.8%, ANM 16.4%, and only 3% had master's degree. Similarly, in this study 77.6% nurses gave correct answer about meaning of spinal anaesthesia and they also knew it is a type of regional anaesthesia which is nearly consistent to the study<sup>7</sup> which reported that 84% gave the correct answer about meaning of SA. This study also shows that 19.4% answered that sequence of nerve block after spinal anesthesia is autonomic sensory motor nerves which is nearly consistent to that study which reported 8% nurses gave the correct answer on sequence of nerve block. This study reveals that 58.2% of nurses had knowledge on immediate physiological changes after spinal anaesthesia which is similar to the study which identified 42% of nurses had good knowledge on immediate physiological changes after SA<sup>7</sup>.

This study reveals that 80.6% of nurses had knowledge about complications and management of spinal anaesthesia which is similar to the study conducted at Dhulikhel hospital which reported 73.3% knew about the complications of regional anaesthesia<sup>6</sup>.

This study shows that 80.6% of nurses had adequate knowledge on SA which is similar to one of the previous study<sup>9</sup> which demonstrated that 78% nurses correctly answered true false questions related to epidural anaesthesia. At the time of this study, no regular inservice education regarding anaesthesia existed for nurses while only 1.5% had received training related to SA. The questions related to complications and management included the fact that a higher self-knowledge corresponded with higher scores on this study. However, the previous study

reported that 40% nurses who had received in-service training rated a good self-knowledge than those who did not scored significantly higher on the knowledge portion of the survey<sup>9</sup>.

Furthermore, this study demonstrated that the educational qualification and the clinical experience of those nurses had armed them with positive attitude and practices, but poor knowledge levels related to SA. The respondent's educational degree did not influence the score, the amount of specific education received by the respondents did factors into those scores. This finding is similar to one of the survey<sup>5</sup> which identified a lack of knowledge and skills among nurses in assessing and managing pain effectively because of the absence of nursing guidelines and pain treatment protocols.

## CONCLUSION

The study concluded that, there was higher level of knowledge related to management of patient receiving SA. However, the obtained result was below the desired competence level among working nurses. Furthermore, it revealed concerns and fears about side effects, complications and management related to SA. As practical skills appear to decline faster than theoretical knowledge, practice must be followed with standard nursing guidelines and regular in-service training among the working nurses for the enhancement of quality patient care.

## REFERENCES

1. The New York School of Regional Anesthesia. Spinal Anesthesia. 2013 [cited 2017 Mar 30]. Available from: <http://www.nysora.com/techniques/neuraxial-and-perineuraxial-techniques/landmark-based/3423-spinal-anesthesia.htm>
2. Dobson MB. Anesthesia at the District Hospital. 2000 [cited 2017 April 26]. World Health Organization: Geneva. Available from: <https://www.amazon.com/Anaesthesia-at-District-Hospital-2nd/dp/9241545275>

3. World Health Organisation. Guidelines for Safe Surgery. Safe Surgery Saves Lives. 2009 [cited 2017 April 25]. Available from: [http://apps.who.int/iris/bitstream/10665/44185/1/9789241598552\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/44185/1/9789241598552_eng.pdf)
4. Sewell A, Young P. Recovery and Post-anesthetic care. *Anaesthesia & Intensive Care Medicine*. 2017 [cited 2017 April 26]. 18(5), 219-278. Available from: <http://www.sciencedirect.com/science/journal/14720299/18>
5. Bardiau, Françoise M, Nicole F, Albert A, Jean G, Michaela. An Intervention Study to Enhance Postoperative Pain Management. *International Anesthesia Research Society*. 2002;96(1):179-185. DOI: 10.1213/00000539-200301000-00038
6. Bhattarai B, Kandel S, Adhikari N. Perception about the role of anesthesia and anesthesiologist among the paramedical staffs: perspective from a medical college in Nepal. *Kathmandu University Medical Journal*. 2012;11(38):1-54
7. Chhetri S. Research on the knowledge of nursing personnel on management of patient with spinal anesthesia. 2010. Unpublished research, Tribhuvan University, Kathmandu, Nepal.
8. Sarkar M, Dewoolkar L, Rao S. Analysis of Anaesthetic Intensive Care Unit Admissions. *The Internet Journal of Anesthesiology*. 2006 [cited 2017 Apr 25];13(1). Available from: <https://print.ispub.com/api/0/ispub-article/7249>
9. Sandie LT, Heindel L. The knowledge and attitudes of non-anesthetic nurses regarding postoperative epidural anaesthesia. *AANA Journal*. 1999;67(5)
10. Baig T. Comparison of 25 Gauge Cutting with Noncutting Needles for Post Dural Puncture Headache in Obstetric Patients. *Journal of Anesthesia & Clinical Research*. 2014 [cited 2017 Mar 29]; 5:448. Retrieved from: <https://www.omicsonline.org/open-access/comparison-of-gauge-cutting-with-noncutting-needles-for-post-dural-puncture-headache-in-obstetric-patients-2155-6148.1000448.php?aid=33100>. DOI: 10.4172/2155-6148.1000448
11. Burden N, Defazio DM, Quinn, Dawes BSG. *Textbook of Ambulatory Surgical Nursing*. Elsevier health sciences. 2002:406-412
12. Candido KD, Stevens RA. Post-dural puncture headache: pathophysiology, prevention and treatment. *U.S. National Library of Medicine*. 2003 [cited 2017 Mar 29];17(3):451-69. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/14529014>
13. Hartmann B, Junger A, Klasen J, Benson M, Jost A, Banzhaf A, Hempelmann G. The Incidence and Risk Factors for Hypotension After Spinal Anesthesia Induction: An Analysis with Automated Data Collection. *International Anesthesia Research Society*. 2002;94(6):1521-1529. DOI: 10.1213/00000539-200206000-00027
14. John VF. *Anesthesia and the EMO system*. National Library of Australia. English Universities Press: London. 1973 [cited 2017 Apr 26]; 7:184. Available from <http://catalogue.nla.gov.au/Record/1801775>
15. Sesmu A, Anneke EE, Jack WK, Jaap JL, Huub S, Paul T, Frans MW, Diederick EG. Impact of Anesthesia Management Characteristics on Severe Morbidity and Mortality. *Journal of American society of Anesthesiologist, Lippincott Williams and Wilkins*. 2000 [cited 2017 Apr 26]; 102:257. Available from <http://anesthesiology.pubs.asahq.org/article.aspx?articleid=2026288>
16. Welder S, Gurtner T. Backache following spinal anesthesia a neglected problem. *Europe PMC*. 1998 [cited 2017 Apr 26];10(1):24-26. Available from: <http://europepmc.org/abstract/med/2953048>
17. Wen DC, Hung YL, Ping TL. Core strength training for patients with chronic low back pain. *Journal of Physical Therapy Science*. 2015;27(3):619-622. DOI: 10.1589/jpts.27.619
18. Apondi C. A Survey of The Knowledge Attitude and Practice Regarding Epidural Labor Analgesia Among Obstetricians at The Kenyatta National Hospital, (A dissertation submitted for master's degree in anesthesia, University of Nairobi). 2012 [cited 2017 Mar 29]. Available from: <http://erepository.uonbi.ac.ke/bitstream/handle/11295/>