

## Post Spinal Anaesthesia Complications' Knowledge and Practice of Management among Nurses in Teaching Hospitals in Ogun State

Lekan-Atejioye, Nkechi Grace (Mrs)<sup>1</sup> Wennie, Jummai PhD<sup>2</sup>  
& Prof. Salawu, Rasheed<sup>3</sup>

School of Nursing Science, Babcock University, Ilishan-Remo, Ogun State

### Abstract

Knowledge and practice remains an important role in the management of complications in post spinal anaesthesia patients because nurses are involved in almost every aspect of client's care in the hospital. There has been a major concern in the management of post spinal anaesthesia complications among surgical patients. This is in due to inadequate knowledge and practice of nurses in the management of post spinal anaesthesia complications which influences higher prevalence of post spinal anaesthesia complications. This study therefore assessed the knowledge and practice on management of post spinal anaesthesia complications among nurses in Teaching Hospitals in Ogun State. Two hypotheses were formulated and tested. Analysis of data was done using t-test statistical analysis fixed at the 0.05 level of significance.

The study adopted a descriptive survey research design while total enumeration sampling technique was used for the available 92 participants who are nurses working in Babcock University Teaching Hospital Ilishan-Remo and Olabisi Onabanjo University Teaching Hospital, Sagamu. A self-designed questionnaire was used for data collection, which was through test-re-test and yielded a reliability coefficient (index) of 0.18. Two research questions and two hypotheses were formulated and tested. Analysis of data was done using descriptive statistics, t-test statistical analysis fixed at the 0.05 level of significance.

The results revealed no significant difference in knowledge on the management of post spinal anaesthesia complications among nurses in BUTH and OOUTH ( $t\text{-cal.} = 0.892, df = 90, p = .091$ ), and no significant difference in the management practices of post spinal anaesthesia complications among nurses ( $t\text{-cal.} = 0.616, df = 90, p = .285$ )

The study concluded that the level of knowledge and related practices in the management of post spinal anaesthesia complications by nurses was high. Therefore, the researcher recommends that standardized survey should be carried out routinely in all aspects of nursing management to improve quality nursing care in the management of surgical patients who had spinal anaesthesia. This will provide credible and reliable information in providing quality care.

**Keywords:** Anaesthesia, Complications, Knowledge, Management, Post spinal, Nurses, Practice

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### I. Introduction

Spinal anaesthesia has been widely practiced for centuries all over the world for the performance of different kinds of surgery with minimal complications. The technique of spinal anaesthesia is by the injection of local anaesthetic agents and additive agents to the subarachnoid space, and is characterized by temporary sensory, motor, and sympathetic blocks. Both spinal and epidural methods are also known as neuraxial anaesthesia, and can be applied as a one-time injection or intermittent bolus/continuous infusion through a catheter.

Spinal anaesthesia is generally applied for three main reasons, which are; surgery of lower abdomen and lower extremities, distinguishing the autonomic nervous system diseases from the organic diseases, and pain treatment for several conditions such as mesenteric ischemia, acute pancreatitis, and vascular diseases of the lower limbs (Lybecker, Djernes & Schmidt, 2015).

Complications from spinal anaesthesia may include hypotension, headache, lumbar pain and bradycardia, which can limit its use (Cook, Counsell & Wildsmith, 2017). Post-spinal headache and hypotension have been considered as the common complications associated with spinal anaesthesia and various conditions from lumbar pain to death have also been reported to date (Erk, 2009; Brull, McCartney, Chan & El-Beheiry, 2015). Among these, are neurological complications, such as cauda equina syndrome, paraplegia, paresthesia, and radiculopathy, but these occur infrequently (Brull, 2015). The headache is described as posture dependent. It

occurs when patient resumes upright position and is characterized by dull pain in fronto-occipital area and relieves on lying down. It may be associated with nausea and vomiting, auditory and visual symptoms (Reynolds, 2013). Headache complications generate pain that may radiate to the neck, leading to neck stiffness in some cases (Lybecker, Djernes & Schmidt, 2015). With this kind of headache, patients may be distressed, resulting in increased hospital stay and could interfere with newborn care in postpartum mothers (Faramarz & Khodamorad, 2016).

