COLLEGE OF HEALTH SCIENCES
SCHOOL OF MEDICINE
DEPARTMENT OF ANESTHESIA

ASSESSMENT OF DISSATISFACTION, REFUSAL AND ASSOCIATED FACTORS AFTER SPINAL ANAESTHESIA FOR ELECTIVE SURGICAL PROCEDURES IN PUBLIC HOSPITALS OF ADDIS ABABA, ETHIOPIA, 2020/2021, A CROSS SECTIONAL STUDY

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Title of research	Assessment of dissatisfaction, refusal and associated factors after spinal anaesthesia for elective surgical procedures in public hospitals in Addis Ababa, Ethiopia, 2020/2021, A cross sectional study
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Abstract

Background: Spinal anaesthesia is the most common type of regional anaesthesia technique which helped for a wide range of surgical procedures. Patient satisfaction with anaesthesia care is important to monitor the quality of anaesthesia delivery system. It is important to identify the reasons and the risk factors for patients' dissatisfaction and refusal after spinal anaesthesia for continuous improvement of quality of anaesthesia services.

Objectives: The aim of this study was to assess the dissatisfaction, refusal and associated factors after spinal anaesthesia for elective surgical procedures in public hospitals in Addis Ababa, Ethiopia, 2020/2021.

Methods: A multicentre cross-sectional study was conducted from December 30 to April 14, 2020/2021, in selected public hospitals in Addis Ababa, Ethiopia. A total of 227 patients older than 18 years old scheduled for elective surgery under spinal anaesthesia were incorporated in the study. A five point likert scale was used to assess patients preoperative, intraoperative, and postoperative satisfaction level of anaesthesia service. Both bivariate and multivariate logistic regressions were used to measure association of predictor and outcome variable at 95% CI using adjusted odds ratio. P value <0.05 was used to declare statistical significance.

Results: A total of 227 patients included in this study and overall proportion of patients who were satisfied with spinal anaesthesia was 150 (66.1%). Risk factors of dissatisfaction were backache (AOR=4.73, 95%CI=1.97, 11.36), headache (AOR=3.68, 95%CI=1.54, 8.80), and intraoperative nausea &vomiting (AOR=3.33(1.43, 7.73). 188(83%) of patients would choose spinal anaesthesia again whereas 39(17%) would refuse to undergo spinal anaesthesia in the future and its risk factors were intraoperative pain, fear of awareness and backache.

Conclusion and recommendation: Patients satisfaction towards spinal anaesthesia was very low in our setup compared to many other previous studies. Backache, headache and intraoperative nausea and vomiting were risk factors which results patients dissatisfaction.

Explaining the benefits and risks of anaesthesia, and understanding the patient's opinion is essential to increase satisfaction with anaesthesia service.

Keywords: spinal anaesthesia, dissatisfaction, refusal and associated factor

Declaration

The under signed certify that the research entitled magnitude and associated factors of patients' dissatisfaction and refusal after spinal anaesthesia for elective surgical procedures at selected public hospitals, Addis Ababa, Ethiopia from December 30/2020 to April 14 /2021: A cross-sectional study is my original work and any literature and/or data cited in this article were listed in the reference section and any assist done during this period has been given an acknowledgement.

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Acronyms

ASA American Society of Anaesthesiologists

BSC Bachelor of Science

DRERC Departmental Research and Ethics Review Committee

GA General Anaesthesia

IONV Intraoperative Nausea and Vomiting

LPPSq Leiden Perioperative Patient Satisfaction questionnaire

MSc Master of Science

PDPH Post-Dural Puncture Headache

PONV Post-operative Nausea and Vomiting

RA Regional Anaesthesia

SA Spinal Anaesthesia

SPSS Statistical Package for Social Sciences

TASH Tikur Anbessa Specialised Hospital

WHO World Health Organization

ZMH Zewditu Memorial Hospital

CHAPTER ONE

1. INTRODUCTION

1.1. Background

Spinal anaesthesia is the most common type of regional anaesthesia technique used for a wide range of surgical procedures. It offers many benefits that are not available with general anaesthesia. It has lower rates of myocardial infarction, decrease requirements of postoperative analgesia, less sympathetic responses to surgical stimulation, and decrease several other complications. However, common complications associated with spinal anaesthesia and discomfort from the procedure may lead patients to prefer a more risky anaesthetic technique (1).

Patient satisfaction is a multidimensional concept and a subjective measure of the degree of fulfilling patients' expectations (2). It measures the effectiveness of health care and level of empathy. Dissatisfaction arises if the patient experiences a discrepancy between expected and provided care(3).

Continuous improvement in quality is important part in all kinds of anaesthesia and evaluation of patient satisfaction is a necessity nowadays. Studies have revealed dissatisfaction and refusal of spinal anaesthesia after the procedure for common reasons such as backache, postoperative nausea vomiting, pain at the puncture site, inadequate analgesia, consciousness during the operation, postdural puncture headache, transient neurological symptoms, and urinary retention(4).

This study was therefore conducted to determine the predictors of dissatisfaction towards spinal anaesthesia during elective surgical procedures and furthermore, it addressed the potential refusal of spinal anaesthesia in the future and related factors.

1.2. Statement of the problem

The evaluation of patient satisfaction is important to know how well a hospital system is operating and can stimulate important insights in to the kinds of changes that are needed to close the gap between the cares provided and the care that should be provided. A major component of quality of health care is patient satisfaction and research has identified a clear link between patient outcomes and patient satisfaction scores(5).

Literatures show the dissatisfaction rate of patients after spinal anaesthesia were 38%, 22.9% [6, 7] respectively.

According to a study conducted by Idris IM. et al, 83.3% of mothers were dissatisfied with preoperative information given by anaesthetists and 75.8% of mothers were dissatisfied with Postoperative visit or follow-up after spinal anaesthesia(8).

A study conducted at Gondar comprehensive specialized hospital by 2019 showed that maternal Satisfaction with pre-anaesthesia information about the procedure was low 29.1%(9).

Studies found that about 33.1% of patients scheduled for elective orthopaedic procedures refused to have spinal anaesthesia (10) and 21.5% parturient refuse to choose spinal anaesthesia in the future surgeries(9).

Studies conducted in Ethiopia showed only parturient underwent caesarean section and not represent other surgical procedures under spinal anaesthesia(6). A broad based study, also including other surgical patients adds to the strength of the study and help to obscure the roots of dissatisfaction and refusal problems.

1.3. Significance of the study

There are many studies in the field of anaesthesia about patient satisfaction, but most of them are restricted on general anaesthesia. The effect and factors of regional anaesthesia on patient satisfaction did not satisfactory demonstrated. Continuous evaluation of patients' level of satisfaction is an important outcome measurement and indicator of quality of anaesthesia care(11). It helps to concentrate more towards the factors which in turn will improve the quality of service and ultimately the patient satisfaction.

