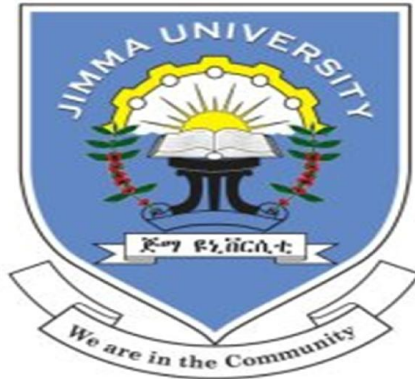


JIMMA UNIVERSITY
INSTITUTE OF HEALTH
FACULTY OF MEDICAL SCIENCE
DEPARTMENT OF ANESTHESIA



PRACTICE OF REGIONAL ANESTHESIA AND ITS ASSOCIATED
FACTORS AMONG ANESTHESIA PROFESSIONALS WORKING IN
GOVERNMENT TEACHING REFERRAL HOSPITALS OF ETHIOPIA,
RUNNING POSTGRADUATE ANESTHESIA PROGRAMS

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Practice of Regional Anesthesia and its Associated Factors among Anesthesia Professionals Working in Government Teaching Referral Hospitals of Ethiopia Running Postgraduate Anesthesia Programs; An institutional based cross-sectional study.

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Abstract

Background: *Regional anesthesia (RA) provides site specific, complete pain relief, early mobilization and rehabilitation; and is preferred than general anesthesia due to its associated risks. It also ensures prolonged analgesia while reducing the need for systemic drugs with their side effects. Despite these advantages, the techniques have not been embraced as alternatives to general anesthesia in Ethiopia.*

Objective: *To assess the magnitude of regional anesthesia practice and its associated factors among anesthesia care providers (ACPs) working in Ethiopian government teaching referral hospitals running postgraduate anesthesia program, 2019.*

Materials and methods: *An institutional based cross-sectional study was conducted among all ACPs working in the selected institutions (Jimma Medical Center, Black Lion hospital and Wolaita Sodo teaching referral hospital) which were randomly selected among six government teaching referral hospitals; from August 1-September 1, 2019. Data were entered into [EpiData] manager version 4.3 and exported to SPSS for further analysis. Descriptive statistics were done to summarize descriptive data. Bivariate logistic regression was done to select candidate variable for multivariable logistic regression. Those variables with p -value < 0.25 were taken as a candidate for the final model. Multivariable logistic regression was used to identify independent predictors of regional anesthesia practice among anesthesia professional. Adjusted odds ratio and 95% CI interval were used to measure association and statistical significance respectively. 95% CI was used to declare statistical significance.*

Results: *A total of 143 anesthesia professionals participated in the study making the response rate 90%. The mean age of the study participants was 30.77 ± 7.049 year that ranges from 22-56 years. Majority of them, are male predominance 88(67.7%), were ≤ 30 years 86(66.2%, 47 (36.2%) were BSc anesthetists, had 1 to 5 years of experience 70 (53.8%) and 64(49.2%) had been working at BLH. The practice of RA among ACPs was 59.2% from which the top performed types of RA were SA (98.5%), CA (72.3%) and axillary block (69.2%) while Sub gluteal sciatic block and IV RA were the least used (8.5% each) types RA. Finally 2 variables (years of experience and academic qualification) were identified as the independent predictors of RA practice among ACPs*

Conclusion and recommendation: *In nutshell practice of RA in teaching government hospitals of Ethiopia was relatively low despite some RA types like SA was almost practiced well. Thus, ACPs were expected to practice all types of RA in reference to routinely abusing GA for patient safety and welfare in all dimensions.*

Keywords: *Regional anesthesia practice, teaching institutions, Ethiopia, Anesthesia care providers, associated factors*

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TABLE OF CONTENTS

| CONTENTS..... | PAGE |
|--|------|
| Abstract..... | i |
| Background: | i |
| Objective: | i |
| Materials and methods: | i |
| Results: | i |
| Conclusion and recommendation: | i |
| Keywords: | i |
| ACKNOWLEDGEMENT | ii |
| TABLE OF CONTENTS | iii |
| ABBREVIATIONS | v |
| CHAPTER 1: INTRODUCTION | 1 |
| 1.1 BACKGROUND..... | 1 |
| 1.2 STATEMENT OF PROBLEM..... | 3 |
| CHAPTER 2: LITERATURE REVIEW | 5 |
| 2.1 magnitude of regional anesthesia practice | 5 |
| 2.2 Factors associated with regional anesthesia practice | 5 |
| 2.3 CONCEPTUAL FRAME WORK | 7 |
| 2.4 SIGNIFICANCE OF THE STUDY | 8 |
| CHAPTER 3: OBJECTIVES..... | 9 |
| 3.1 GENERAL OBJECTIVE | 9 |
| 3.2 SPECIFIC OBJECTIVES | 9 |
| CHAPTER 4: METHODOLOGY | 10 |
| 4.1 Study area and period..... | 10 |
| 4.2 Study design | 11 |
| 4.3 Population..... | 11 |
| 4.4 Inclusion and Exclusion criteria..... | 11 |
| 4.5 Sample size determination and sampling procedure | 12 |
| 4.6 Study variables | 12 |

| | |
|--|-----------|
| 4.7 Operational Definitions | 12 |
| 4.8 Data collection (instrument, technique) | 13 |
| 4.9 Data processing and analysis..... | 13 |
| 4.10 Data quality control..... | 13 |
| 4.11 Ethical Clearance..... | 14 |
| CHAPTER 5: RESULTS | 15 |
| 5.1 Socio-demographic characteristics of study participants | 15 |
| 5.2 Regional anesthesia practice status of Anesthesia care providers..... | 15 |
| 5.3 professional characteristics of Anesthesia care providers..... | 19 |
| 5.4 Individual factors of Anesthesia care providers | 20 |
| Knowledge and attitude status of Anesthesia care providers about regional anesthesia | 20 |
| 5.5 results of bivariate analysis | 22 |
| 5.6 Independent predictors of regional anesthesia practice among ACPs | 24 |
| CHAPTER 6: DISCUSSION..... | 25 |
| 6.1 Limitations of the study..... | 26 |
| CHAPTER 7: CONCLUSION AND RECOMMENDATION | 27 |
| 7.1 Conclusion..... | 27 |
| 7.2 Recommendations | 27 |
| REFERENCE..... | 28 |
| ANNEXES..... | 31 |
| Annex 1: Consent form | 31 |
| Annex 2: Questionnaire..... | 32 |

ABBREVIATIONS

ASA: American Association of Anesthesiologists

ACPs: Anesthesia care providers

BLH: Black Lion Hospital

CNS: Central nervous system

CA: Caudal anesthesia

CVS: Cardiovascular system

DA: Diploma in Anesthesia

ERC: Ethics and research committee

GA: General Anesthesia

IV: Intravenous

IASP: International Association Study of Pain

JMC: Jimma Medical Center

LA: Local Anesthetic

MD: Medical Doctor

MSC: Masters of anesthesia

SD: standard deviation

SA: spinal anesthesia

PACU: Post anesthesia care unit

PN: Peripheral nerve

PNB: Peripheral Nerve Block

PNS: Peripheral Nerve Stimulator

RA: Regional Anesthesia

US: Ultra Sound

WHO: World Health Organization

WSTRH: Wolaita Sodo Teaching referral Hospital

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

Regional anesthesia refers applying anesthetics on specific area without producing general loss of consciousness which has become an important for pain and surgical management if performed by an anesthesiologist who possesses the competence and skills necessary for safe and effective performance. Types of regional anesthesia can be categorized as neuraxial anesthesia (spinal anesthesia, epidural anesthesia and caudal anesthesia) and peripheral nerve blocks (1, 2).

