



Cross-sectional Study

Management of postoperative pain among health professionals working in governmental hospitals in South Wollo Zone, Northeast Ethiopia. Prospective cross sectional study

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ABSTRACT

Introduction: Pain is a distressing experience associated with actual or potential tissue damage with sensory, emotional, cognitive and social components. Inadequate postoperative pain management leads to negative clinical outcomes such as extended hospitalization, poor recovery, diminished and decreases the quality of life, increased healthcare costs and utilization, higher morbidity and mortality, and the development of chronic pain. The study was used for the hospitals administrations, health professionals, committee that develop the pain management guideline, researcher, and governmental health institutions regarding the practice of postoperative pain management. The aim of this study was to assess the management of postoperative pain among health professionals working in governmental hospitals in South Wollo Zone, Ethiopia.

Methods and materials: A hospital-based prospective cross-sectional study was conducted from February 20, 2022 to March 25, 2022. The study population was selected from South Wollo Zone governmental hospitals and 386 samples were collected using a self-administered questionnaire and verified, coded and entered into Epidata software version 3.1 and it exported to SPSS version 23 for analyze. To summarize descriptive statistics frequencies, percentages, and mean were used and presented with tables, charts, and figures.

Result: 386 participants were involved and making up 95.8% of the response rate. Among the respondents, 97.9% of the respondents had used pharmacological management. 51.3% applied non-pharmacological and 66.1% applied multimodality management of postoperative pain. Among pharmacological management, 48.7% of systemic analgesics technique, 26.3% of regional analgesics technique, and 25.0% of patient-controlled epidural analgesics, whereas in non-pharmacological management 40.4% of cold and heat application followed by 32.3% of immobilization was applied to the management of postoperative pain.

Conclusion and recommendation: The overall level of pharmacological, non-pharmacological and multimodality approach of post-operative pain management among health professionals in the study area was more than ninety, half and more than half of the participants, respectively. Postoperative pain management found in many key areas of postoperative pain management has an impact on the provision of effective pain management and optimal care given to surgical patients. This study provided an opportunity for health professionals working in hospitals, to evaluate themselves in the area of postoperative related to pain management.

1. Introduction

An unpleasant sensory and emotional experience called pain is a result of existing or potential tissue damage. With sensory, emotional, cognitive, and social components, pain is an uncomfortable sensation linked to real or potential tissue damage. Surgical injuries and an inflammatory response cause postoperative discomfort to develop. The most important symptom reported by surgery patients, it is a matter of

personal perception. More than 50% of surgical patients, according to the study, feel postoperative pain (POP) [1–3].

The two types of pain management are as follows. Postoperative pain management includes both pharmaceutical and non-pharmacological approaches. The non-pharmacological postoperative pain management options include neurostimulation, acupuncture, cognitive behavioral therapy, and other complementary therapies, whereas the pharmacological options include systemic analgesia (non-opioid, opioid, non-

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steroid anti-inflammatory drug (NSAID), and adjuvant), regional or local analgesia, condition-specific analgesia, and interventional analgesia [4,5].

There are three key components to postoperative pain management, according to the American Pain Society's practice recommendations for the management of postoperative pain. These include effective transition to outpatient treatment, preoperative education, and perioperative pain management planning [5].

In Tanzania and Rwanda (KUTH and BUTH), the pharmacologic drugs prescribed postoperatively were 70.7% and 60.9% & 9.3% pethidine, 11.4% and 83.9% & 67.4% morphine, and 11.4% and 16.1% & 27.9% fentanyl, respectively. Other analgesics used were paracetamol (60.2%, 72.4%, and 79.1%) and diclofenac (22%, 60.9%, and 62.8%, respectively [6,7]. According to a Ghanaian study, the prevalence of non-pharmacological postoperative pain management was 34.5%. The combination management was the most popular, with 9% using deep breathing, prayer, and walking, 4.0% using only walking, and 1% using massage. In the Mekelle University and Addis Ababa studies, the most commonly used medication for the management of postoperative pain was 42.2%, 20.6% Tramadol, followed by 29.2%, 47.9% combination of diclofenac and tramadol, respectively. A combination of tramadol and paracetamol was also used to treat postoperative pain in a few patients. According to a study conducted at the University of Gondar (UOG), 56.9% of patients were prescribed an NSAID, with 24.1% having a relative contraindication [8]. where in TASH the administration of NSAID was 46.9% and 7.7% of mild opioid [9–11].