The outcome of this study will provide information about the magnitude of patients' dissatisfaction, refusal and associated factors in public hospitals in Addis Ababa, Ethiopia.

It is helpful for program planners and policy makers to incorporate anaesthetic standards that promote satisfaction and as well as health facilities.

It may also serve as an insight for any researcher for further knowledge or research about anesthesia care, services and management in Ethiopia.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Patient satisfaction

Patient satisfaction is meeting someone's expectations, hence, enjoyment from received services and products (12). It is a judgment of the quality of health care delivery system.

Patient satisfaction is a measure of the quality of the provided care and the expectations of that care(2). It is considered that patient experiences or exceptions contributed more to higher satisfaction scores than technical aspects of the operation or type of anaesthesia.

In the field of anaesthesiology, continuous evaluation of patient satisfaction gives insights about the effectiveness of care and level of empathy which improve the quality of anaesthesia service(13).

Compared to general anaesthesia, spinal anaesthesia can improve clinically oriented outcomes(14). Reduction in airway related complications, better postoperative analgesia, earlier discharge for outpatients and less expense are valuable advantages**.**

2.2 .Magnitude of patients' dissatisfaction after spinal anesthesia

A cross sectional study conducted in India (2014) with a total of 116 patients revealed that maternal satisfaction after spinal anaesthesia was 84.5%. Multiple pricks and backache were associated with dissatisfaction(15).

According to a study done in Turkey in 2019 with a total of 285 patients underwent caesarean section under spinal anaesthesia, satisfaction levels postoperatively in the 1st and 3^{rd} days was (82.1% vs 79.6%) respectively. Pain at surgical site, backache and headache were factors related with dissatisfaction(16).

A study conducted in South Africa (2014), revealed that overall maternal level of satisfaction after spinal anaesthesia for caesarean section was 77.1%. Headache, nausea and vomiting and dizziness were main cause of dissatisfaction(7).

Similar studies conducted in Kenya and Ghana among patients who underwent caesarean section under spinal anaesthesia, showed that (85%, 89.4%) of the mothers were satisfied with anaesthesia service[17,18] respectively.

Another study conducted in Eritrea among mothers who underwent caesarean section under spinal anaesthesia revealed that only 16.7% of mothers were satisfied with preoperative information given by anaesthetists and 75.8% of them were dissatisfied due to the lack of anaesthetist visit or follow-up after surgery(8).

In Ethiopia, a study conducted among mothers who underwent caesarean section under spinal anaesthesia revealed that satisfaction rate of spinal anaesthesia was 62%. Backache and intraoperative nausea and vomiting were associated with dissatisfaction(6).

Another study conducted at Gondar comprehensive specialized hospital by 2019 on a total of 383 parturient to assess maternal satisfaction after spinal anaesthesia for elective caesarean section showed that 83.8% of parturient were satisfied. Satisfaction with pre-anaesthesia information about the procedure was low 29.1%(9).

2.3. Magnitude of patient refusal of spinal anesthesia for future surgery

A cross sectional study conducted in Korea in 2009 with patients undergoing various surgical procedures under spinal anaesthesia showed that, 16% of patients rejected to receive spinal anaesthesia for future. Significant factors associated with refusal were low back pain, needle type (Quincke) and tingling sensation in the lower extremities immediately after spinal anaesthesia induction(1).

A prospective cross sectional study conducted in Pakistan in 2016 with a total of 549 patients undergoing elective orthopaedic procedures showed that, 33.1% of patients refused to have spinal anaesthesia. Main reason for refusal among female patients was fear of remaining awake and there was a significant association between female gender and refusing RA due to backache and fear of being awake during the operation(10).

A study done in Ghana in 2017, maternal satisfaction in receiving spinal anaesthesia for caesarean section revealed that, 13.5% of mothers refuse to have spinal anesthesia for future. Pain and discomfort during the operation were main causes of refusal(18).

A study conducted at Gandhi Memorial hospital revealed that maternal refusal rate for future spinal anaesthesia was 18% due to backache and headache(6). Another study done at Gonder Comprehensive specialized hospital in 2019 showed that 21.5% parturient refuse to choose spinal anaesthesia in the future surgeries. The main reasons to refuse spinal anaesthesia for the same surgical procedure in the future were surgical pain, afraid of being awake during the procedure(9).

2.4. Associated factors

2.4.1. Patient related factors

Age, gender, socioeconomic status, education as well as heath status may positively or negatively affect the patient satisfaction.

According to a study done by Afzal et.al, 2014, the age of the patient had a significant relationship with satisfaction score, satisfaction level increased with increase in age. Gender and occupation of patient were not associated with satisfaction(19).

Higher level of education is associated with lower level of patient satisfaction as educated patients are more likely to have good understanding of disease and they expect a better communication from health care providers(20).

A Prospective Study on surgical inpatient satisfaction with perioperative anesthetic service in Jimma university specialized hospital showed that level of education has statistically significant correlation with level of satisfaction in both regional and general anesthesia (p-value is <0.05 while sex has no association with level of satisfaction(21).

A study conducted at Ghandi memorial hospital in 2015 showed that patients who had history of anaesthesia before were less likely satisfied compare to those had not history of anaesthesia and education level was negatively associated with patient satisfaction(6).

2.4.2. Postoperative backache

A study in Turkey in 2019 revealed that, postoperative backache was the second leading factor for patient dissatisfaction after spinal anaesthesia. Ratio of patients reported backache was 38.59% and 36.14% at postoperatively 1st and 3rd days respectively(22).

Another study showed that backache was the major cause of patients' refusing spinal anaesthesia(23).

2.4.3. Postoperative nausea and vomiting

Postoperative nausea and vomiting (PONV) is a common minor complication after operation and causes patient's dissatisfaction. The incidence of PONV varies from 5 to 40%(24).

Nausea and vomiting with onset during the operation and persisting in the postoperative period cause reduced patient comfort, delayed discharge from the hospital, and increase in costs.

Patients might become extremely distressed, which in turn can cause them anxiety about undergoing further surgery(25).Postoperative nausea and vomiting (PONV) was the most common cause of dissatisfaction after spinal anaesthesia(4).

2.4.4. Shivering

Anaesthesia cause shivering due to thermal dysregulation as a compensatory mechanism and worsened by vasodilatation from spinal anaesthesia that redistributes core body heat(26).

Shivering is a cause of dissatisfaction in patients undergoing caesarean section (27). It is very uncomfortable and distressing for the patient, anaesthetists and the surgeon(28). Moreover, shivering may aggravate postoperative pain simply by stretching surgical incisions. It also occasionally impedes monitoring techniques(29).