Regional anesthesia is often used for different types of surgeries like orthopedic surgery done on an extremity (arm, leg, hand, or foot), for female reproductive surgery (gynecological procedures and cesarean section), removal of enlarged prostate from male and even the current studies recommended the practice of RA in laparoscopic surgeries (laparoscopic cholecystectomy, laparoscopic assisted vaginal hysterectomy and total laparoscopic hysterectomy) (3).

The use of regional techniques provides site specific, complete pain relief, facilitates early mobilization and rehabilitation while avoiding general anesthesia and its associated risks. It also ensures prolonged analgesia while reducing the need for systemic drugs with their side effects. Regional anesthetic techniques have a good safety profile, can be used in every age group including pediatrics for instance caudal anesthesia seems to be an inexpensive, simple, and effective technique not only as a supplement for postoperative analgesia, but also as a single method of anesthesia in providing excellent postoperative analgesia(4).

RA is also recommended on battle field as military medicine over GA for different reasons (Excellent operating conditions, profound perioperative analgesia, hemodynamic stability, limb-specific anesthesia, reduced need for other anesthetics, reduced or eliminated use of narcotics, improved postoperative alertness, minimal adverse effects, rapid recovery from anesthesia, simple/easily transported equipment and cost-effectiveness)(5–7).

The newer local anesthetic agents have improved safety and efficacy of RA. Additionally, the avoidance of opioids with regional techniques can be a distinct advantage in the day surgery

Setting and RA has the potential to produce high quality analgesia with minimum morbidity compared to the other modalities of postoperative pain management (4,8).

In general regional anesthesia is recommended if surgery indicated over general anesthesia due to the associated complication of the later technique like risk of aspiration, difficult airway, postoperative pain, nausea, vomiting, delay awaking, long hospital stay, high cost, risk of DVT, volume of blood loss and specific side effects of multi drug used in GA(9).

RA is also indicated for general safety by minimizing prolonged hospital stay and reduces cost in relative to GA for day case and ambulatory surgeries (10–13). The use of regional blocks in modern anesthesiology has increased in the last two decades, especially due to their advantages (14). But, it was not implemented well in our country yet, as majority of anesthesia professionals routinely abusing general anesthesia.

1.2 STATEMENT OF PROBLEM

The advantages of regional anesthesia are widely appreciated and there is evidence of reduced morbidity and mortality. Compared with patients receiving general anesthesia, those receiving regional anesthesia have lower incidence of postoperative chest infection, improved postoperative oxygenation, a lower incidence of deep vein thrombosis, a reduced stress response to surgery these all reflected in a reduction in hospital costs(15).

Studies have identified that the practice of RA is minimal among patients undergoing different surgeries including orthopedic surgeries globally, despite, the practice has changed over time (15–19).

The practice of RA is 97.8% despite the peripheral block practice was lower (59.7%) in USA (20).The practice of RA was 45.5% and considered under practice due to lack of equipment and inadequate education/training as reported from Greece nation survey (21).The study conducted by Rukewe and Fatiregun in Nigeria among anesthesiologists revealed that the magnitude of RA practice was 52.9% (spinal anesthesia (92.9%), epidural anesthesia (15%) and peripheral nerve blocks (2.9%) due to limited exposure and lack of equipment (22). Also the study conducted in Kenya among anesthesiologists revealed that 72.3% of the respondents practice RA and the rest 27.7% didn't perform RA due to lack/ inadequate exposure during training (23).

There are numerous potential explanations for differences or determined associated factors in RA practice, including patient characteristics, differences in health insurance, geographical proximity to care, or insufficient literacy and knowledge, Hospital policies and patient and physician preferences, the racial, ethnic, and gender disparities in use of health-care resources (17). In another study; Age, perception of adequate training, nerve block rotation, adequate application in education, following innovations were the factors which significantly affected the RA practice as reported by Baydar et al who conducted among Turkish anesthesiologists (24).

Despite literature abundance on potential benefits associated with regional anesthesia, there are sparse evidence-based data to evaluate the frequency of regional anesthesia practice at national or international level. Regardless of their benefits as compared to other forms of anesthesia, they are infrequently used and also it has not been embraced as alternatives to general anesthesia in Ethiopia as Haile et al reported the practice of RA was 61% in Ethiopia (25).But, there is limited

literature that revealed the magnitude of RA practice and associated factors in Ethiopia. Thus, the present study was aimed to assess the magnitude of regional anesthesia practice and its associated factors among anesthesia professionals.

CHAPTER 2: LITERATURE REVIEW

2.1 magnitude of regional anesthesia practice

A nationwide survey shows the practice of RA is 97.8% despite the peripheral block practice was lower (59.7%) in USA (20).

A cross-sectional descriptive survey was conducted in Greece shows the practice of RA was 45.5% and considered under practice due to lack of equipment and inadequate education/training as reported from Greece nation survey (21).

Across sectional study conducted by Rukewe and Fatiregun in Nigeria among anesthesiologists revealed that the magnitude of RA practice was 52.9% (spinal anesthesia (92.9%), epidural anesthesia (15%) and peripheral nerve blocks (2.9%) (22).

A cross-sectional descriptive survey was conducted in Kenya among anesthesiologists revealed that 72.3% of the respondents had RA practice (23). Merga et al reported the practice of RA s 61% in Ethiopia (25). Another study conducted in University of Gondar hospital among pregnant mothers under gone caesarean section within 15 years reported that majority of them were performed under GA (65.6%) and the rest 34.4% were operated under spinal anesthesia and sudden shift of obstetric anesthesia from GA to RA (spinal anesthesia) starting from 2000 (26).

2.2 Factors associated with regional anesthesia practice

A study done in the South East Thames Region among anesthesiologist reported that majority of them (86%) had knowledge about RA importance for postoperative analgesia (27). The vast majority (94.49%) of anesthesiologists of Greece had knowledge about neuraxial anesthesia, whereas only 46.4% had knowledge about PNBs as reported from Greece nation survey (21). The study conducted in Kenya among anesthesiologists revealed that 26.2% of the respondents considered as they had poor knowledge/training to perform RA (23).

The attitude of anesthesia residents and anesthesiologists towards RA was 64 ± 10.6 and 57 ± 7.7 mean score among those who performed and not performed RA specifically PNBs as study conducted by Helayel et al in Brazil(28).