Inadequate postoperative pain management results in negative clinical outcomes such as prolonged hospitalization, poor recovery, diminished and decreased quality of life; increased healthcare costs and utilization; increased morbidity and mortality, and chronic pain development. Productivity loss and poor patient functionality can have a negative impact on patients' quality of life, leading to anxiety and depression in the health care system and society. POP that is not treated costs millions of dollars per year due to longer hospital stays [12,13].

This study provided an opportunity for health professionals to investigate and describe their postoperative pain management in depth. The current study was also used to identify the management of postoperative pain in surgical, orthopedics, gynecology, obstetric ward, and intensive care units and create easy conditions for health professionals to understand and correct the management of postoperative pain. They also understand that managing their patients is based on the standard or guideline of POP management and it is leading to improved postoperative pain management.

The current study sought to describe the pharmacological, non-pharmacological, and multimodality approaches to postoperative pain management used by health professionals in the South Wollo Zone of Northeast Ethiopia.

2. Methods and material

2.1. Registration

This manuscript is registered in www.researchregistry.com with the unique identification number (UIN) of researchregistry8065 [14].

2.2. Study area and period

The study was conducted in governmental hospitals found in the South Wollo Zone. South Wollo is one of the zones in the Amhara region which is found in Northeast Ethiopia. The zone has 20 Woredas. In this Zone, there are 12 governmental hospitals and they serve the many population living inside and around the zone. In the South Wollo Zone, there are 203 general practitioners, 46 anesthetics, 740 nurses, and 187 midwifery (South Wollo health office). The study was conducted from 20/02/22 to March 25, 2022.

2.3. Study design

Hospital-Based prospective cross-sectional study design was conducted.

2.4. Source and study population

All health professionals working in government hospitals found in the South Wollo Zone was source population whereas health professionals working in the recovery room, intensive care unit (ICU), surgical ward, and orthopedics ward, obstetrics and gynecology of selected governmental hospitals in the South Wollo Zone during the study period was study population.

2.5. Inclusion criteria

All nurses, midwifery, and anesthetics who were working in the recovery room, surgical and orthopedic wards, Intensive care unit (ICU), and gynecology and obstetrics wards were included.

2.6. Non-inclusion criteria

All nurses, midwifery, and anesthetics who were in study leave, sick leave, maternal leave, and health professionals that working more than one ward or unit were excluded.

2.7. Sample size determination and sampling technique

2.7.1. Sample size determination

The sample size was determined using the formula of single population proportion with a 95% confidence interval, a margin of error of 5%, and Prevalence is 52.1% (0.52) [15]. The calculated sample size was 384. Substituting to the formula:

To determine the sample size apply the formula

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

Where: n = the required minimum sample size.

P = the prevalence of poor postoperative pain management

d = margin of error

$Z_{\alpha/2}$ = critical value at 95% confidence level (1.96).

$$n = (1.96)^2 0.52(1-0.52)/(0.05)^2 \Rightarrow n = 3.84 * 0.25 / 0.0025 \Rightarrow n = 384$$

Using 5% non-response rate because the response rate of the research that done was greater than 96%. The calculated final sample size = 384 + 5% non-response rate (19.2). The final sample size was = 403.

2.7.2. Sampling technique

There are 12 governmental hospitals in the South Wollo Zone. Using lottery method of simple random sampling technique six hospitals were selected from 12 governmental hospitals. Then participants were selected by simple random sampling from selected hospitals (Fig. 1).

2.7.3. Data collection tool

Self-administered quantitative questionnaires were used to collect data. The questionnaire was open, and closed-end questions, but most of the questionnaire became a closed-end question. The questionnaire contains two parts which include health professionals, socio-demographic status and management of postoperative pain. The second part contains three sub-parts. These are pharmacological, non-pharmacological, and multimodality. The socio-demographic part contains nine items; the management part contains twenty-three items. Totally the questionnaires contained thirty two items.