The role of nurses in educating individual patient is focused on the uniqueness of the spinal complication in relations to surgical factors, psychosocial context and the environment. These factors are all addressed based on the nurses' adequate knowledge of complications that help her to assess her patient properly. Working in partnership with patients and inter-professional team, nurses use knowledge to optimize patients' physical and mental health by mobilizing their social support systems. Ideally, surgical planning commences at least several weeks prior to the scheduled procedure. During the diagnostic workup, nurses educate patients about the indications and implications of imaging and neurophysiological testing. Since patient safety is a priority, it is imperative to identify patients who may be pregnant in order to avoid imaging modalities that emit ionizing radiation. Furthermore, it is contended that post spinal anaesthesia complications management is one of the nursing activities that require an interdisciplinary approach. It is therefore imperative that a nurse who is the main care provider should be knowledgeable and in position to mobilise the care team. There has been a major concern on the practice and management of post spinal anaesthesia complications among surgical patients (Gbenga, 2015). Study by Haprenand Irurita (2014), revealed that nurses' responsibilities create a greater vacuum in the prevention and management of post spinal anaesthesia. Despite several researches in the area of post spinal anaesthesia complications and management, majority of surgical patients do develop complications as a result of spinal anaesthesia (Gbenga, 2015).

Poor or inadequate knowledge and practice of nurses in the management of post spinal anaesthesia complications influenced higher prevalence of post spinal anaesthesia complications (Ayello & Meaney, 2015). Post spinal anaesthesia complications occurred as a result of a combination of both intrinsic and extrinsic factors and one important extrinsic factor occurs after administering spinal anaesthesia (Bliss, 2015). Some reasons for the high incidence of post spinal anaesthesia complications might be related to nurses' knowledge and practice in terms of risk assessment and prevention methods. Knowledge increases nurses' awareness of the problem of post spinal anaesthesia complications and provided the basis for informed decision making and the framework to develop and maintain competency of delivering high quality of nursing care (Benbow, 2015). Gunningberg, Lindholm, Carlsson, and Sjoden (2017) studied staff nurses' knowledge and practice regarding existing guidelines in the management of post spinal anaesthesia complications in Sweden and found that majority of the nurses had inadequate knowledge and practice in implementing and documenting the risk assessment, prevention, and management of post anaesthesia complications in surgical patients. Post anaesthesia complications prevention is the responsibility of all health care professionals who are involved in patient care. Knowledge and practice are necessary to provide nursing care effectively (Cully, 2014).

Implementation of proper management, educating nurses, formation of quality improvement team and protocol, nursing step in assessing risk and nutritional status, providing patients' skin care, and documentation are the quality indicators for combating the post anaesthesia complications occurrences (Catania, Huang, James, Madison, Moran, & Ohr, 2017). Post anaesthesia complications management is one of the core components of the surgical patients care and healthcare strategic planning services. Previous studies showed that in order to deliver high quality care, it is essential for nurses to provide evidence-based nursing practice. In this regard, nurses should have knowledge of risk factors and preventive strategies of post spinal complications development (Panagiotopoulou & Kerr, 2015). Various preventive measures were being used in nursing practice following a set of scientific rationales. Not only the nurses' knowledge, but also their level of practice of post spinal complications is important.