There are numerous potential explanations for differences or determined associated factors in RA practice, including patient characteristics, differences in health insurance, geographical proximity to care, or insufficient literacy and knowledge, Hospital policies and patient and physician preferences, the racial, ethnic, and gender disparities in use of health-care resources (17).

Age, perception of adequate training, nerve block rotation, adequate application in education, following innovations were the factors which significantly affected the RA practice as reported by Baydar et al who conducted among Turkish anesthesiologists(24). The cross-sectional study conducted by Rukewe and Fatiregun in Nigeria among anesthesiologists revealed that the

magnitude of RA practice was low (52.9%) due to limited exposure and lack of equipment(22). The cross-sectional study conducted in Kenya among anesthesiologists revealed that inadequate exposure during training was the cause of not practicing RA (23).

2.3 CONCEPTUAL FRAME WORK

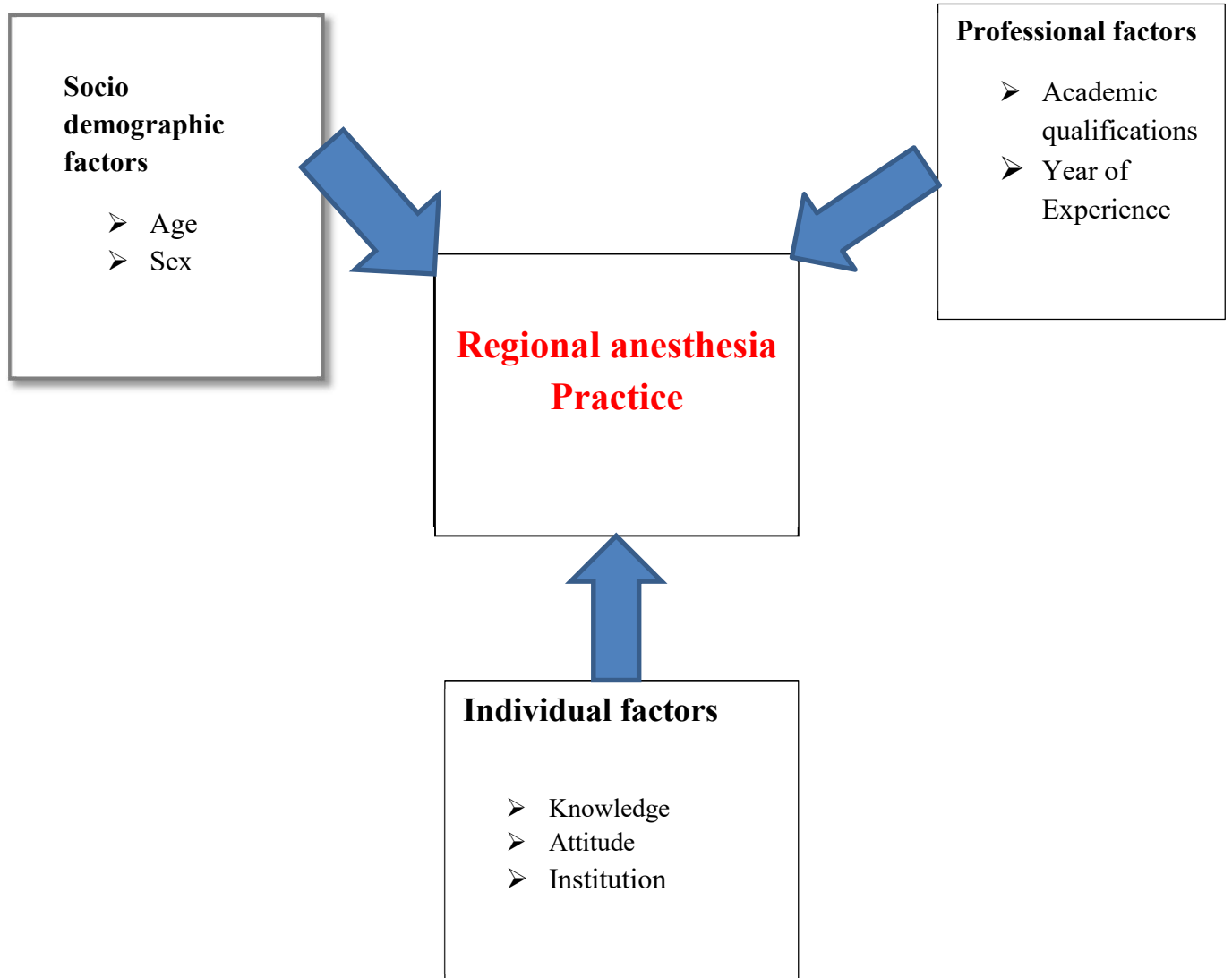


Fig.1: Conceptual framework of the study

2.4 SIGNIFICANCE OF THE STUDY

Different studies indicated the advantage of RA over GA. But, it is not frequently used and not practiced routinely due to many reasons. In comparison to GA, the practice of RA is minimal globally even though there is a variation in magnitude among countries. Now a days practice of RA across a nation has gradually changed to prevent complications arises from GA. The present study will assess the magnitude of RA practice and associated factors among anesthesia care providers.

The findings of this study will assist policy makers and other stakeholders by giving relevant information for future planning and interventions and also provides as a base line data for further similar studies.

CHAPTER 3: OBJECTIVES

3.1 GENERAL OBJECTIVE

To assess the magnitude of regional anesthesia practice and its associated factors among Anesthesia professionals working in Ethiopian government teaching referral hospitals running postgraduate anesthesia program, 2019.

3.2 SPECIFIC OBJECTIVES

- To assess the magnitude of RA practice among anesthesia professionals working in Ethiopian government teaching referral hospitals running postgraduate anesthesia program, 2019.
- To identify factors associated with RA practice among anesthesia professionals working in Ethiopian government teaching referral hospitals running postgraduate anesthesia program, 2019.

CHAPTER 4: METHODOLOGY

4.1 Study area and period

The study was conducted among Anesthesia professionals in Ethiopian government teaching referral hospitals running postgraduate anesthesia program (Jimma Medical Center, Black Lion hospital and Wolaita Sodo hospital).

Jimma University medical center (JUMC) is found in Jimma town, Oromia regional state, in the south west part of Ethiopia 352 km far from Addis Ababa, the capital city. It is one of the oldest governmental hospitals, which was established in 1937 during Italian occupation for the service of their soldiers. After the withdrawal of the colonial conquerors, it has been running as public hospital under the Ministry of Health by different names at different times. Currently become “Jimma University Medical Center” under federal ministry of education. The hospital currently provides tertiary care services with a total of nearly 1,000 hospital staffs for approximately 9,632 inpatients, 5,000 accident and emergency cases, and 80,000 outpatient attendants each year from catchment area population of 18million.