Below this there are five figure that we submit with in manuscript and in separate file. The figure order can be incorporate in the following figure order/number.

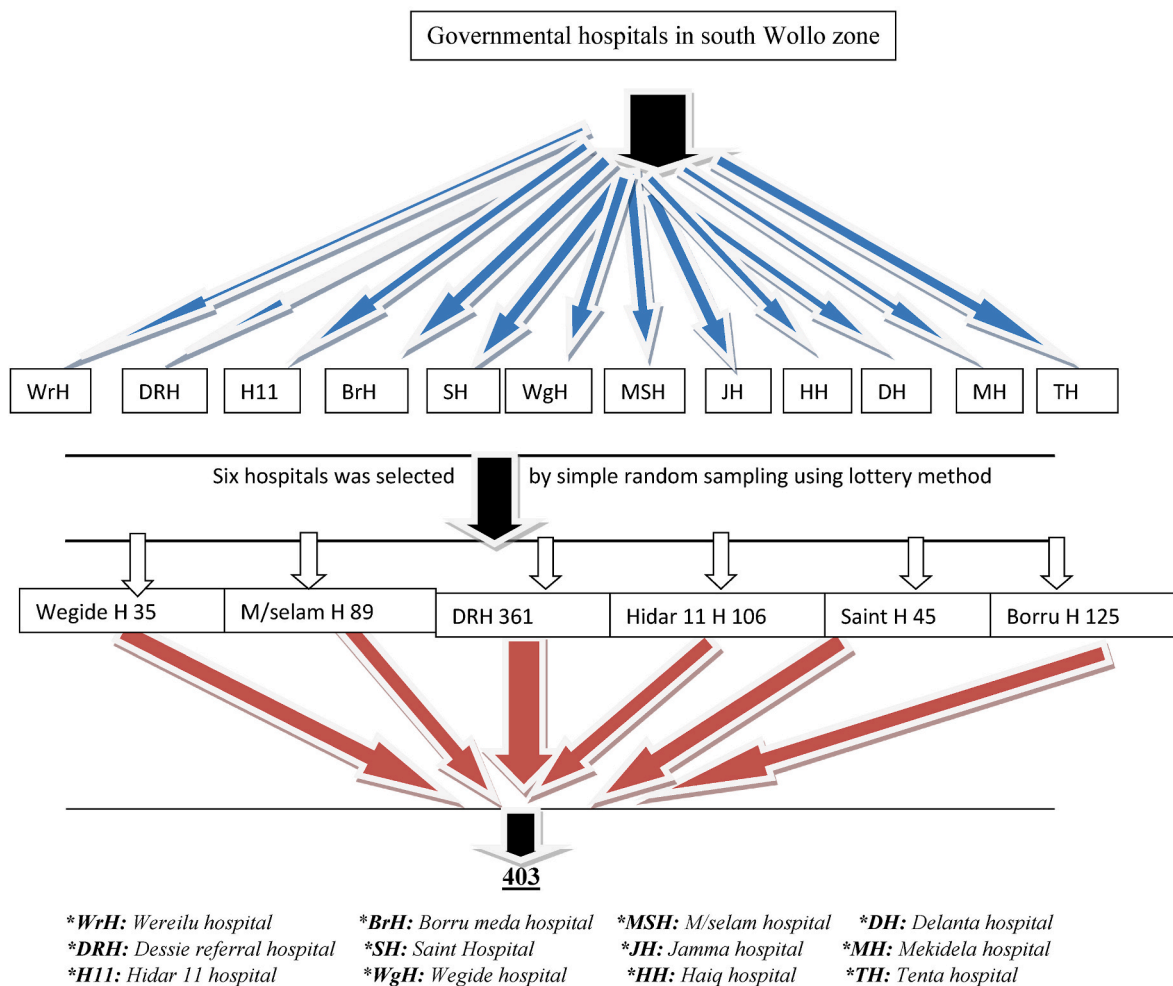


Fig. 1. Schematic presentation of the sampling technique, Ethiopia.