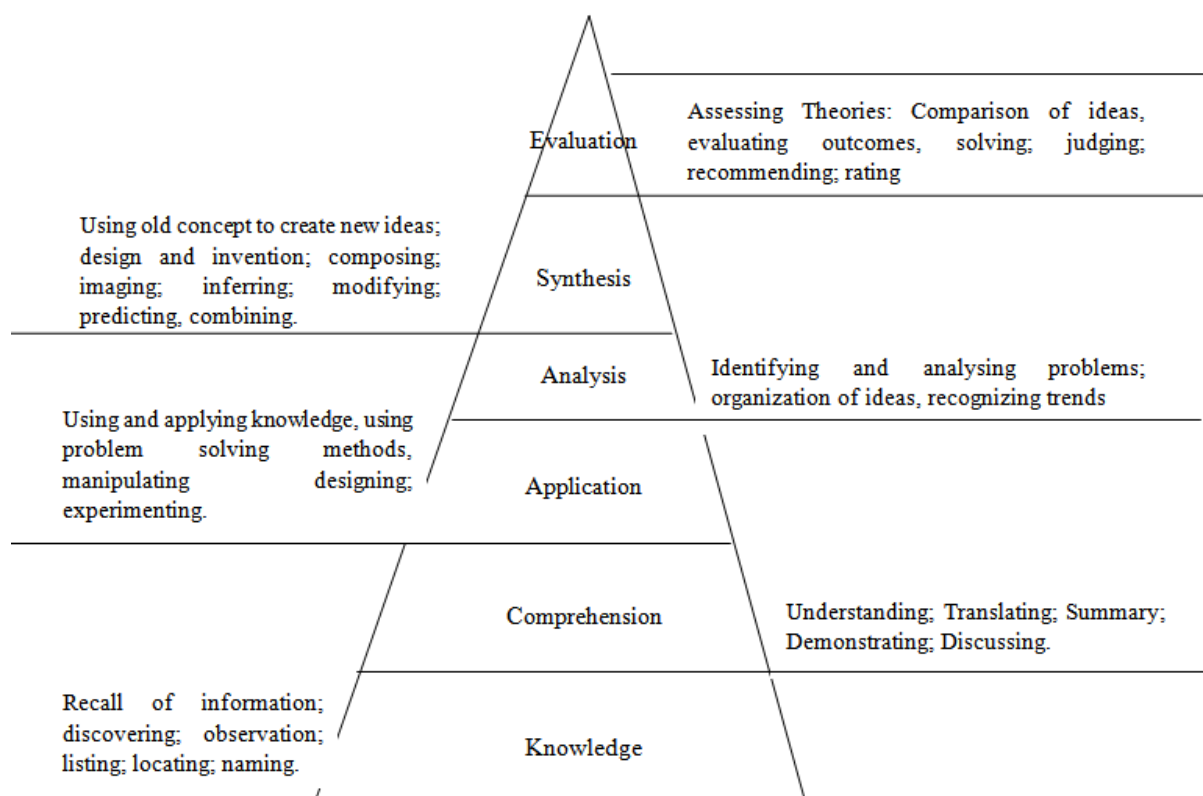
In Nigeria, there is very limited information available on management of post spinal anaesthesia complications among nurses. Currently, there is no evidence on nurses' knowledge and practice of post spinal anaesthesia complications. However, it was observed by the researcher that many of the patients that had spinal anaesthesia in the research setting developed complications as a result of the procedure. Therefore, it is important to explore and investigate the nurses' knowledge and practice in the management of post spinal anaesthesia complications among surgical patients in the Teaching Hospitals.

### **Conceptual Model**

The conceptual model of this study was developed based on Bloom's Taxonomy which was primarily conceptualized and presented by Dr. Benjamin Bloom at the start of 1956 (Orey, 2010). Its core purpose was to ensure that learning transforms into higher levels of thinking, rather than a mere act or process of remembering the facts in a well-defined structure. A pyramid was developed to present the learning prototype advancement. The intent was to ensure that learning outcomes were designed in such a manner that enabled the teachers to

gradually bring learners from acquiring subject information to its practical application in the real context and ultimately, create meaning of their own from the same (Riazi, 2010).

This model is often used to assist the construction of a curriculum or syllabus, to establish learning objectives and to determine the competencies to be assessed. To date, there have been two models of Taxonomy as shown below: The first one with the original Bloom's taxonomy structure which was presented in 1956 and the second one is the modified one, which was presented in 2001. The first level of both of these are based on knowledge, whereby mere information imparting is focused to ensure that learners should have the knowledge of a phenomenon; the next level is about establishing an understanding of that phenomenon; the third application stage is where the knowledge is applied in the real life context. Then comes the analysis of that phenomenon and how its connections can be made with the other set of information. Once that is done, comes the stage of evaluation to enable learners to evaluate the acquired information with respect to its utilization and critically appraise how it can be modified to suit the need. Lastly, is the stage of creation, which is considered the highest stage of level of achievement, whereby new information or idea is generated based on the experiences of learning from the past levels (Paul, Naik, Rane, & Pawar, 2012)



**Figure 1: Source: Bloom's (1995)**

### **Application of the Model**

The ultimate goal in developing clinical competencies in nursing is to bridge the theoretical knowledge into practice and to promote the transfer of learning to clinical practice. Certain nursing practices are directly related to the integration and synthesis of nursing knowledge (Evans & Donnelly, 2015). Nursing basic courses, training, and experiences are very important foundation for knowledge development of nurses. Nurses' knowledge of post spinal anaesthesia complications is important because is a foundational component for nurses to perform practice. Practice could be a direct goal-oriented action to build judgement taken by nurses in order to perform quality care (Ndikon & Onibokun, 2014). This was referred to as management of post spinal anaesthesia complication in this study.