Black lion specialized hospital which is the largest, multi-specialist tertiary care teaching hospital located, in Addis Ababa, Ethiopia, opened since 1972 and, in 1998 transferred to school by FMOH since then it became a university teaching hospital Offer diagnosis & treatment for approximately 370,000-400,000 in a year. BLSH is now the main teaching hospital for clinical and preclinical trainings of most disciplines. It is also an institution where specialized clinical services that are not available in other public or private institutions are rendered to the whole nation. It has about 800 beds, it had about 17 operation theatre and approximately 7000-9000 patients undergo surgery in a year including emergency surgery more than 900 health professionals in the different specialties dedicated to providing health care services, and the various department's residents under specialty training in the school of medicine also provide patient care in the hospital .

Wolaita Sodo teaching and referral hospital is one of the seven university that found in southern nation nationality peoples regional state. It has three campus, the Wolaita Sodo university

hospital is one of the three campus which is found in Sodo town; the capital city of Wolaita zone. Sodo was found at southern part of Ethiopia and located 387 Kms away from Addis Ababa; capital city of the country and 165km to the west of Hawassa; capital city of the southern nation nationality people's regional state. Wolaita Sodo is one of the forests areas and it has evergreen areas around the town and the culture of the people and the socio economic issues (dynamics) are highly attractive and most popular. According to the 1999E.C national census the total residents of the Wolaita zone were around 1.7 million and among those 105,000 peoples were resided in Sodo town. The town is divided in to 3 sub cities or "kifle ketemas" and 11 Keble's. Wolaita Sodo university teaching referral hospital with other two missioner hospital that found in the zone are ordinary serving the total population of the zone and community of nearby zones. The study will be conducted WSUTRH. Wolaita Sodo hospital was established at 1928G.C, it was under administration zone health bureau until 2012G.C onward this period it becomes under management of Wolaita Sodo University. WSUTRH has four major operation rooms including ophthalmic, emergency obstetric procedures and two major surgical operation rooms. The Hospital can serve for 2- 3 million people.

The study was conducted from August 1- September 1, 2019 G.C among Anesthesia professionals.

4.2 Study design

An institutional based cross-sectional study design was employed.

4.3 Population

Source population: Anesthesia professionals working in Ethiopian government teaching referral hospitals running postgraduate anesthesia program

Study population: All Anesthesia professionals working in three selected Ethiopian government teaching referral hospitals running postgraduate anesthesia program

4.4 Inclusion and Exclusion criteria

Inclusion criteria: All Anesthesia professionals have been working for at least six month in that institution before the commencement of data collection

Exclusion criteria: -Anesthesia professionals who will not available during data collection.

- Non-consenting anesthesia professionals

4.5 Sample size determination and sampling procedure

Sample size determination

sample size was calculated using single population formula based on the following assumptions: 61% of regional anesthesia practice from the previous study by Haile et al (25), 95% confidence interval and 5% margin of error which yielded 365 samples. Since the source population was less than 10,000 (200) finite population proportion formula was used to calculate the final sample size which yielded a total of 130 anesthesia professionals. By adding 10% non-response rate, the final sample size was 143.

Sampling procedure

There are six government teaching referral hospitals (Black Lion hospital, Jimma Medical Center, Gondar teaching referral hospital, Dilla teaching referral hospital ,Wolaita Sodo teaching referral hospital and St Paulo's millennium medical college) that running postgraduate anesthesia program in Ethiopia. Jimma Medical Center, Black Lion hospital and Wolaita Sodo teaching referral hospital were selected with simple random technique. Then, all available (Survey) anesthesia professionals who have been working in selected Ethiopian government teaching referral hospitals were enrolled to participate in the study.

4.6 Study variables

Dependent variables: Regional anesthesia practice

Independent variables: Socio-demographic variables (Age, Sex) professional factors (academic Qualifications, years of Experience), individual factors (Knowledge, Attitude, Institution)

4.7 Operational Definitions

RA practice- is considered if the respondent performed (30%) ≥ 5 types of RA assuming as minimum representation of all types of RA.

Knowledge- The anesthesia professional considered as having knowledge if he/she answered (scored) >10 score of knowledge related questions and otherwise it will be considered as having no knowledge about RA.

Attitude- The anesthesia professional considered as having positive attitude if he/she answered (scored)>10 score of attitude related questions and otherwise it will be considered as having negative attitude about RA.

4.8 Data collection (instrument, technique)

The study was conducted by Self-administered questionnaires which is prepared in English. Consequently, training was given for data collectors. Then, the prepared format and questionnaire had given to data collectors.

4.9 Data processing and analysis

Data were entered using Epidata manager version 4.3 and exported to statistical package for social science for further statistical analysis. Descriptive statistics like measures of central tendency (mean, mode, median) and measures of dispersion (range, variance and standard deviation) for continuous variable, and frequency count and proportion for categorical variables were used. In bivariate analysis, simple-crosstab/ chi-square test and binary logistic regression was conducted to explore the association between covariates and outcome variable. Those variables with p-value < 0.25 were taken as a candidate for the final model. Multivariable logistic regression was used to identify independent predictors of regional anesthesia practice among Anesthesia professional. In multivariate analysis, adjusted odds ratio (AOR) with 95% confidence interval (CI) was used to assess association between outcome variable (regional anesthesia practice) and the associated factors and statistical significance. Statistical significance was declared with p-value of <0.05.

4.10 Data quality control

The validity of developed self-administered questionnaire was checked by Pre-test on 5% of total sample size in Shanan Gibe Hospital prior to the actual data collection to ensure clarity, understandability and completeness. Correction and modification on grammar, sequences and timing were made based on the result of pre-test before the start of actual data collection. The collected data were checked for completeness, accuracy, clarity and consistency by the principal

investigator. Appropriate statistical analysis was performed based on the type of covariates and outcome variable.

4.11 Ethical Clearance

Implementation of the proposal was carried out after getting approval letter from the ethical clearance committee/ethical review board of Jimma University. An official letter of collaboration and permission request to conduct study was obtained from Department of Anesthesia. Informed verbal and written consent was taken from the respondents/clients after explaining the objectives and purpose of the study. The participants were assured that they have full right to participate or withdraw from the study and the collected data/ information will be kept confidentially.

CHAPTER 5: RESULTS

5.1 Socio-demographic characteristics of study participants

A total of 143 anesthesia professionals participated in the study making the response rate 90%. The mean age of the study participants was 30.77 ± 7.049 year that ranges from 22-56 years. Majority of them, are male predominance 88(67.7%), were ≤ 30 years 86(66.2%)

Table 1: Socio- demographic characteristics of Anesthesia care providers, 2019

| Variables | Categories | Frequency | Percentage (%) |
|--------------|--------------|------------|----------------|
| Age in years | ≤ 30 | 86 | 66.2 |
| | 31-40 | 32 | 24.6 |
| | 41-50 | 9 | 6.9 |
| | >50 | 3 | 2.3 |
| | Total | 130 | 100.0 |
| Sex | Male | 88 | 67.7 |
| | Female | 42 | 32.3 |
| | Total | 130 | 100.0 |

5.2 Regional anesthesia practice status of Anesthesia care providers

The practice of RA among ACPs was 59.2% (**Fig 1**). Among 130 questionnaires' of ACPs reached for analysis, the top performed types of RA were SA (98.5%), CA (72.3%) and axillary block (69.2%) while Sub gluteal sciatic block and IV RA were the least used (8.5% each) types RA (**Table 2**).