2.7.4. Data collection procedures

Data was collected by six BSc health professionals who were recruited from different hospitals and two trained MSc health professional supervisors. The principal investigator was assist and coordinates the data collectors as well as the participant during data collection. Data was collected from health professionals that were selected from each hospital. The principal supervisors took the responsibility of coordinating the health professionals and discussing the purpose of the study then based on their voluntariness to participate, the principal supervisor was given orientation on how to fill the questionnaire then; the questionnaires were distributed and clarify any difficulty during the data collection. Finally, the completed questionnaire was returned to the data collectors.

2.7.5. Data quality control

The activity of checkup was applied regarding the format, pattern, and duplication of the questionnaire before distributing to the data collectors. A 5% pretest among the sample size was conducted in the XX health center to test the consistency of the questionnaire. Two days of training were given to data collectors about the proper handling of data.

Close supervision by two trained MSc health professionals was done during the data collection procedure and proper recording was performed. Immediate checkup was carried out and any unfilled data had been filled immediately. Data is placed properly in a secure and safe

place.

2.7.6. Data analysis procedure

The data entry was conducted using Epidata 3.1 and exported into statistical package for social science (SPSS) version 23 for data cleaning and analysis. To summarize, descriptive statistics frequencies, percentages, and mean were used, whereas tables, charts, and figures were used for data presentation. Cross-tabulation was used to assess the proportion of dependent variables.

2.8. Operational definition and term

Postoperative pain management: an intervention or actions undertaken about management of pharmacological, non-pharmacological and multimodality approach of the pain experienced by patients recovering from surgery while in hospital.

Health Professional: in this study, it implies the profession of comprehensive nurse, surgical nurse, operative theatre nurse, emergency and critical nurse, anesthetics, and midwifery working in the study area.

2.9. Dissemination and utilization of a result

Results will be disseminated to South Wollo Governmental hospitals

and the University, College of Medicine and Health Science through documentation, presentation and publication. To the principal supervisor, data collector, researchers and students, the results will be disseminated through presentations and publication. Finally, it will be accessible on the internet for all through publication.

3. Results

A total of 403 questionnaires were distributed to health professionals working in south Wollo Zone governmental hospitals. Among those, 386 participants were involved making a response rate of 95.8% and the remaining 4.2% were considered non-respondents due to incompleteness and inconsistency of the respondents.

3.1. Socio demographic characteristics of study participants

Males made up more than half of the 216 respondents (56%). The average age of respondents was 27.24 ± 3.948 years, with the lowest and highest ages being 20 and 45, respectively. Two hundred forty-four (63.2%) of participants were Orthodox Tewahido Christians, and 368 (95.3%) were Amhara. A significant number of respondents, 287 (74.4%), held a bachelor's degree. In terms of marital status, 202 respondents (52.3%) were married, while 1.9% were divorced. 237 (61.4%) of the total respondents had 1–5 years of work experience. One hundred and four (26.9%) of those polled worked in the surgical ward (Table 1).

3.2. Management Options of Postoperative Pain

This study primarily evaluated three approaches to postoperative pain management. To manage postoperative pain, 378 (97.9%) used pharmacological management; 198 (51.3%) used non-pharmacological management, and 66.1% used a multimodality approach (Fig. 2).

3.3. Pharmacological management of postoperative pain

In terms of pharmacological management of postoperative pain, 378 (97.9%) of respondents said they had used pharmacological pain management. POP was managed using three main techniques derived from pharmacological management: systemic analgesics, regional analgesics, and patient-controlled epidural analgesics (Fig. 3).

3.3.1. Systemic analgesics technique

The systemic analgesics technique was used in 355 (48.7%) of the pharmacological managements. NSAID accounted for 48% of systemic analgesics, followed by 22.3% of weak opioids and 4.9% of, at the very least, Paracetamol.