2.5. Conceptual framework of the study

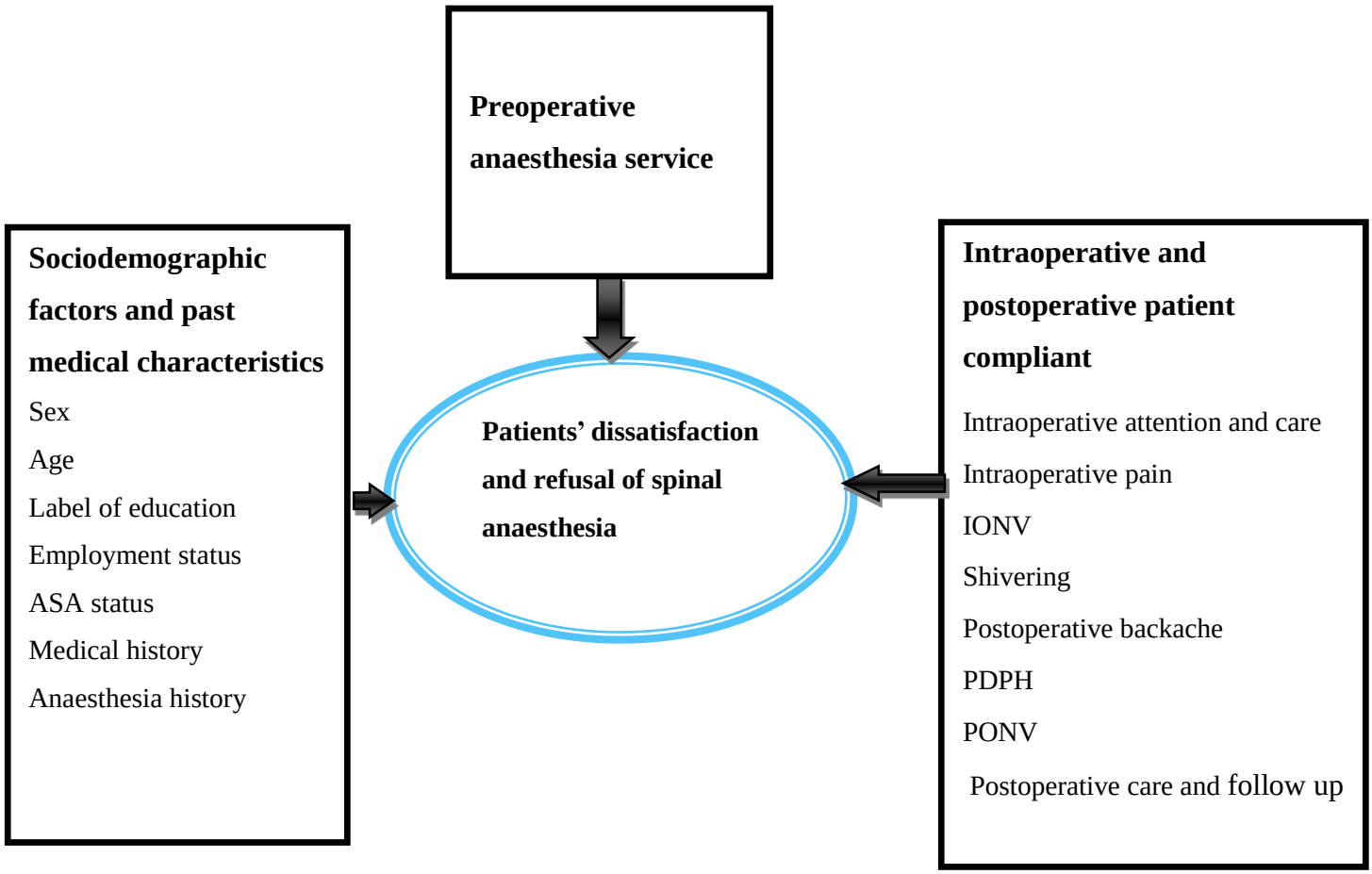

Figure 1. The relationship between patients' dissatisfaction and refusal of spinal anesthesia and its associated factors.

CHAPTER THREE

3. OBJECTIVES

3.1. General Objective

To determine the magnitude of patients' dissatisfaction, refusal and identify associated factors after spinal anaesthesia for elective surgical procedures in public hospitals in Addis Ababa, Ethiopia from December 30 -2020 to April 14-2021.

3.2. Specific objectives

To determine the magnitude of dissatisfaction after spinal anaesthesia

To determine the magnitude of refusal of spinal anaesthesia for future surgery

To identify factors for patients dissatisfaction after spinal anaesthesia

To identify factors for patients refusal of spinal anaesthesia for future surgery

CHAPTER FOUR

4. METHODS AND MATERIALS

4.1. Study Area

The study area was in Addis Ababa, the capital city of Ethiopia, with average elevation of 2500 meter above sea level. It has a geographic and territorial possession with an area of 540sq.km and a total population of about 4 million according to the 2015 census. There are 79 government owned health facilities: 13 hospitals, 23 health centres, 9 clinics and 34 health posts. This study was conducted in four public hospitals, namely: Tikur Anbessa specialized hospital, St.Paul's hospital, Meneilk II hospital and Zewditu Memorial hospital which were selected purposefully because of better patient flow relative to other hospitals.

Tikur Anbessa specialized hospital, the largest referral hospital in the country and now the main teaching hospital for both clinical and preclinical training of most disciplines. The hospital has more than 15 operation rooms includes 9 main operation theatre, 2 obstetric unit and 4 in orthopaedic department. St.Paul's hospital, has 12 operation room and serves for gynaecology, obstetric, maxillofacial and ENT, ophthalmology, paediatric, urology, general and kidney transplant surgeries. Meneilk II hospital consists of 10 operation tables and gives operation services for cardiothoracic, orthopaedic, neurology, gynaecology, obstetric cases and Zewditu hospital has 7 operation tables and gives operation service for general, emergency, neurology, gynaecology, obstetric and plastic surgeries.

4.2. Study design and Study period

A multicenter cross sectional study was conducted from December 30, 2020 to April 14, 2021.

4.3. Population

4.3.1 Source Population

All surgical procedures that underwent spinal anesthesia in Addis Ababa public hospitals were a source population.

4.3.2. Study Population

Adult patients who were undergoing elective surgical procedures under spinal anaesthesia in selected public hospitals in Addis Ababa during the study periods that fulfil inclusion criteria.

4.4. Eligibility criteria

4.4.1. Inclusion criteria

Patients who were:

American Society of Anaesthesiologists (ASA) physical status classification I, II

Age ≥ 18,

Elective surgery under spinal anaesthesia,

4.4.2. Exclusion criteria

Patients with psychiatric disorders

Spinal anaesthesia failure

4.5. Sample size and sampling procedure

4.5.1. Sample size determination

To determine the sample size for the study population the following assumption were made.

