



UNIVERSITY *of*
RWANDA

COLLEGE OF MEDICINE AND HEALTH SCIENCES

School of Medicine and Pharmacy

Department of Anesthesiology, Critical Care and Emergency Medicine

***PREVALENCE OF CHRONIC PAIN AFTER ABDOMINAL
HYSTERECTOMY AT PUBLIC UNIVERSITY TEACHING
HOSPITALS IN RWANDA***

Research work submitted in partial fulfillment of the requirements for award of

Masters of Medicine degree in Anesthesiology

By

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June, 2020

DECLARATION

I, Claudine UZAMUKUNDA, declare that this dissertation is the result of my own work and has not been submitted to any other university for similar or any other degree award.

Signature.....



Supervisor's approval for submission

Prof Theogene TWAGIRUMUGABE

Signature.....

DEDICATION

I most gratefully dedicate this work to:

The Almighty God who stayed with me through my life

My Dearest beloved Husband Emmanuel UZABAKIRIHO,

My late parents,

My beloved sons; Ganza Guy Yannick and Shema Byiza Ivan,

My research supervisors,

My brothers and sisters,

All of my friends,

God bless you all.

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Thanks to the Almighty God, the creator who has made every accomplishment to happen, to Him the glory belongs forever.

ABSTRACT

Background: Post-abdominal hysterectomy chronic pain is well-established in high income countries but its prevalence and predisposing factors are not known in low-income countries.

Methods: We conducted a cross-sectional study combining a retrospective collection of demographic data for patients who underwent abdominal hysterectomy at two public university teaching hospitals in Rwanda namely University teaching hospital of Kigali(CHUK) and Butare (CHUB) from January 2016 to January 2019 from patients' records and a prospective data collection on presence of pain using phone calls. We defined chronic pain as pain persisting 3 months and onwards postoperatively. Characteristics of patients with pain and those without were compared using Chi-square and T- tests accordingly.

Results: Of 318 eligible patients, we obtained sufficient information for only 200. They were aged 49.5 years on average (SD, 10.9 years). The commonest indications for hysterectomy were pelvic organs prolapse 56(28%) and adnexal masses 31(15.5%). Of the 200 patients, 105(52.5%) reported having chronic pain. Age, indications of hysterectomy, prevailing pain prior to surgery and the management of the postoperative acute pain were not significantly associated with the prevalence of post-hysterectomy chronic pain.

Conclusion: This study shows a high prevalence of post-hysterectomy chronic pain. We did not identify any predicting factors but further larger studies are guaranteed.

Key words: *Abdominal hysterectomy, risk factors, chronic pain*

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List of Abbreviations

1. AUB: Abnormal Uterine Bleeding
2. CHUB: University Teaching Hospital Of Butare
3. CHUK: University Teaching Hospital of Kigali
4. IASP: International Association for the Study of Pain
5. IRB/CMHS: Institutional Review Board of the College of Medicine and Health Sciences
6. PSCP: Post Surgical Chronic Pain
7. SD: Standard deviation
8. WHO: world Health Organization

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CHAPTER I. INTRODUCTION

1. Background

Post surgical chronic pain is defined as pain which persist for at least 3 months after surgery. It should not be present preoperatively or different in characteristics and or in intensity, should be at the incision site or at the referred area with other causes of pain excluded⁽¹⁾⁽²⁾.

Chronic post surgical pain involves neuropathic and or nociceptive components. The release of inflammatory mediators following tissue injury (surgery) causes a lowering of the threshold of the transduction of pain at nociceptors terminals, and this is called peripheral sensitization. This local inflammation to the site of surgery generally causes post-surgical acute pain which, if well treated, subsides after the inflammatory period⁽³⁾⁽⁴⁾. Central sensitization results from inputs from excitatory noxious stimulus from nociceptors or from nerve damage or nerve dysfunction. It is centrally mediated amplification of pain irrespective of the mechanism or the location of pain⁽⁴⁾⁽⁵⁾. The persistence of central sensitization is the root cause of chronic pain⁽⁶⁾. The prevalence of post hysterectomy chronic pain differs depending on the type of the procedure and it can be as high as 50%-60%⁽²⁾⁽⁷⁾.