3.3.2. Regional analgesics technique

This drug class was used as the second method of management in the South Wollo Zone. A total of 192 (26.3%) of respondents used the regional analgesics technique. In the study area, two main techniques of regional analgesics were used. These included 117 (60.9%) local anesthetics and 75 (39.1%) epidural analgesics. The proportion of those two analgesics was calculated from the responses of 192 people using the regional analgesics technique.

3.3.3. Patient's controlled epidural analgesics

Among the three pharmacological management techniques, the proportion of patients controlled by epidural analgesics (PCEA) was 182 (25.0%). In the study area, various PCEA drugs were used. Among those, 104 (49.8%) morphine, 43 (20.6%) fentanyl, 39 (18.7%) bupivacaine 0.125% and fentanyl 4ug/ml, and 5 (2.4%) ropivacaine 0.2% and fentanyl 5ug/ml were used.

Table 1

Socio demographic characteristics of health professionals (n = 386) working in South Wollo Zone hospitals, Ethiopia, 2022.

Socio demographics characteristics		Practice of POP management		Total N (%)
		Good N (%)	Poor N (%)	
Gender	Male	134(62)	82 (38.0)	216 (100.0)
	Female	88 (51.8)	82 (48.2)	170 (100.0)
Age	Age 20-24	56 (59.6)	38 (40.4)	94 (100.0)
	Age 25-29	119 (61.7)	74(38.3)	193 (100.0)
	Age 30-34	34 (43.6)	44(56.4)	78 (100.0)
	Age 35-39	10(66.7)	5 (33.3)	15 (100.0)
Marital status	Age 40-45	3 (50.0)	3 (50.0)	6 (100.0)
	Married	122 (60.4)	80 (39.6)	202 (100.0)
	Single	96 (54.2)	81 (45.8)	177 (100.0)
Working Hospital	Divorced	4 (57.2)	3 (42.8)	7 (100.0)
	Primary hospital	34 (94.4)	2 (5.6)	36 (100.0)
	District hospital	119 (72.6)	45 (27.4)	164 (100.0)
Type of profession	Referral hospital	69 (37.1)	117 (62.9)	186 (100.0)
	Comp. Nurse	133(56.4)	103(43.6)	236(100)
	Surgical nurse	12(60)	8(40)	20(100)
	ORT Nurse	11(78.6)	3(21.4)	14(100)
	ECC Nurse	9(75)	3(25)	12(100)
	Anesthetics	10(55.6)	8(44.4)	18(100)
Level of education	Midwifery	47(54.7)	39(45.3)	86(100)
	Diploma	55(73.3)	20(26.7)	75(100)
	Degree	156(54.4)	131(45.6)	287(100)
Working wards	MSc & above	11(45.8)	13(54.2)	24(100)
	Surgical ward	62(59.6)	42(40.4)	104(100)
	Recovery room	42(50)	42(50)	84(100)
	Obstetrics ward	43(53.8)	37(46.3)	80(100)
	Gynecolog ward	10(76.9)	3(23.1)	13(100)
	Orthopedics	6(40.0)	9(60)	15(100)
	ICU	22(84.6)	4(15.4)	26(100)
	Emergency ward	6(66.7)	3(33.3)	9(100)
	Medical ward	31(56.4)	24(43.6)	55(100)
Years of experience	1–5 years	141 (59.5)	96 (40.5)	237 (100.0)
	6–10 years	63 (53.8)	54 (46.2)	117 (100.0)
	≥11 years	18 (56.3)	14 (43.8)	32 (100.0)

POP: postoperative pain.

N: number/s.

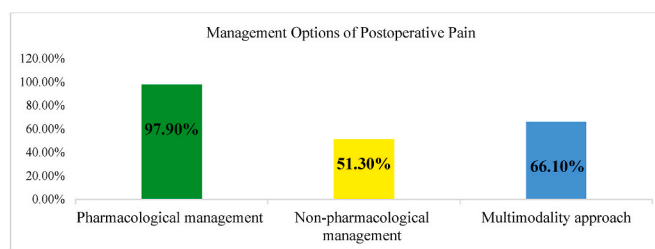


Fig. 2. Management options of postoperative pain among health professionals (n = 386) working in South Wollo zone hospitals, Ethiopia, 2022.