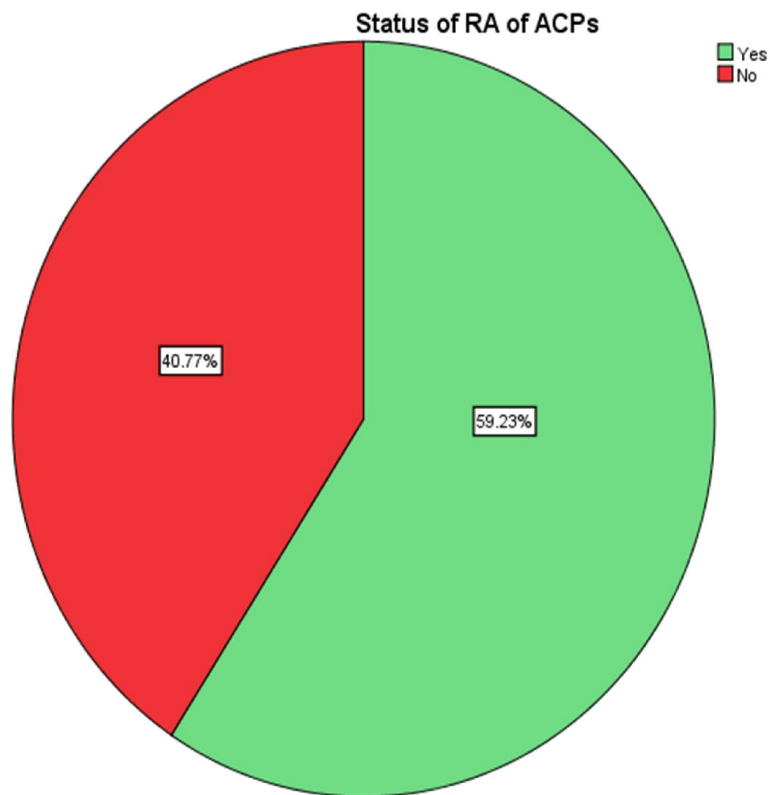


Fig 1: Regional anesthesia practice status of Anesthesia care providers, 2019

Table 2: Frequency of practiced types of RA

| RA types | Categories | Frequency | Percentage (%) |
|---------------------|--------------|------------|----------------|
| Spinal anesthesia | Yes | 128 | 98.5 |
| | No | 2 | 1.5 |
| | Total | 130 | 100.0 |
| Epidural anesthesia | Yes | 55 | 42.3 |
| | No | 75 | 57.7 |
| | Total | 130 | 100.0 |
| Caudal anesthesia | Yes | 94 | 72.3 |
| | No | 36 | 27.7 |
| | Total | 130 | 100.0 |

| | | | |
|---------------------------|--------------|------------|--------------|
| Interscalene block | Yes | 32 | 24.6 |
| | No | 98 | 75.4 |
| | Total | 130 | 100.0 |
| Supraclavicular block | Yes | 51 | 39.2 |
| | No | 79 | 60.8 |
| | Total | 130 | 100.0 |
| Infraclavicular block | Yes | 20 | 15.4 |
| | No | 110 | 84.6 |
| | Total | 130 | 100.0 |
| Axillary block | Yes | 90 | 69.2 |
| | No | 40 | 30.8 |
| | Total | 130 | 100.0 |
| Elbow block | Yes | 30 | 23.1 |
| | No | 100 | 76.9 |
| | Total | 130 | 100.0 |
| Lumbar plexus block | Yes | 15 | 11.5 |
| | No | 115 | 88.5 |
| | Total | 130 | 100.0 |
| Femoral block | Yes | 52 | 40.0 |
| | No | 78 | 60.0 |
| | Total | 130 | 100.0 |
| Saphenous block | Yes | 32 | 24.6 |
| | No | 98 | 75.4 |
| | Total | 130 | 100.0 |
| Classic sciatic block | Yes | 19 | 14.65 |
| | No | 111 | 85.4 |
| | Total | 130 | 100.0 |
| Sub gluteal sciatic block | Yes | 11 | 8.5 |
| | No | 119 | 91.5 |

| | | | |
|--|--------------|------------|--------------|
| | Total | 130 | 100.0 |
| Popliteal block | Yes | 35 | 26.9 |
| | No | 95 | 73.1 |
| | Total | 130 | 100.0 |
| Ankle block | Yes | 63 | 48.5 |
| | No | 67 | 51.5 |
| | Total | 130 | 100.0 |
| Thoracic paravertebral block | Yes | 46 | 35.4 |
| | No | 84 | 64.6 |
| | Total | 130 | 100.0 |
| Transverse abdominis plane block | Yes | 77 | 59.2 |
| | No | 53 | 40.8 |
| | Total | 130 | 100.0 |
| IV RA | Yes | 11 | 8.5 |
| | No | 119 | 91.5 |
| | Total | 130 | 100.0 |
| Other | Yes | 38 | 29.2 |
| | No | 92 | 70.8 |
| | Total | 130 | 100.0 |

When the numbers of RA performed were analyzed, a few respondents (1.5%) didn't do any type of RA while the majorities (46.9%) were doing 1-5 types of RA (**Fig 2**).