Chronic postsurgical pain (CPSP) does not necessarily follow major surgeries as its prevalence was higher in different surgical procedures being minor or major such as herniorrhaphy or hysterectomy. Hysterectomy is a common gynecological procedure performed worldwide for different indications⁽⁸⁾. In 2007, Brandsborg B et al showed the prevalence of chronic pain of 31.9% in post abdominal hysterectomy study conducted in ⁽⁹⁾. Post hysterectomy chronic pain was also reported with prevalence of 30.1% in southern Jiangsu , China by Chao Han et al⁽¹⁰⁾. Studies on different types of surgeries showed that there are some predisposing factors like genetic predisposition, preoperative pain, severe post surgical acute pain and psychological vulnerability⁽¹¹⁻¹⁷⁾. Factors for post hysterectomy chronic pain were found in different studies conducted in high income counties, which included; ~~The~~the presence of pelvic pain, pelvic surgeries and the pain of any kind ~~preoperatively ,preoperatively~~, type of hysterectomy and anesthesia technic used, acute post operative pain intensity and its ~~duration~~duration⁽¹⁸⁻²³⁾.

Although hysterectomy is prevalent in our settings, low, there is limited data on the associated chronic pain prevalence and possible associated factors ⁽¹⁹⁾.

This makes it difficult for physicians to do an evidence-based counseling and information to patients and for policy makers to allocate resources in chronic pain clinic. We therefore conducted this study to determine the prevalence of chronic pain post-abdominal hysterectomy in two public referral hospitals in Rwanda and potentially associated factors.

CHAPTER II: METHODS

2.1 Study design

This was a cross-sectional study combining a collection of retrospective data on patients who underwent abdominal hysterectomy at two public tertiary hospitals in Rwanda namely University teaching hospital of Kigali (CHUK) and Butare (CHUB).

2.2 Study Settings

This study was conducted at two public university teaching hospitals in Rwanda, namely University Teaching Hospital of Kigali and Butare. The University Teaching Hospital of Kigali is located in Kigali City. It serves the City of Kigali, Northern Province, part of southern and part of western provinces. It has 78 beds in obstetric and gynecology, 9 gynecologists and three operating rooms. Gynecologic procedures including hysterectomies are performed on daily basis mainly in one room among these three. The University teaching hospital of Butare is located in Huye district, Southern province. It serves the majority of southern province and part of western province. It has 5 gynecologists, 85 beds for obstetric and gynecologic wards. There are 3 operating rooms for obstetric and gynecologic procedures.

2.3. Study Population

The study population was made with all women who underwent abdominal hysterectomy from January 2016 up to January 2019 at two hospitals. All patients aged 18years and above who underwent hysterectomy in that period were eligible. Demographic characteristics and data on the operation and the perioperative period were collected from hospital records.

2.4. Ethical considerations

The study was approved by the Institutional Review Board of the College of Medicine and Health Sciences, University of Rwanda(approval notice N° 181/CMHS IRB/2019). A verbal consent to be enrolled in the study was obtained during the phone call prior to further data collection on the research topic.

2.5. Procedures of data collection

After identifying all women who underwent hysterectomy in above mentioned period and the verbal consent obtained, five trained research assistants collected data including demographic characteristics such as age, residence, indication of hysterectomy, history of preoperative pain and medications, type of anesthesia during the hysterectomy and management of acute post-hysterectomy pain from hospitals 'records.

The primary investigator collected data with regard to the presence of pain, its characteristics using phone calls.

2.6. Data Analysis

All data were entered into an excel sheet then transferred to SPSS version 23, IBM for analysis. We determined the prevalence by the proportion of patients reporting pain over the total of enrolled patients. A comparison of demographic, perioperative and postoperative characteristics of pain were compared between patients with pain and those without by using the Chi-square and T-test accordingly. A $p < 0.05$ was considered as statistically significant.

CHAPTER III: RESULTS

We screened 318 participants who have been operated during the study period, 216 at the University Teaching Hospital of Kigali and 102 at University Teaching Hospital of Butare.

With phone calls, 71 participants were offline, 45 were registered on a wrong number in their records while 2 have died by the time of the call. The flowchart showing participants' inclusion is illustrated in fig. 1.