The sample size was calculated using the single population proportion formula; and 5% margin of error at 95% confidence interval.

The prevalence of obstetric patients dissatisfaction and refusal of spinal anaesthesia was (38%,18%) respectively (6).

Based on the above information the total sample size was calculated by using the following formula.

$$n = \frac{z^2_{\alpha/2} p(1-p)}{w^2}$$

When we calculated the sample size by taking the previous study p_1= 38%

&p_2 = 18% for patients dissatisfaction and refusal respectively

$n_1 = \frac{1.96^2 \times 0.38(1-0.38)}{0.05^2}$ =362 when p=38%, $n_2 = \frac{1.96^2 \times 0.18(1-0.18)}{0.05^2}$ = 227 when p =18%

In this case we used large sample size. p_1= 38%

Then using correction formula for finite population since source population is less than 10,000

Where $n_f = \frac{n}{1+\frac{n}{N}}$

N= 480 from situational analysis (the number of surgery under spinal anaesthesia in selected public hospitals in Addis Ababa done within three month).

So $n_f = \frac{362}{1+\frac{362}{480}} = 206$ Where:

n = sample size

N= total population

P = percentage

q = 1-p

w = desired degree of precision

Z= is the standard normal value at 95% confidence level

We added 10% of nf for the non-response rate (i.e., 206+20.6 =227). Therefore, a total sample size of 227 patients underwent surgery under spinal anaesthesia were participated in this study.

4.5.2. Sampling technique.

In situational analysis was done for the last three months each hospital , 175 elective surgeries under spinal anaesthesia were done in TASH, 142 in St. Paulo's hospital, 88 in Menelik II hospital and 75 in Zewditu memorial hospital per three months were undergo elective surgery under spinal anaesthesia on average. Finally the sample size was allocated proportionally to all hospitals based on their average three months report.

A systematic sampling technique was used to get the required sample size during the study period. So during the study period a total of 480 patients underwent elective surgery under spinal anaesthesia. Since the calculated sample size was 227, 480 divided by 227 is 2.11 When we divided the three month report of elective surgery under spinal anaesthesia in each hospital by 2.11, there were 83 patients undergoing surgery under spinal anaesthesia at TASH, 67 patients at St. Paulo's Hospital and 42 patients at Menelik II hospital and 35 patients in Zewditu memorial hospital. Systematic random sampling technique was used during data collection on each hospital after the first case selected on lottery method and every two patient was chosen for the study during the study period.

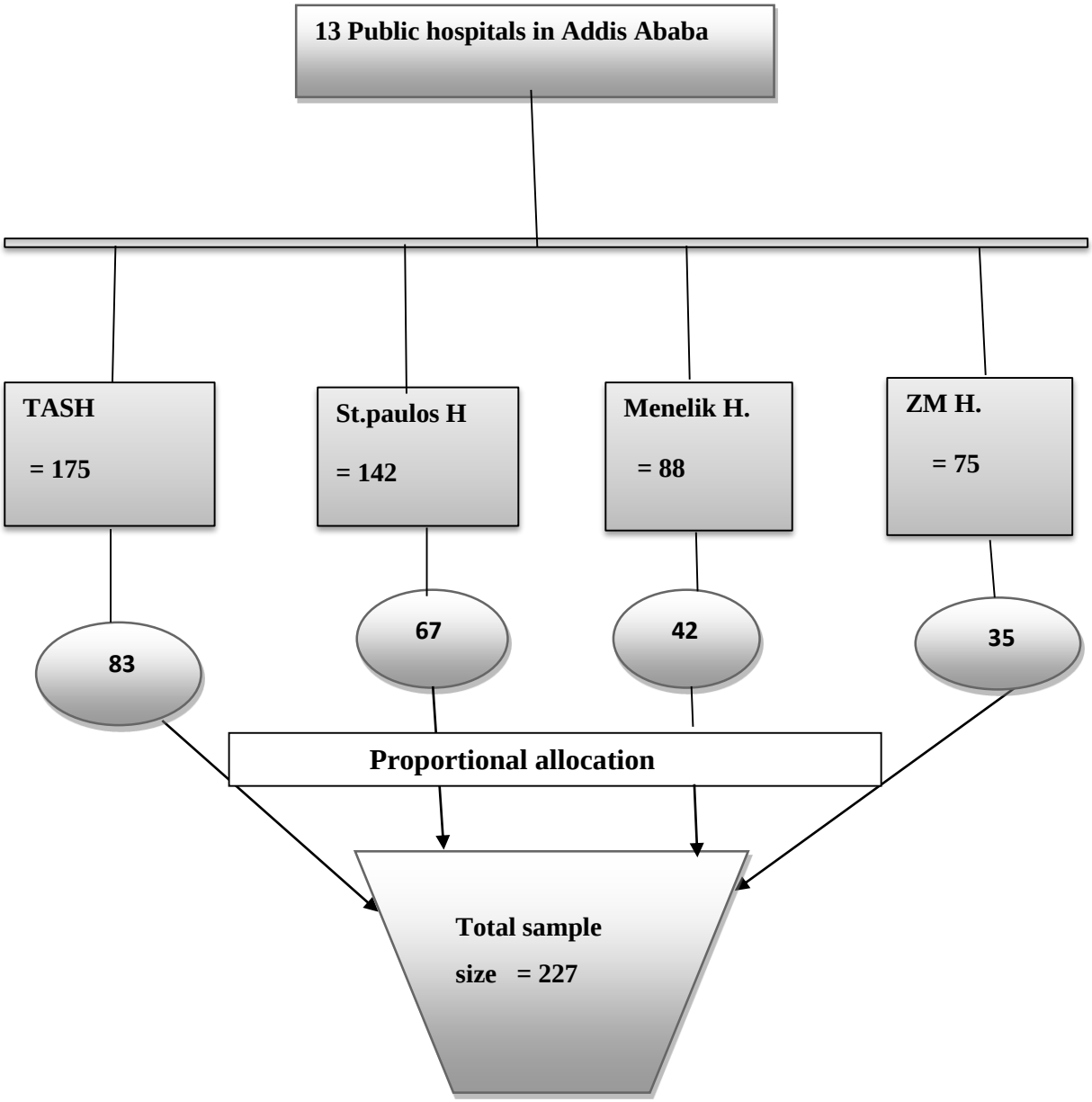

Figure 2: Schematic presentation for sampling techniques of elective surgical procedures under spinal anaesthesia in public hospitals in Addis Ababa, Ethiopia, from December 30, 2020 to April 14, 2021

4.6. Study variables

4.6.1. Dependent Variables

Patient dissatisfaction of spinal anaesthesia

Patient refusal of spinal anaesthesia

4.6.2. Independent Variables

Socio- demographic variables

Sex

Age

Educational status

Employment status

Factors related to surgery, anaesthesia, and disease status

Previous experience of surgery and anaesthesia,

Past medical illness

ASA status

Perioperative factors

Preoperative explanation about the procedure

Intraoperative and postoperative compliant like:

Backache

IONV

PONV

Pain

Shivering

PDPH

4.7. Operational definitions

Patient satisfaction: Meeting the apparent needs and the anticipations of the patients in relative to factors related to the health care worker and facilities.