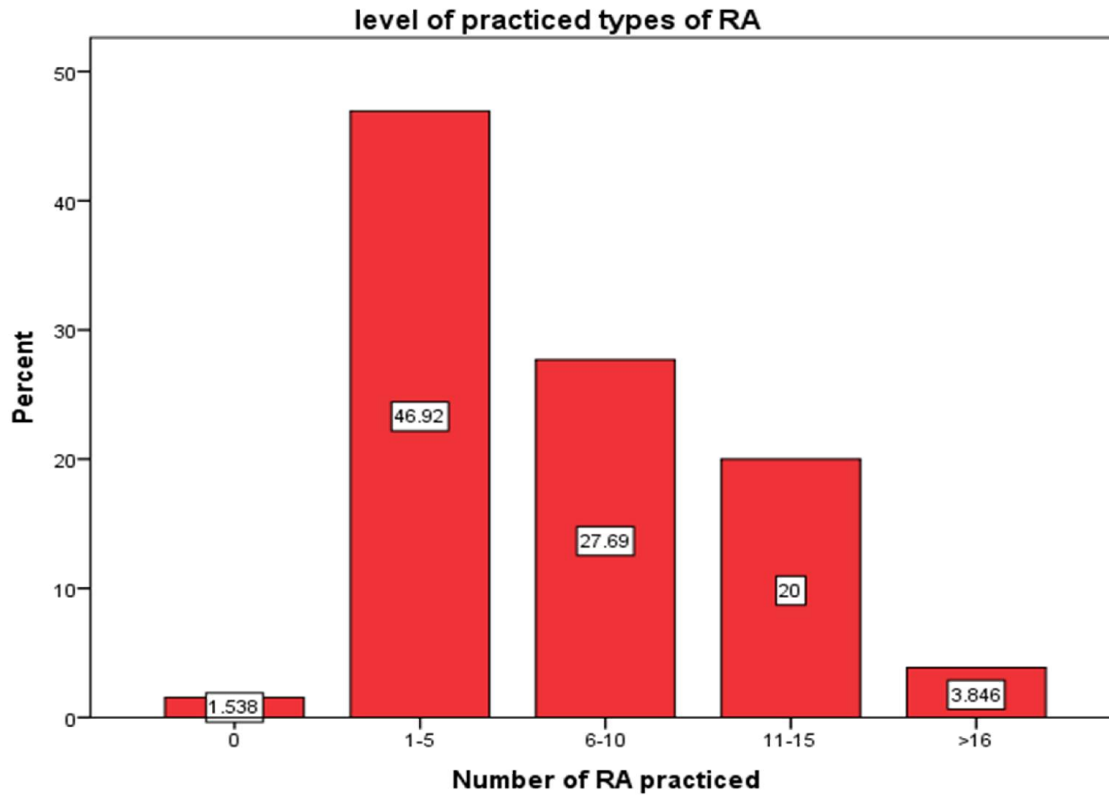


Fig 2: Frequency of number of RA practiced among ACPs, 2019

5.3 professional characteristics of Anesthesia care providers

Majority of the participants [47 (36.2%)] were BSc anesthetists, had 1 to 5 years of experience (53.8%) and [64(49.2%)] had been working at BLH (Table 3).

Table 3: professional characteristics of Anesthesia care providers, 2019

| | | | |
|----------------------|------------------|------------|--------------|
| Academic | BSc | 47 | 36.2 |
| Qualification | MSc student | 32 | 24.6 |
| | MSc | 21 | 16.2 |
| | Resident | 21 | 16.2 |
| | Anesthesiologist | 9 | 6.9 |
| | Total | 130 | 100.0 |
| Year of | ≤ 1 | 20 | 15.4 |

| | | | |
|--------------------|--------------|------------|--------------|
| experience | 1-5 | 70 | 53.8 |
| | 5-10 | 32 | 24.6 |
| | >10 | 8 | 6.2 |
| | Total | 130 | 100.0 |
| Institution | JMC | 38 | 29.2 |
| | BLH | 64 | 49.2 |
| | WSUTRH | 28 | 21.5 |
| | Total | 130 | 100.0 |

5.4 Individual factors of Anesthesia care providers

Knowledge and attitude status of Anesthesia care providers about regional anesthesia

Knowledge status of ACPs about regional anesthesia showed that most them [119(91.5%)] had knowledge considering regional anesthesia by scoring greater than 10 points as computed from different items assessing knowledge domain towards RA (**Fig 3**).

Attitude status of anesthesia care providers about regional anesthesia also showed that majority [123(94.6%)] had positive attitude toward regional anesthesia by scoring greater than 10 points as computed from different items assessing attitude domain towards RA (**Fig 4**).