3.4. Non pharmacological management of postoperative pain

In the study area, the proportion of non-pharmacological management was 198. (51.3%). The most common non-pharmacological management method used in the study area was 40.4% cold and heat

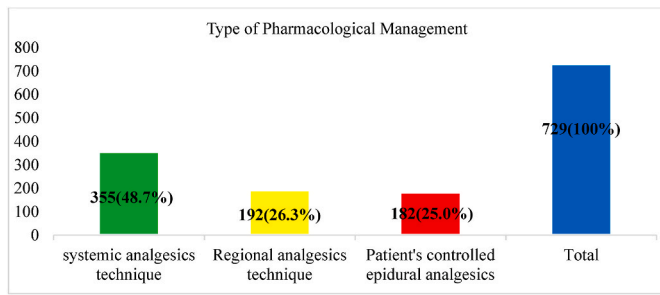


Fig. 3. Pharmacological Management of Postoperative Pain among Health Professionals (n = 386) Working in South Wollo Zone Hospitals, Ethiopia, 2022.

application, followed by 32.3% immobilization, and 15.5% massage, 3.0% acupuncture, and 2.7% hypnosis (Fig. 4).

3.5. Multimodality approach of postoperative pain management

In the study, 66% of respondents used the multimodality approach to postoperative pain management. Among those with multimodality, 37.9% received a combination of opioid analgesics and local anesthetics, while 32.4% and 29.8% received analgesics from different groups and a combination of local and systematic anesthetics, respectively (Fig. 5).

4. Discussion

The purpose of this cross-sectional study was to evaluate the management of postoperative pain in governmental hospitals in the southern Wollo zone. Among the study participants, 378 (97.9%) had used pharmacological management; 198 (51.3%) had used non-pharmacological management, and 66.1% had used a multimodality approach to postoperative pain management.

4.1. management of postoperative pain

This study shows that both pharmacological and non-pharmacological methods of postoperative management as well as multimodality approach of POP management were applied.

According to this study, 355 (48.7%) of patients received systemic analgesics; 192 (26.3%) received regional analgesics, and 182 (25.0%) received patient-controlled epidural analgesics. In terms of systemic analgesics, 48.0% of NSAID were administered to the patient, while 56.9% were prescribed by the University of Gondar. The difference could be explained by the availability and distribution of drugs at the hospital level, as well as the starting and continuing times of these drugs, as 23.4% of NSAID in UOG were administered and counted the previous

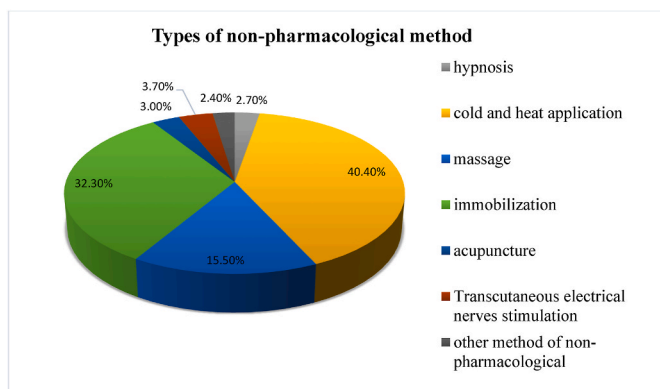


Fig. 4. Non-pharmacological management of postoperative pain among health professionals (n = 386) working in South Wollo zone hospitals, Ethiopia, 2022.

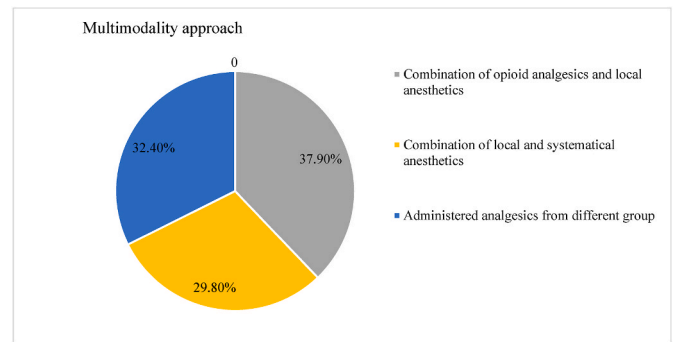


Fig. 5. Multimodality approach of Postoperative Pain management among Health Professionals (n = 386) Working in South Wollo Zone Hospitals, Ethiopia, 2022.