Satisfied: Patients who scored 50% and above from the items of patient satisfaction questionnaire were categorized under satisfied' for the overall satisfaction level**.**

Dissatisfied: Patients who scored below 50% from the items of patient satisfaction questionnaire were categorized under unsatisfied' for the overall satisfaction level**.**

4.8. Data collection technique

Pretested questionnaire was designed to obtain information on sociodemographic characteristics and past medical history of respondents. Patients were asked about their general satisfaction with spinal anaesthesia, causes of dissatisfaction, and causes of their refusal to have spinal anaesthesia 24 hrs after the procedure using face to face interview. Four BSC nurses were involved in data collection after training.

To insure content validity, the questionnaire was adapted from previous related studies(6,8). Responses to questioners were standardized to a five point Likert Scale revealed to be optimal for surveys of patient satisfaction. Finally, the five scale measurement was changed very satisfied and satisfied outcomes were used as satisfied and very dissatisfied, neutral and dissatisfied outcomes were put in dissatisfied ones to adjust for analysis. After considering the setup of previous study conducted at Gandhi Memorial hospital decided that satisfaction of 50% and above is considered as "satisfied " (6).

4.9. Data entry, analysis and interpretation

Data were summarized and analysed by using SPSS version 24 software. Before entering data, the questionnaire was checked for its completeness and consistency. Overall satisfaction of patients was measured for all the three subscales: preoperative assessment and evaluation (five items), intraoperative attention and care (three items), postoperative care and follow up (three items). Both bivariate and multivariate logistic regression were used to measure association between the factors and the outcome at 95% CI using adjusted odds ratio. Variables with P-value < 0.2 binary logistic regression included in a multivariate logistic regression and p-value < 0.05 was taken as statistically significant.

4.10. Data Quality Control and Assurance

To assure the quality of data, training was given for the relevance of the study and brief orientations on the assessment tools were provided for data collector and pre-test was done on 5% of the sample size at Yekatit 12 Hospital. During data collection, close supervision and daily information exchange was used as to correct problems and control the quality of data.

4.11. Ethical consideration

Ethical clearance and approval was obtained from ethical review committee, Anaesthesia Department, Addis Ababa University. Permission to conduct was obtained from each public Hospital which was selected for the study. Verbal consent was taken from every study participant before the start of the interview after telling them about the objective of the study. The obtained data were only be used for study purpose. Confidentiality and anonymity was ensured at all levels.

4.12. Result Dissemination plan

The result of the study will be submitted to the collage of medical and health science of Addis Ababa University, to the study hospitals, Ethiopian Anaesthetist Association (EAA) and it will be presented for the entire department of anaesthesia. The result will also be presented to relevant workshops and seminars and efforts will be done to publish it in peer reviewed local and international journals.

CHAPTER FIVE

5. RESULTS

5.1. Sociodemographic and past medical characteristics of study Participants

In this study a total of 227 respondents participated. Out of the 227 study participants 100 (44.1 %) were males and 127 (55.9%) were females. Most of the respondents 90 (39.6%) were in the age group of 25-34 years. The mean age of the respondents was 25.6. Majority of the participants 119 (52.5%) were grade 9 and above (See Table 1).

Table 1. Socio demographic and past medical characteristics of patients in public hospitals in Addis Ababa, Ethiopia, from December 30 to April 14, 2020/ 2021

Variable	Category	Frequency(n)	Percent (%)
Age in years	18-24 25-34 35-44 45 and above	38 90 32 67	16.7 39.6 14.1 29.5
Sex	Male Female	100 127	44.1 55.9
Educational status	Unable to read and write Able to read and write Grade 1-8 Grade 9-12 > Grade 12	30 20 58 68 51	13.2 8.8 25.6 30.0 22.5
Employment status	Employed Unemployed	121 106	53.3 46.7
Type of surgery	Orthopaedic Urologic General Obstetric Gynaecology	44 56 28 87 12	19.4 24.7 12.3 38 5.3
ASA status	I II	90 137	39.6 60.4
Medical History	Yes No	68 159	30 70

Anaesthesia history	Yes No	85 142	37.4 62.6
Previous anesthesia received	GA SA	16 69	7.0 30.4
Kind of complication developed	Pain Backache Headache PONV	3 22 40 5	1.3 9.7 17.6 2.2

5.2. Intraoperative and postoperative patient complaint

Our study showed that, majority of patients had complaint of headache 120(52.9%) and backache 118(52%). 187(82.4%) of patients had number of attempts at puncture site 1-2 times and 40(17.6%) of them had greater than two attempts at puncture site (See Table 2).

Table 2. Intraoperative and postoperative patient complaint in public hospitals in Addis Ababa, Ethiopia, from December 30 to April 14, 2020/ 2021

Variables	**Category**	**Frequency(n)**	**Percent (%)**
Nausea& vomiting during operation	Yes No	62 165	27.3 72.7
Shivering	Yes No	95 132	41.9 58.1
Pain during operation	Yes No	49 178	21.6 78.4
Nausea & vomiting after operation	Yes No	59 168	26.0 74
Backache	Yes No	118 109	52 48
PDPH	Yes No	120 107	52.9 47.1
Number of attempts at puncture site Puncture site	1-2 >2	187 40	82.4 17.6

5.3. Refusal rate of future spinal anaesthesia

In this study, majority of participants 188 (83%) were willing to take spinal anaesthesia for future whereas 39 (17%) of them were refused. Pain during surgery and backache were the main causes of refusal of spinal aesthesia for future surgery (see table 3).

Table 3. Refusal rate of spinal anaesthesia for future surgery in public hospitals in Addis Ababa, Ethiopia, from December 30 to April 14, 2020/ 2021

Variable	Category	Frequency(n)	Percent (%)
Willingness to take spinal anaesthesia for similar surgery	Yes No	188 39	83 17
Reason for refusal	Fear of awareness Pain Nausea and vomiting Backache Headache	8 12 3 10 5	21.1 31.6 7.9 26.3 13.2

5.4. Overall satisfaction towards spinal anaesthesia

The overall satisfaction of patients after spinal anaesthesia was 150 (66.1%) and 77(33.9%) of them were dissatisfied.