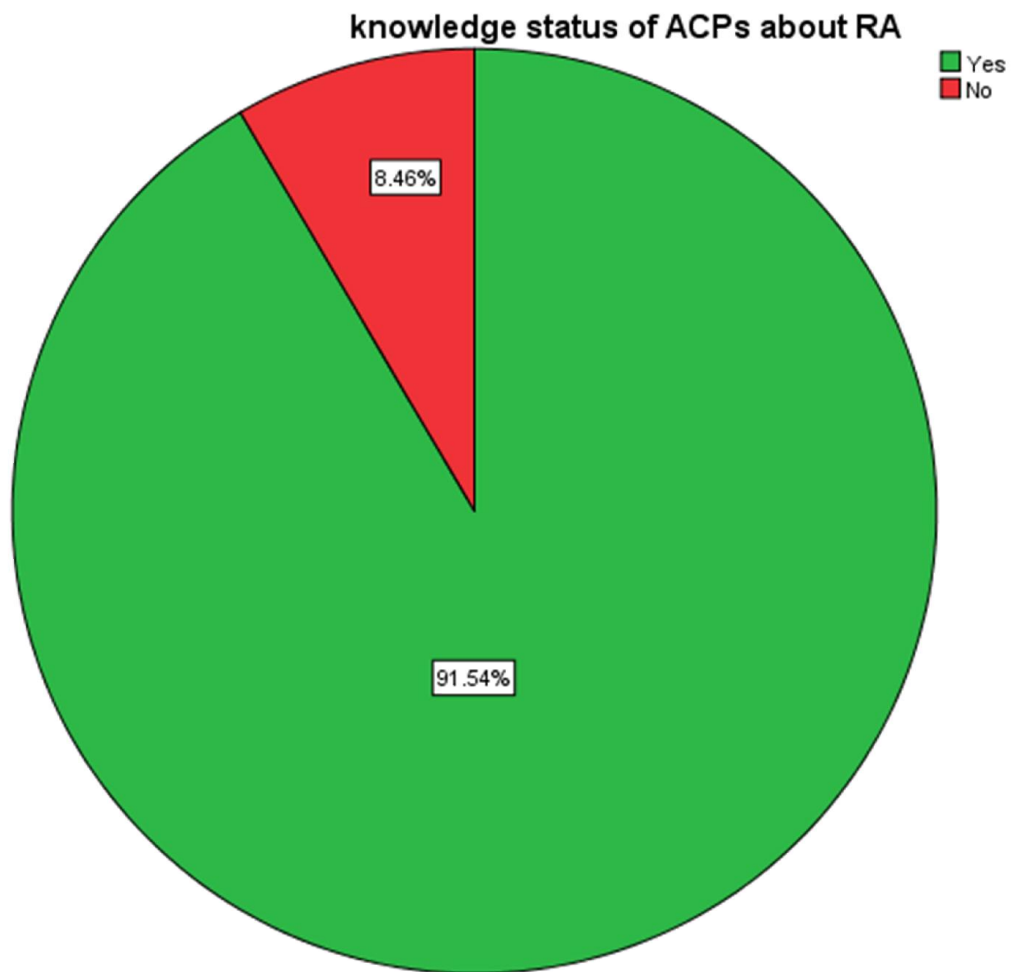


Fig 3: Knowledge status of ACPs towards RA

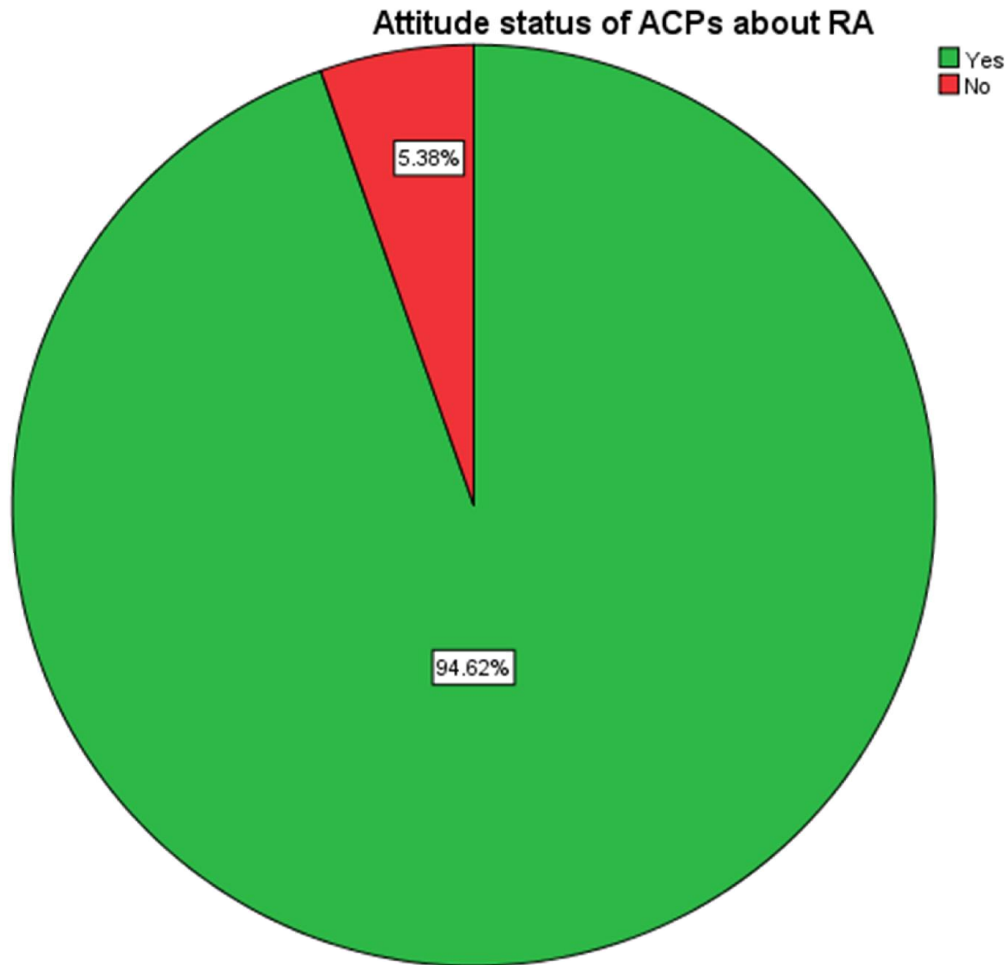


Fig 4: Attitude status of ACPs towards RA

5.5 results of bivariate analysis

To identify factors associated with practice of RA, cross tabulation and logistic regression analysis was applied. In the bivariate analysis, the candidate variables having p-value < 0.25 were selected for the final model. Accordingly, about eight variables (age, sex, experience, professional qualification, Institution, knowledge concerning RA and attitude towards RA) were identified as the expected factors associated with practice of RA with their specific COR, 95% CI and p-values as explained in **Table 4** in details.

Table 4: results of bivariate analysis of practice of regional anesthesia among ACPs, 2019

| Variables | Practiced N₀ (%) | Not practiced N₀ (%) | COR(95% CI) | P-value |
|-------------------------|---------------------------------------|--|--------------------|----------------|
| Age: | | | | |
| ≤30 | 44(33.8) | 42(32.3) | 1 | |
| 31-40 | 26(20) | 6(4.6) | 4.1(1.5-11) | 0.005* |
| ≥ 41 | 7(5.4) | 5(3.8) | 1.3(0.4-4.5) | 0.642 |
| Sex: | | | | |
| Male | 57(43.8) | 31(23.8) | 2.02(0.95-4.2) | 0.065* |
| Female | 20(15.4) | 22(16.9) | 1 | |
| Qualification: | | | | |
| BSc | 8(6.2) | 39(30) | 1 | |
| MSc & resident students | 41(31.5) | 12(9.2) | 16.6(6.1-45) | 0.000* |
| MSc & Anesthesiologist | 28(21.5) | 2(1.5) | 68.2(13.4-346) | 0.000* |
| Experience: | | | | |
| ≤1 | 4(3.1) | 16(12.3) | 1 | |
| 1-5 | 44(33.8) | 26(20) | 6.7(2.0-22.4) | 0.002* |
| ≥6 | 29(22.3) | 11(8.5) | 10.5(2.9-38.6) | 0.000* |
| Institution: | | | | |
| JMC | 19(14.6) | 19(14.6) | 1 | |
| BLH | 43(33.1) | 21(16.2) | 2(0.9-4.6) | 0.088* |
| WSUTRH | 15(11.5) | 13(10) | 1.2(0.4-3) | 0.774 |
| Knowledge: | | | | |
| Yes | 75(57.7) | 44(33.8) | 7.6(1.5-37.1) | 0.011* |
| No | 2(1.5) | 9(6.9) | 1 | |
| Attitude: | | | | |
| Yes | 76(58.5) | 47(36.2) | 9.7(1.1-83.1) | 0.038* |
| No | 1(0.8) | 6(4.6) | 1 | |

5.6 Independent predictors of regional anesthesia practice among ACPs

Further, multivariate analysis (binary logistic regression with enter methods) was used to identify the main predictor variables. Finally two variables (years of experience, professional qualification) were identified as the factors associated with practice of RA among ACPs with p-value less than 0.05 and specific AOR (95% CI).

The possible interpretation was forwarded as MSc students and residents had 23.7 times practice of RA than BSc holders with statistical significance and specific AOR of **23.7(6.5-86), p=0.000**. And also MSc and specialty holders had 51 times practice of RA than BSc holders with statistical significance and specific AOR of **51(7.6-340), p=0.000**.

There was also statistical significant difference among ACPs regarding years of experiences in practicing RA; those with experience of 1-5 years were had 7.6 times practice RA than those with experience of ≤ 1 year with statistical significance and specific AOR of **7.6(1.6-36), p=0.011**.

Table 5: result of multivariate analysis of regional anesthesia practice among ACPs, 2019

| Variables | Practiced No (%) | Not practiced No (%) | AOR(95% CI) | P-value |
|------------------------|------------------|----------------------|--------------|---------------|
| Qualification: | | | | |
| BSc | 8(6.2) | 39(30) | 1 | |
| MSc &resident students | 41(31.5) | 12(9.2) | 23.7(6.5-86) | 0.000* |
| MSc & Anesthesiologist | 28(21.5) | 2(1.5) | 51(7.6-340) | 0.000* |
| Experience: | | | | |
| ≤ 1 | 4(3.1) | 16(12.3) | 1 | |
| 1-5 | 44(33.8) | 26(20) | 7.6(1.6-36) | 0.011* |

CHAPTER 6: DISCUSSION

Since the scope of RA is vast and broad, the present study classified them in different types (about 19) and assessed the magnitude of practices of RA among ACPs working in three institutions. The mean of performed number of RA was 6.8 ± 4.7 SD that ranges from 0-18. The study showed that only 1.5% of respondents didn't perform any types of RA yet while majority of respondents (98.5%) were performed at least 1 type of RA. This finding was against study conducted by Haile et al (25) who reported 39% of respondents didn't perform any types of RA. The possible difference might be due to the short period of study time (2 month) and they studied non-teaching hospitals this may decrease RA practice.