8 h [8]. Another possible explanation is that admission cases differ between the two hospitals, which require a prescription for the drug. Examples of arthritis that require this drug include osteoarthritis, rheumatoid arthritis, and many others. On the other hand, this study shows that 42.0% of opioids were used whereas 94.5% of opioids were used in Tanzania [7].

Among PCEA, 49.8% of morphine was used for postoperative pain management, whereas it was used in 9.5%, 83.9%, and 11.4% of patients in Ghana, Rwanda, and Tanzania, respectively. The difference between this study and Tanzania could be explained by a limitation in analgesic drug availability in Tanzania, which may limit the opportunity to choose from the range of available analgesia or the prescriber's reference. [6,7,16].

Fentanyl is a highly potent synthetic opioid used as a pain reliever and anesthetic, but its high potency makes it addictive. Due to its addictive nature, it is illegally associated with overdose and sold as a powder, dropped onto blotter paper, placed in eye droppers and nasal sprays, or made into pills that resemble other prescription opioids [17]. Fentanyl was prescribed for postoperative pain management in this study. But it can also be prescribed for those experiencing dependence, which is characterized by withdrawal symptoms when the drug is stopped. According to this study, 20.6% of fentanyl was prescribed for the treatment of POP, while 54.9% of fentanyl intake was reported on its own, indicating a mix of both prescribing and recreational use [18].

This study is supported by a study in US adults, in which high fentanyl dosages were possibly associated with the need to relieve pain. But the effect becomes, attempting to cope with the molecules increasing levels of tolerance over time [19]. Nonetheless, the recreational value of fentanyl should not be overlooked. Fentanyl overdose can cause respiratory arrest, pulmonary edema, chest wall rigidity, and apnea [20].

Morphine has the potential to be highly addictive due to the rapid development of tolerance to it. However, because morphine is used for pain relief after major surgeries, treatment for cancer-related pain, and shortness of breath at the end of a patient's life, 49.8% of morphine was used to manage POP in the study area. Morphine, on the other hand, has a high potential for abuse due to its pleasurable effects and ease of access.

This study describes the legal prescription of morphine because it is considered abuse without a prescription but a legal substance when prescribed.

Sixty-six percent of POP management in this study was accomplished through a multimodality approach, whereas in Addis Ababa and Mekele University studies, the combination of drugs was 47.9% and 29.2%, respectively [21,22]. In Tanzania, on the other hand, 70.0% of the multimodality approach was used [7]. The difference could be due to insufficient drug distribution and financial constraints, causing them to administer in a single mode rather than multimodality.

This study discovered that 51% of management was non-pharmacological, whereas studies in Hawassa and Ghana discovered

78.3% and 34.5% of non-pharmacological management, respectively [16,23]. Such significant difference between this study area and Hawassa was, the participants in the study area had more than half of the negative attitude toward the practice of postoperative pain management and were less knowledgeable than those in the Hawassa study.

In this study, 40.4% of cold and heat applications were used to manage POP, whereas the study in Europe indicated that 65.4% of cold applications were used. Similar to this, 3.0% of acupuncture and 15.5% of massage were used in this study, but it is lower than the study in Europe because in Europe, 59.3% of acupuncture and 65.0% of massage were used to manage postoperative pain [24]. The reason for such a significant difference could be professional value, study area, and differences in professional and patient experience with those types of management.

59.8% of health professionals documented their postoperative pain management. There is good documentation that compares to 49.0% of AA public hospitals and 33.0% of Nigeria's study [9,25]. When compared to TASH and American anesthesiologist guidelines, it is not as good. This could be due to the presence of health professionals' workload and the unit team's low priority of POP management. Forty percent of respondents indicated that POP management documentation was incomplete or absent, resulting in the practice being incomplete, irregular, and of questionable reliability or validity, and pain assessment becoming inconsistent and sporadic. As a result, documentation is the visibility of postoperative pain management practice.