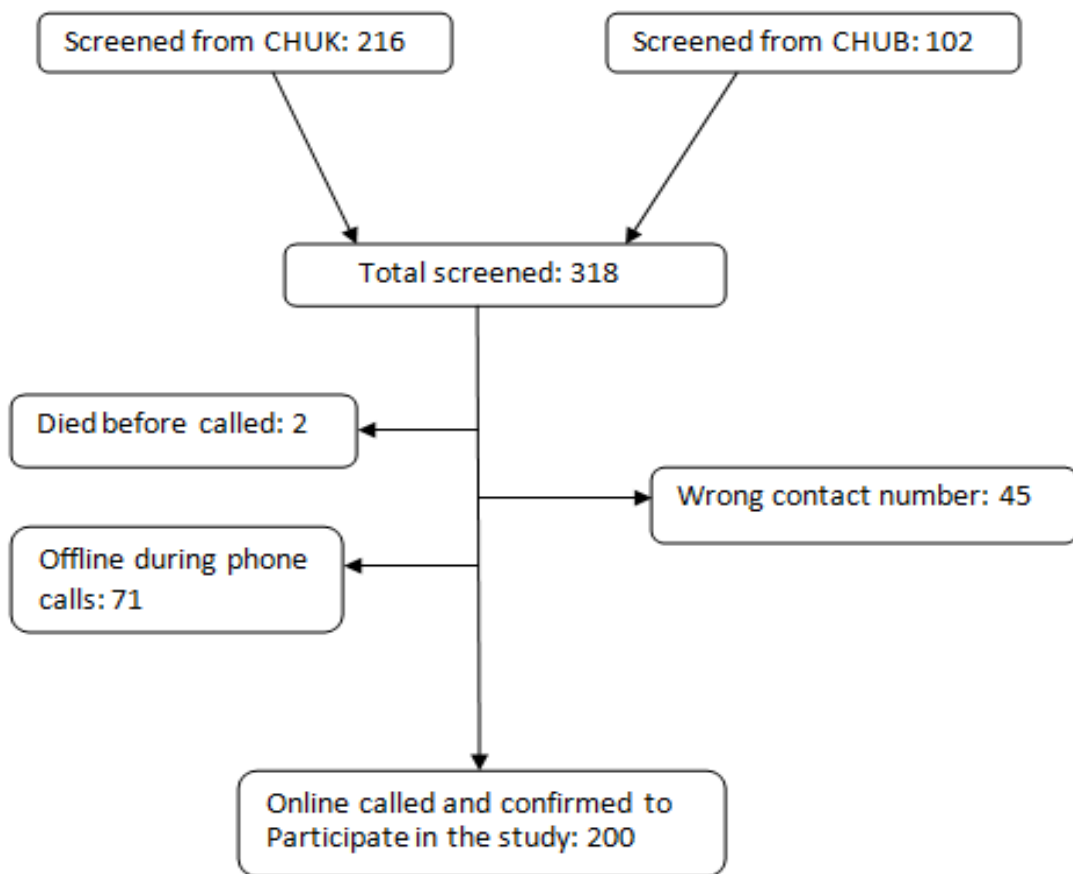


Figure 1. Flowchart which shows included participants

Of 318 eligible patients, we obtained sufficient information for only 200. They were aged 49.5 years on average (SD, 10.9 years). Most patients were above 45 years, 125(62.5%; table 1).

Table 1. Characteristics of patients enrolled in the study.

Characteristics of social demographic	Frequency	Percent, %	
Age category (Average =49.5 ;SD=10.9)	≤45	75	37.5
	>45	125	62.5
Pain prior to surgery	Absent	47	23.5
	Mild	24	12
	Moderate to severe	57	28.5
	Pain not assessed	72	36
Residence	Kigali City	40	20.0
	Western Province	14	7.0
	Eastern province	20	10.0
	Northern province	31	15.5
	Southern Province	95	47.5

The commonest indications for hysterectomies were pelvic organs prolapse 56(28%) and adnexal masses 31(15.5%; table2).

Table 2. Indications of the hysterectomy

Variable	Frequency	Percent,%
Indication of hysterectomy		
Abnormal uterine bleeding(AUB)	21	10.5
Adnexal mass	31	15.5
Cervical dysplasia	41	20.5
Uterine fibroids	29	14.5
Molar pregnancy	22	11.0
Pelvic organ prolapse	56	28.0

Preoperatively, all participants were taking medications for preexisting pain with 133(66.5%) taking multimodal analgesia, 50(25%) taking WHO ladder I analgesics and 17(8.5%) taking opioids (table 3)

General anesthesia during the hysterectomy was used in 190(95.0%) of participants whereas in 10(5%) participants, spinal anesthesia was used (table3).

Table 3. Perioperative characteristics of participants.

Variable		Frequency	Percent, %
Type of anesthesia	General anesthesia	190	95.0
	Spinal anesthesia	10	5.0
Analgesics	WHO ladder I	50	25.0
	Opioids	17	8.5
	Multimodal	133	66.5

Of the 200 study participants with sufficient information, 105(52.5%) had persistent pain after three months of surgery as shown in figure 2. The remainder, 95(47.5 %) were not experiencing chronic pain during the period of the study.