About 17.7% of respondents in the present study didn't perform any types of peripheral nerve block which is in harmony with the finding of Mwangi (23) who reported that 26.7% of respondents didn't perform any types of peripheral nerve block in Kenya.

The magnitude of RA practice was varied among different types. The most performed were SA (98.5%), CA (72.3%) and axillary block (69.3%) while sub gluteal sciatic block and IV RA were the least used (8.5% each) types RA. This pattern in magnitude of different types of RA practice was also supported by study of Buist (27) who reported that SA was most frequently performed (98%). And also supported by the study done by Hadzic et al (20) revealed that most anesthesiologists (97.8%) perform at least some regional anesthesia techniques (any regional anesthesia technique).

About 46.9% of respondents were applied 1-5 types of RA. 27.6% were performed 6-10 types of RA, 20% were performed 11-15 types of RA and only a few (3.8%) were performed >16 types of RA. In harmony with the study done in USA by Hadzic et al (12) and in Kenya Mwangi (23) showed that the practice of RA less than five PNBs per month were 50.5%, 43.1% respectively.

RA practice status was devoted to > 30% types of RA annually Hadzic et al (20). Thus, the present study deliberately used ≥ 5 types of RA which is the minimum (30%) representation of

RA from listed 19 types. ACPs who practiced ≥ 5 types of RA and <5 types of RA were considered as they had RA practice and not respectively.

Accordingly, 59.2% of respondents had practiced ≥ 5 types of RA while the rest 40.8% were considered not to have RA practice. This, finding was against the study conducted by Mwangi (23) who revealed that only 29.2% of respondents practiced ≥ 5 types of RA. This difference happened might be due to a short study period (2 month) and the study included only PNB.

Finally 2 independent predictors (academic qualification, year of experience) were identified as associated factors with status of RA practice.

This study showed that; Academic qualification and years of experience of ACPs significantly associated with RA practice. In harmony with study done by Haile et al (25) revealed that academic qualification of the ACPs and years of experience of the ACPs in the field of anesthesia have shown a significant association with the number of practice of RA.

6.1 Limitations of the study

There were several limitations of our study. The study sample included participants only from teaching referral hospitals running postgraduate anesthesia program and were heterogeneous population so cannot be concluded to ACPs of the whole county.

Another limitation was that a risk of bias may have been introduced due to the collected data were with self-administered questionnaires.

CHAPTER7: CONCLUSION AND RECOMMENDATION

7.1 Conclusion

In nutshell, practice of RA in teaching government hospitals of Ethiopia was relatively low despite some RA types like SA was almost practiced well. Thus, ACPs were expected to practice all types of RA in reference to routinely abusing GA for patient safety and welfare in all dimensions.

7.2 Recommendations

- Conduct further studies in future to find out the magnitude of RA in all hospitals of the country.
- The ministry of health as well as teaching hospitals should encourage the practice of RA.
- All ACPs should routinely practice all types of RA if indicated than frequently abusing GA.
- All ACPs should promote their academic or professional qualification as it identified as the risk factor for not practicing RA.

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ANNEXES

Annex 1: Consent form

Hello! My name is -----I am data collector of the study being conducted by Elias Habtu, MSc student at Jimma University, Institute of Health Science, and Faculty of Medical Science department of Anesthesia. I am conducting a scientific research on practice of regional anesthesia and its associated factors among Anesthesia professionals working in Ethiopian government teaching referral hospitals running postgraduate anesthesia programme. Therefore, you are kindly requested to participate in this study as you are one of the potential participants in this study. Your participation is entirely based on your willingness. If you are willing to participate on the study please fill the following question thoroughly and also you have the right to refuse participation. Any information obtained from you will remain confidential. Please give your consent by signing below that ensures your willingness to participate on the study.

Signature of Participant _____ Date _____

THANK YOU!!

Annex 2: Questionnaire

Please write the answer on provided space and/or circle to the alternatives given

I. Socio-demographic data

1. Age in years _____

2. Sex _____

3. What is your qualification?

A. BSc Anesthesia

C. MSc Anesthesia

E. Anesthesiology

B. MSc student

D. Anesthesiology resident

F. Other

4. Your experience in years _____

5. Name of your Hospital/institution _____

II. Knowledge about Regional Anesthesia

1. Is Regional Anesthesia provides adequate analgesia?

A. Yes B. No

2. Can RA used as sole anesthetic type if patient procedure indicated?

A. Yes B. No

3. Is Regional Anesthesia safe to patients?

A. Yes B. No

4. Is Regional Anesthesia minimize patients cost?

A. Yes B. No

5. Do you differentiate your patients who fit for RA?

A. Yes B. No

6. Do you know relevant anatomy of nerves?

A. Yes B. No

7. Is RA safer in children?

- A. Yes B. No
8. Is RA important in outpatient surgeries?
A. Yes B. No
9. Is RA important in orthopedic surgeries?
A. Yes B. No
10. Is RA is good for patient satisfaction?
A. Yes B. No
11. How would you rate your knowledge of RA in general?
A. Very poor
B. Poor
C. Medium
D. Good
E. Very good

III. Attitude about Regional Anesthesia

1. Do you believe RA provides adequate analgesia?
A. Yes B. No
2. Do you think RA is important in the field of anesthesia?
A. Yes B. No
3. Do you think RA is safer than GA?
A. Yes B. No
4. Do you think RA is cost effective than GA?
A. Yes B. No
5. Do you believe knowledge of relevant anatomy is important for performing RA?
A. Yes B. No
6. Do you perform RA for children if indicated?
A. Yes B. No
7. Do you think RA is important in outpatient surgeries?
A. Yes B. No
8. Do you think RA is important in orthopedic surgeries?
A. Yes B. No
9. Do you think RA is good for patient satisfaction?

S. Other (specify)_____

3. If you only perform spinal anesthesia and do not perform others especially peripheral nerve blocks, what is your reason(s)?

A. Not trained well

B. No equipments

C. No drugs

D. Not my scope

E. No idea about it

F. Not important as GA

G. Staff/surgeons not cooperative

H. Patient not prefers

I. Hospital do not allow to perform

J. No adequate room

K. No skill to perform

L. Fear of complication/risk/adverse effect

M. Takes long time to perform

N. Other reason (specify)_____

DECLARATION

I, the undersigned, declare that this proposal is my original work, has not been presented for a degree in this or any other university and that all sources of materials used for the proposal have been fully acknowledged.

Name: _____

Signature: _____

Name of the institution: _____

Date of submission: _____

This thesis has been submitted for examination with my approval as University advisor

Name and Signature of the first advisor

Name and Signature of the second advisor

Name and Signature of the internal examiner