The studies done in postoperative pain management were limited to showing in the postoperative pain management program and communicating the research results to provide the protocol and standard guideline for the health professionals about postoperative pain management. POP occurs immediately after the surgical procedure, but studies did not show postoperative pain management, and they also did not begin early and were delayed for more than 2 h after surgery, which can affect postoperative pain management, particularly in the first 24 h [15,16,26].

The current study gave health professionals the opportunity to learn more about postoperative pain management and describe their pain management. The current study was also used to identify the management of postoperative pain in surgical, orthopedics, gynecology, obstetric ward, and intensive care units and create easy conditions for health professionals to understand and correct the management of postoperative pain. They also understand that managing their patients is based on the standard or guideline of POP management and it is leading to improved postoperative pain management.

4.2. Limitation of the study

The current study describes postoperative pain management, but not the factors, and there may be a response bias in the study population.

5. Conclusion

The overall level of pharmacological, non-pharmacological, and multimodality approach to post-operative pain management among health professionals in the study area was more than ninety, nearly half, and more than half, respectively.

5.1. Recommendations

5.1.1. For South Wollo Zone health administration and hospitals

There is a need for inter-professional management and implementation by health professionals, as well as in-service training for postoperative pain management. Continuous professional education and training programs on management and postoperative pain management, particularly non-pharmacological approaches, are required. Policies and procedures for pain management in South Wollo Zone health administration and hospitals should include (but are not limited to):

- ❖ Give continues education for health professionals regarding POP management
- ❖ Give POP management training for health professionals (considering the three main approaches)

5.1.2. For health professionals

This study provided an opportunity for the health professional of working in hospitals, to evaluate themselves in the area of postoperative pain management. The results of the study would facilitate innovation in postoperative pain management.

5.1.3. For researchers

This study recommends that further studies should include in-depth interviews and observation of actual health professional's postoperative pain management. Additionally, there is need for research inquiry to identify factors that affect the approaches of post-operative pain management.

Ethical approval

Ethical clearance was obtained from research and community service of Wollo University, college of medicine and health science, research, community service and postgraduate coordinator i.e. committee. The reference number of this approval letter was CMHS-450/013/12.

Sources of funding for your research

There is no funding source for this manuscript.

Author contribution

1Mulusew Zeleke; participate in writing proposal, analysed the data, wrote the result and discussion. 2Lehulu Tilahun; participate in analysing the data, writing result and prepared manuscript.

Registration of research studies

Name of the registry: Mulusew Zeleke Belay.

Unique Identifying number or registration ID: researchregistry8065.

Hyperlink to your specific registration (must be publicly accessible and will be checked): <https://www.researchregistry.com/browse-th-e-registry#home/>

Consent

After getting permission from each respective of South Wollo Zone governmental hospitals, informed oral consent was obtained from the study participants this is because after explaining the study purpose, procedure, duration and other detail explanation participants was interested to give oral consent.

Guarantor

Mulusew Zeleke Belay.

You can contact the above guarantor to access the data.

Declaration of competing interest

The authors declare that there is no conflict of interest between them.

Acknowledgment

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would like to thank my data collectors and respondents.

Abbreviations

AOR	Adjusted Odd Ratio
BUTH	Butare University Teaching Hospital
COR	Crude Odd Ratio
ICU	Intensive Care Unit
KUTH	Kigali University Teaching Hospital
OPQRS	Onset, Provocation, Quality, Radiation, Severity
PCEA	Patient Controlled Epidural Analgesia
POD	Postoperative Daily
POP	Postoperative Pain
QISS TAPED	Quality, Impact, Site, Severity, Temporal, Aggravating, Preference, Diagnostic
SOCRATES	Severity, Onset, Character, Radiation, Aggravating, time, exacerbation, Site
SPHMMC	Saint Paulo's Hospital Millennium Medical College
TASH	Tikur Anbessa Specialized Hospital
UOG	University of Gondar
WHO	World Health Organization

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2022.104148>.

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