Remembering and understanding focused on knowledge regarding management of post spinal anaesthesia complications. Under this section, questions were designed to map the first two of the six categories of the revised-Bloom's taxonomy. The next level is applying and analysing, in which questions are designed to focus on basic level of practice regarding management of post spinal anaesthesia complications. However, evaluating and creating was not included in this study because the management of post spinal anaesthesia complications involve less nurses' judgement and value of this kind of nursing care.

### **Hypotheses**

1. There is no significant difference in knowledge of the management of post spinal anaesthesia complications among nurses in the two hospitals.
2. There is no significant difference in the level of practice on the management of post spinal anaesthesia complications among nurses in the two hospitals.

## **II. Methodology**

**Research Design:** A descriptive research design was used to assess knowledge and practice on management of post spinal anaesthesia complications among nurses in Teaching Hospitals in Ogun State because it involves the collection of data at a point in time through the use of scientific investigation.

**Population:** The population for this study were the nurses of the two teaching hospitals in Ogun State, Nigeria. These were Babcock University Teaching Hospital, Ilishan Remo with total number of 220 nurses and Olabisi Onabanjo Teaching Hospital, Sagamu with the total number of 234 nurses working in the institution. Specifically, the nurses working at the surgical, orthopaedic and obstetrics and gynaecology units of the two teaching hospitals in Ogun State, Nigeria were involved in the study. This brings the target population to a total number of 110 nurses.

**Inclusion criteria:** This includes all the nurses working at the surgical, orthopaedic and Obstetrics and gynaecology units of Babcock University Teaching Hospital Ilishan Remo and Olabisi Onabanjo University Teaching Hospital, Sagamu. Ogun State.

**Exclusion criteria:** Includes nurses who are newly posted to the unit as well as those who work outside the units (surgical, orthopaedic and Obstetrics and gynaecology units) but work in the institutions.

**Sample size and sampling Technique:** Total enumeration was adopted for the selection of all the nurses working at the surgical, orthopaedic and obstetrics and gynaecology units of the two teaching hospitals in Ogun State, due to the manageable size of the population which was 110.

**Instrumentation:** The instrument for data collection was a self-structured questionnaire, which comprised of both open-ended and closed-ended questions. This is important so as to have first hand information from the respondents. The participants were guided on how to fill the questionnaire. The questionnaire consisted of three sections.

**Section A:** Socio-demographic characteristics of the respondents. This section consists of 8 items that assessed the socio-demographic characteristics of the participants.

**Section B:** Assessment on respondents' knowledge of the management of post spinal anaesthesia complications. This includes 17 close ended questions with all made up of yes and no response questions. This was used in measuring the respondent's level of nurses' knowledge in the management of post spinal anaesthesia. Knowledge as a variable was measured as either high (mean score between 13.0 and 17.0), moderate (mean score between 6.0 and 12.0) or low (mean score between 0.0 and 5.0).

**Section C:** Assessment on the respondents' level of practice in the management of post spinal anaesthesia. This involves 10 items with true, false and don't know response questions which was used to assess the nurses' level of practice in the management of post spinal anaesthesia. Nurses level of practice in the management of post spinal anaesthesia was measured as either high (mean score between 8.0 & 10.0), moderate (mean score between 4.0 & 6.0) or low (mean score between 1.0 & 3.0).

The instrument was subjected to a reliability testing among twenty (20) nurses of Federal Medical Centre, Abeokuta, Ogun State. This was to test and improve on the questionnaire used for the study. All the twenty (20) copies distributed were recovered, where a section by section reliability test results yielded the following value: Section B- 0.80, and Section C - 0.85.

**Method of Collection:** The researcher and one research assistant were involved in the administration of the instruments to each of the sample respondents chosen. The research assistant is a postgraduate student of Babcock University trained for the purpose of this study. She was given an orientation on the research and how to carry out the administration of the questionnaire. The researcher met with the Assistant Director of Nursing Services of OOUTH as well as the Director of Nursing Service of BUTH, to explain the purpose of the research and presenting the letter of permission from the ethical committee department of each individual hospitals, the researcher was granted permission to meet with the Head of each Units in company of the Head of Continuing Education Unit of each institutions. Head of Units were spoken with, nurses were met at different duty shift (morning and afternoon duty) while the aim of the study as well as the need for their participation was explained to them. The researcher waited to collect questionnaire at each visit so as to ensure proper filling and complete retrieval of instruments. A period of three weeks was used in the administration of instrument and collection of data.