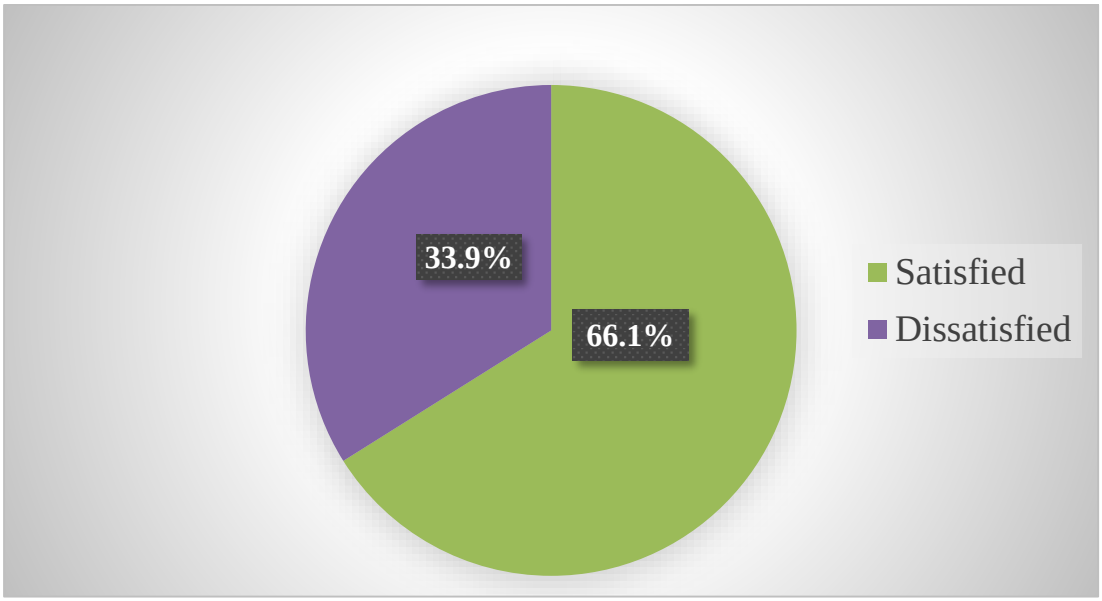

Figure 3. Percentage of overall dissatisfaction rate after spinal anaesthesia in public hospitals in Addis Ababa, Ethiopia, from December 30 to April 14, 2020/ 2021

5.5 Three components of overall satisfaction towards spinal anaesthesia

5.5.1. Preoperative assessment &evaluation

The finding showed that, in the preoperative anaesthesia service 136 (59.9%) of patients were satisfied, the remaining 91(40.1%) were dissatisfied. Majority of patients 147 (64.8%) were dissatisfied with information about postoperative complication related with spinal anaesthesia. 88(38.8%) of patients were dissatisfied with preoperative visit by the anaesthetist.

5.5.2. Intraoperative care and attention of the anaesthetist

Majority of patients 192 (84.6%) were satisfied with intraoperative care and attention of the anaesthetist. 185 (81.5%) of patients were satisfied with attention of anaesthetists for their compliant and 188(82.8%) of them were satisfied with anaesthetist's action according to their needs.

5.5.3. Postoperative care and follow up by the anaesthetist

The satisfaction level for the postoperative care and follow up was 140 (61.7%) with components as follows: satisfaction with anaesthetists postoperative visit 142 (62.6%), satisfaction with PONV treatment 148 (65.2%), and satisfaction with pain therapy after operation was 141 (62.1%).

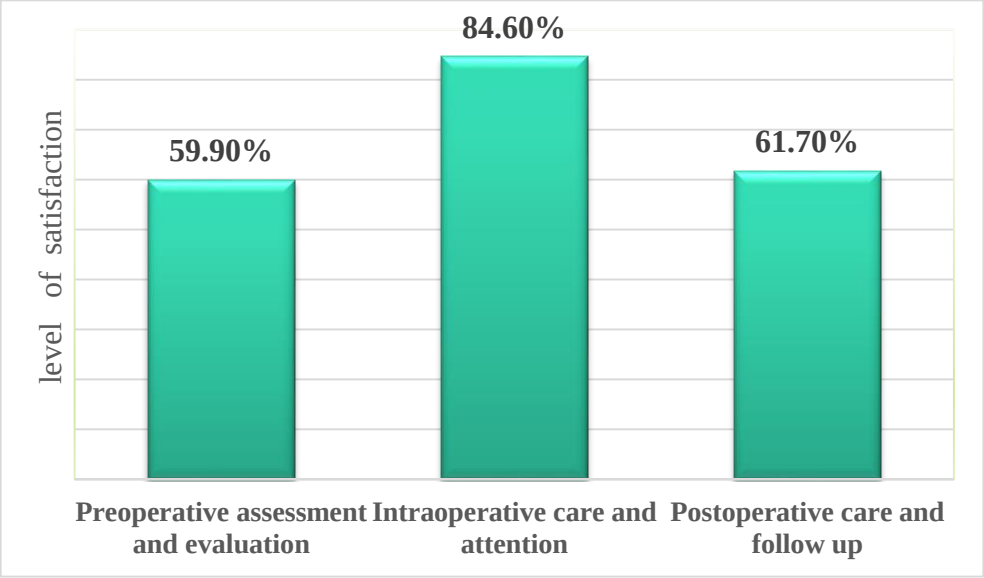

Figure 4. Three components of overall satisfaction of patients in public hospitals in Addis Ababa, Ethiopia, from December 30 to April 14, 2020/ 2021

Table 4. The effect of patients' sociodemographic and past medical characteristics on the overall satisfaction with bivariate and multivariate logistic regression in public hospitals, in Addis Ababa, Ethiopia, from December 30 to April 14, 2020/ 2021