**Method of Data Analysis:** In this study, the data analysis tools that were adopted include descriptive and inferential statistics. Descriptive statistics of frequency distribution mean and standard deviation were used to analyze the data and provide answers to the research questions 1 and 2. T-Test was used to test the two

hypotheses. All the hypotheses were tested at 5 percent level of significance ( $\alpha = 0.05$ ) using the SPSS version 21 software.

**Ethical Consideration:** The study considered various steps to ensure that the data collection process adhered to traditional ethical research standards. Permission was obtained from the Babcock University Health Research Ethical Committee (BUHREC) to conduct the study. Introductory letter was written to the management of BUTH and OOUTH, and permission was obtained from both institutions. Participants were informed about the study and their involvement in the study was made voluntary. Informed oral and written consent was obtained. The ethical principles of respect for persons, confidentiality, beneficence, non-maleficence and justice were observed.

### III. Results and Discussions

**Table 1: T-test showing the difference in knowledge on the management of post spinal anaesthesia complications among nurses in BUTH and OOUTH**

	N	Mean	Std. Deviation	Std. Error Mean	df	T	Mean diff	Sig
OOUTH	65	17.400	2.171	.269	90	.892	.415	.091
BUTH	27	17.815	1.642	.316				

Table 1 shows no statistical significant difference in knowledge on the management of post spinal anaesthesia complications among nurses in BUTH and OOUTH. Therefore the hypothesis was accepted while the alternate one is rejected (t-cal. = 0.892, df = 90, sig. = .091). Also, going through the knowledge mean scores, one can say that the mean score of nurses in OOUTH (17.400) has no significant difference from their counterparts at BUTH (17.815). This could be as a result of continuing education which is seen among nurses across the nation.

This implies that nurses in both institutions have up-to-date knowledge in the area of scientific nursing practice. This finding negates the empirical study conducted by Guihan et al(2015) which revealed that practicing nurses generally had inadequate knowledge on the management of post spinal anaesthesia complications. They also did not have current knowledge on the management of post spinal complications, nor did they know the prognosis of unpreventable and unmanaged post spinal anaesthesia complication that often lead to permanent disability and death. Nurses had inadequate understanding of the importance of interdisciplinary management. Similar findings were also reported in spinal cord injury units in the United States (Guihan et al, 2015). This therefore suggests an improvement in the level of knowledge in post spinal anaesthesia complication management overtime therefore providing scientific based care that could be improved on over a period of time.

**Table 2: T-test showing the difference in the management of post spinal anaesthesia complications among nurses in BUTH and OOUTH**

	N	Mean	Std. Deviation	Std. Error Mean	Df	T	Mean diff	Sig
OOUTH	65	19.708	2.448	.304	90	.616	.329	.285
BUTH	27	20.037	2.028	.390				

Results in Table 2 show no significant difference in the management of post spinal anaesthesia complications among nurses in BUTH and OOUTH. Therefore the hypothesis was accepted while the alternate one is rejected (t-cal. = 0.616, df = 90, sig. = .285). Also, going through the knowledge mean scores, one can say that the mean score of nurses in OOUTH (19.708) is not significantly difference from their counterparts at BUTH (20.037). This result is contrary to the findings of Catania, *et. al.* (2017) where it was found out that higher level of orthopedic nurses' knowledge was negatively correlated with their practice in the management of post spinal anaesthesia complications. Van (2016) also studied Dutch nurses' knowledge and practice on spinal anaesthesia complications, and it was revealed that nurses' knowledge level was significantly higher than that their practice level. It can therefore be concluded that the ability of nurses' in both institutions to transfer the knowledge gained in the management of post spinal anaesthesia complications into practice can be linked to the continuing education they are involved in, as majority of nurses are in various tertiary institutions where they update their knowledge and skill of evidenced based nursing practice.

### IV. Conclusion

The study concluded that most nurses have high knowledge and good level of practice on the management of post spinal complications. The perceived quality of nursing management is mostly high, resulting in good nursing care. It was found that there is a high level of respondents' knowledge in rendering quality management post operatively.

### **V. Recommendations**

In view of the findings and conclusions of this study, the following recommendations are made:

1. Nursing leaders in Nigeria should maintain and improve on the result of this study through regular in-service training.
2. Further interventions studies should be conducted on nurses' participation in an in-service training program on Post Spinal Anaesthesia complications.
3. A replication of this study is recommended in other settings to promote the generalizability of the findings above.

### **References**

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