AOR: Adjusted odd ratio, COR: crude odd ratio, CI: Confidence interval

Variables	Category	Satisfied	Dissatisfied			
		N (%)	N (%)	COR(95% CI)	AOR(95% CI)	P- value
Age	18-24	26 (17.3%)	12 (15.6%)	0.61(0.26,1.39)	0.51(0.13,1.99)	0.330
	25-34	65 (43.3%)	25 (32.5%)	0.51(0.26,0.98)	2.29(0.73,7.21)	0.156
	35-44	21 (14%)	11 (14.3%)	0.69(0.29,1.65)	1.68(0.46,6.16)	0.434
	45 and above	38 (25.3%)	29 (37.7%)	1		
Sex	Male	56 (37.3%)	44 (57.1%)	2.24(0.26,0.78)	1.91(0.70,5.22)	0.206
	Female	94 (62.7%)	33 (42.9%)	1		
Educational status	Unable to read and write	22 (14.7%)	8 (10.4%)	0.52(0.19,1.39)	0.54(0.11,2.74)	0.455
	Able to read and write	13 (8.7%)	7 (9.1%)	0.77(0.26,2.25)	0.61(0.11,3.21)	0.557
	Grade 1-8	43 (28.7%)	15 (19.5%)	0.49(0.22,1.12)	0.66(0.20,2.22)	0.506
	Grade 9-12	42 (28%)	26 (33.8%)	0.88(0.42,1.86)	1.06(0.35,3.19)	0.922
	> Grade 12	30 (20%)	21 (27.3%)	1		
Employment status	Employed	63 (42%)	58 (75.3%)	4.23(2.28,7.77)*	7.31(2.53,21.12)	0.000
	Unemployed	87 (58%)	19 (24.7%)	1		
Type of surgery	Orthopaedic	20 (13.3%)	24 (31.2%)	2.40(0.63,9.16)	0.94(0.12,7.46)	0.954
	Urologic	33 (22%)	23 (29.9%)	1.39(0.37,5.18)	1.52(0.18,12.37)	0.695
	General	23 (15.3%)	5 (6.5%)	0.43(0.09,2.03)	8.24(0.87,77.76)	0.066
	Obstetric	66 (44%)	21 (27.3%)	0.64(0.17,2.33	2.54(0.32,20.34)	0.380
	Gynaecology	8 (5.3%)	4 (5.2%)	1		
ASA status	I	53 (35.3%)	37 (48.1%)	1.69(0.97,2.96)	1.17(0.45,3.06)	0.743
	II	97 (64.7%)	40 (51.9%)	1		

Medical history	Yes	40 (26.7%)	28 (36.4%)	1.57(0.87,2.83)	0.69(0.25,1.95)	0.492
	No	110 (73.3%)	49 (63.6%)	1		
Anaesthesia history	Yes	52 (34.7%)	33 (42.9%)	1.41(0.80,2.48)	1.57(0.62,4.00)	0.340
	No	98 (65.35)	44 (57.1%)	1		

Table 5. Association between intraoperative and postoperative patient compliant and overall satisfaction of patients underwent elective surgery using bivariate and multivariate logistic regression, in public hospitals Addis Ababa, Ethiopia, from December 30 to April 14, 2020/ 2021

Variables	**Category**	**Satisfied**	**Dissatisfied**			
		N (%)	**N (%)**	**COR (95%CI)**	**AOR (95% CI)**	**P-value**
IONV	Yes	25 (16.7%)	37 (48.1%)	0.22(0.12,0.41)*	3.33(1.43,7.73)	0.005
	No	125(83.3%)	40 (51.9%)	1		
Shivering	Yes	51 (34.0%)	44 (57.1%)	0.39(0.22,0.68)*	2.09(0.97,4.54)	0.061
	No	99 (66%)	33 (42.9%)	1		
Pain during operation	Yes	25 (16.7%)	24 (31.2%)	0.44(0.23,0.84)*	2.01(0.83,4.89)	0.121
	No	125 (83.3%)	53 (68.8%)	1		
PONV	Yes	33 (22%)	26 (33.8%)	0.55(0.30,1.02)*	2.21(0.93,5.28)	0.074
	No	117 (78%)	51 (66.2%)	1		
Backache	Yes	55 (36.7%)	63 (81.8%)	0.13(0.06,0.25)*	4.73(1.97,11.36)	0.000
	No	95 (63.3%)	14 (18.2%)	1		
Headache	Yes	59 (39.3%)	61 (79.2%)	0.17(0.09,0.32)*	3.68(1.54,8.80)	0.003
	No	91 (60.7%)	16 (20.8%)	1		
	1-2	128(85.3%)	59 (76.6%)	0.77 (0.88,3.50)	0.67(0.24,1.88)	0.445
	>2	22 (14.7%)	18 (23.4%)	1		

Number of attempts at puncture site						
Willingness to take spinal anaesthesia for similar surgery	Yes	137 (91.3%)	51 (66.2%)	5.34(2.56,11.25)*	0.52(0.17,1.58)	0.252
	No	13 (8.7%)	26 (33.8%)	1		

*****Significant in binary logistic regression, AOR: Adjusted odd ratio, COR, crude odd ratio

CI: Confidence interval

CHAPTER SIX

6. DISCUSSION

In this study, the level of overall satisfaction of spinal anesthesia includes three subscales with a total of 11 components in preoperative, intraoperative and postoperative periods. The level of overall satisfaction was 66.1%. Our finding was low compared with studies conducted by Rhee WJ. (96.3%), Makoko M, et al (77.1%), I.Idris et al (87.9%) and Shisanya MS, et al (85%) [4, 7, 8, 17] respectively. This might be due to difference in organizational and structural setup.

Our results showed that, satisfaction with preoperative communication was 59.9%, which was comparable to studies conducted by Makoko M, et al (67.1%) (7) and Belay D (63%)(6). On the contrary, our finding showed greater satisfaction level in the preoperative period compared to studies conducted by Bayable SD et al (29.1%) (9) and Shisanya MS. et al (36%) (17). This low patient satisfaction might be due to inadequate explanation about the procedure.

This present study indicated that, the refusal rate of future spinal anesthesia was 17%.Our finding was comparable with the studies conducted by Choi JG (16%), Belay D (18%) and Alirimbey AE, et al (13.5%) [1,6,18] respectively. On the contrary, our study showed high level of refusal rate of spinal anaesthesia compared with study conducted by Rhee et al, which was 3.2%(4).This could be due to low community awareness towards anesthesia and surgery and inadequate preoperative explanation about the procedure.

Literature findings indicate that patients with higher level of education associated with increase dissatisfaction rate of heath service(21). Contrastingly, our study indicated no statistically significant regarding relation between level of education and satisfaction.

In our study, employment status was one of the predictor of satisfaction of spinal anesthesia with AOR = 7.31, 95% CI = 7.31, p-value < 0.001. Patients who were employed were seven times less satisfied than unemployed. This result is in line with the study conducted by Makoko UM et al (7). This could be due to the fact that headache and back pain are common in workers.

In this study, multivariate analysis showed that backache (p-value < 0.001), headache (p- value = 0.003) and IONV (p-value = 0.005) were significantly associated with dissatisfaction. This finding was parallel with a study which show, backache was the major cause of patients dissatisfaction after spinal anaesthesia (23). Although postoperative backache was one of the

main factor associated with patients' dissatisfaction and refusal of spinal anaesthesia. Other factors can contribute postoperative backache such as operation time, age, pregnancy, needle type, surgical trauma, making it difficult to distinguish the actual cause of backache(1).

Our study also parallel with a study which showed, IONV (p- value= 0.01) was predictable factor for dissatisfaction(6). In contrast to this, a study conducted by Bayable SD, et al revealed that IONV is not statistical significant to determine patients level of satisfaction(9).This might be due to most parturients were given prophylactic antiemetics and less use of intrathecal opioids.

In contrast to our finding, a study conducted by Rhee et al found that headache (p-value = 0.137) was not significantly associated with dissatisfaction(4).This might be due to low preanesthesia information delivery about the possible side effects of the procedure.

This study showed that, the main reasons for refusal of spinal anaesthesia for future surgery were pain during surgery, backache, fear of awareness, headache and nausea & vomiting. This finding was in line with previous studies which showed that fear of post spinal backache was the leading causes of refusal (1,23).

Presence of complications after spinal anaesthesia may negatively affect patient satisfaction and results refusal for future anaesthesia. Anaesthetists must perform the procedures carefully and pay attention to patient's opinion is essential to increase satisfaction with anaesthesia service.

7. STRENGTH AND LIMITATION OF THE STUDY

7.1 Strength

Since a multicentre study and includes different surgical procedures which increase the generalizability of the study.

7.2. Limitations

There is no specific guideline to manage intraoperative and postoperative adverse effects of spinal anaesthesia which can affect level of satisfaction.

Satisfaction score may be overestimated because patients like to please staffs by replaying as 'satisfied'.

Patient completed the interview within 24 hours after surgery, when complication, PDPH may not displayed yet.

8. CONCLUSION

The overall satisfaction with spinal anaesthesia in our study was 66.1%, and refusal rate was 17%. This result was low in comparison to other recorded levels of satisfaction elsewhere and ideally satisfaction close to 100% should be the target. In this subscale wise study of satisfaction preoperative information and explanation about the procedure was low (59.9%) and negatively affects the overall satisfaction. This study revealed that backache, headache and intraoperative nausea and vomiting were significantly associated with dissatisfaction. Risk factors of refusal of spinal anaesthesia includes, pain during surgery, backache and fear of awareness. Explaining the benefits and risks of anaesthesia, and understanding the patient's opinion is essential to increase satisfaction with anaesthesia service.

9. RECOMMENDATION

By taking in to account the results of this study the following recommendations are forwarded for the respective body to increase patients' satisfaction towards anaesthesia service.

To Ministry of heath

Regular service evaluation via satisfaction survey to provide feedback for continuous quality improvement.

Hospital decision makers

The hospital managers should work with governmental and nongovernmental organizations to provide training for health workers about patient satisfaction.

Anaesthesia practitioners

Anaesthesia providers should have good clinical communication skills to explain the benefits and risks of anaesthesia and to understand patients' concern and compliant.

For Researchers

Patient satisfaction studies should be regularly conducted both in public and private hospitals to identify gaps and improve the quality of anaesthesia service.

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11. ANNEX I: information and consent form

Information sheet

This questionnaire is designed to assess the magnitude and associated factors of patient dissatisfaction and refusal of spinal anaesthesia among elective surgical procedures under spinal anaesthesia in public Hospitals in Addis Ababa, Ethiopia, 2020/2021. I am going to conduct patient dissatisfaction and refusal of spinal anaesthesia. There is no risk to take part in the study, all information is confidential. Their names will not keep in the form. Their participation in the study will be voluntary: They are not obliged to participate and may discontinue at any time. Moreover, this research thesis is approved by Ethical review board of AAU and college of health science, department of anaesthesia.

For more information and question if there here is the contact address of investigator:

Ali Yimam
Tel: 0904961075
E-mail: aliyimam23@gmail.com

Consent Form

Hello!

Good morning/afternoon?

My name is ----------. I am here today to collect data regarding to the magnitude and associated factors for patients' dissatisfaction and refusal of spinal anaesthesia among elective surgical patients in selected public Hospitals, Addis Ababa, Ethiopia, 2020/2021. The objective of this questionnaire is to assess patients' dissatisfactions and refusal of spinal anaesthesia among elective surgical procedures in public Hospitals, Addis Ababa, Ethiopia, 2020/2021.

Your correct and genuine response or answer to the questions can make the study achieve its goal. Therefore, you are kindly requested to respond very voluntary with patience. The questionnaire may take 10 to 15 minutes. We assure you that this study is surely confidential, thus writing your name is not needed. Are you willing to participate in answering the questionnaire?

Yes! Go to the next page

ANNEX II: Questionnaire Form

Data collection format prepared for Assessment of patients' dissatisfaction and refusal of spinal anaesthesia

Part I. Questions for Socio-demographic factors

S. No	**A. Demographic status of the patients**	
1.	Age (years)	1. 18-24 2. 25-34 3. 35-44 4. 45 and above
2.	Sex	1. Male 2. Female
3.	Educational status	1. Unable to read and write 2. Able to read and write 3. Grade1-8 4. Grade 9–12 5. >Grade 12
4.	Employment status	1. Employed 2. Unemployed
5.	Type of surgery	1. Orthopaedic 2. Urologic 3. General 3. Obstetric 4. Gynaecology
	B. Past medical and anaesthesia experience	
6.	American Society of Anaesthesiologists (ASA) status	A. I B. II
7.	Does the patient have any medical history?	1. Yes 2 .No
8.	Has the patient received anaesthesia before?	1. Yes 2. No
9.	If the answer is yes for Q.NO 8, what technique?	1. SA 2. GA
10.	What was the complication?	1. Pain during surgery 2. Headache 3. Backache

		4. PONV Others (specify)**……**
	C. perioperative care	
11.	Did you experience any episodes of nausea and/vomiting during operation?	1. Yes 2. No
12.	Was there any shivering?	1. Yes 2. No
13.	Did you feel pain during operation?	1. Yes 2. No
14.	Did you experience any episodes of nausea and/vomiting after operation?	1. Yes 2. No
15.	Did you have postoperative backache?	1. Yes 2. No
16.	Did you have headache postoperatively?	1. Yes 2. No
17.	Number of attempts at puncture site?	1. 1-2 2. >2
18.	Are you happy to take spinal anaesthesia for similar surgery?	1. Yes 2. No
19.	If answers to NO.18 is **no** why?	1. Fear of awareness 2. Pain 3. Nausea &vomiting 4. Backache 5. Headache Others (Specify)……

Part II. The following are assessing the level of satisfaction on listed factors. Please, provide appropriate responses using tick "√" mark in front of the corresponding items

S.NO	Item	Degree of satisfaction				
	To what degree did you satisfied?	very dissatisfied	Dissatisfied	neutral	Satisfied	Very satisfied
	Preoperative assessment &evaluation					
20	Satisfaction with the amount of information given from the anaesthetist					
21.	Explanation about operation					
22.	Understandable information					
23.	Satisfaction with preoperative visit					
24.	Satisfaction with information about postoperative complication					
	Intraoperative care and attention of the anaesthetist					
25.	Satisfaction of anaesthetist' attention to your complaints like pain and nausea					
26.	Satisfaction with degree of anaesthetist's will to listen your questions					
27.	Action according to your needs					
	Postoperative care and follow up by the anaesthetist					
28.	Satisfaction with anaesthetists postoperative visit					
29.	Satisfaction with PONV treatment					
30.	Satisfaction with pain therapy after surgery					