There was no statistically significant factor associated to chronic pain after abdominal hysterectomy. Neither the age, indication of the hysterectomy, type of analgesia used perioperatively, the type of anesthesia used nor the management of acute pain and prevailing pain prior to surgery were associated with chronic pain (table 4)

Table 4. Factors associated to post-hysterectomy chronic pain

Characteristics	Chronic pain(n=105)	No chronic pain (n=95)	P-Value
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Age	≤45	37(49.3%)	38(50.7%)	0.479
	>45	68(54.4%)	57(45.67%)	
Indication of Pelvic organ hysterectomy	Prolapse	27(48.2%)	29(51.8%)	0.655
	Others	78(54.2%)	66(45.8%)	
Type of analgesia	WHO ladder I	37(56.2%)	30(44.8%)	0.346
	Multimodal	68(51.1%)	65(48.9%)	
Type of Anesthesia used	General anesthesia	99(52.1%)	91(47.9)	0.438
	Spinal anesthesia	6(60%)	4(40%)	
Management of acute pain	WHO Ladder I	30(60%)	20(0%)	0.456
	Opioids	9(52.9%)	8(47.1%)	
	Multimodal	66(49.6%)	67(50.4%)	
Prevailing pain prior to surgery	No pain	22(48.9%)	25(51.1%)	0.737
	Mild pain	13(54.2%)	11(45.8%)	
	Moderate to severe pain	29(50.9%)	28(49.1%)	

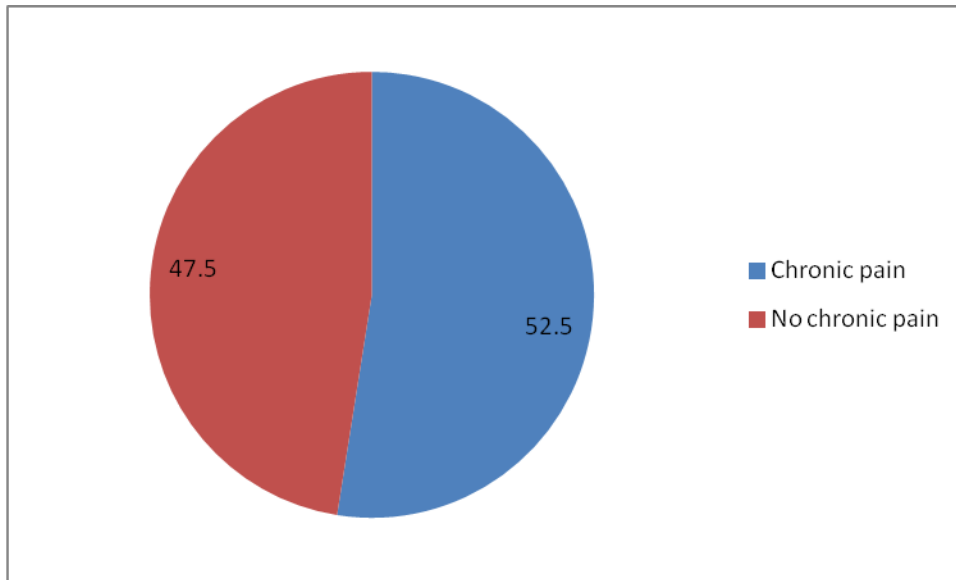


Figure 2. Post hysterectomy chronic vs no chronic pain

CHAPTER4: DISCUSSION

4.1. Prevalence of chronic pain

In our retrospective study of 200 participants who had t abdominal hysterectomy, the prevalence of chronic pain was 52.5%. There is a similar study conducted in Turkey which found a prevalence for post-hysterectomy chronic pain of 30.1%⁽²⁰⁾. In Denmark, a study looking at risk factors for post vaginal and open abdominal hysterectomy chronic pain found a prevalence of 31.9%, which is close to that found in Turkey⁽⁹⁾. These two studies have shown closer prevalence of chronic pain to our study but relatively somehow smaller. This is probably because they mixed open abdominal hysterectomy and vaginal hysterectomy cases in their respective studies.

In contrast, a study conducted in China found Post laparoscopic abdominal or vaginal-assisted laparoscopic hysterectomies prevalence of 27.7%⁽¹⁰⁾. Similarly, a study conducted in Netherlands on 468 participants who underwent vaginal, laparoscopic-assisted vaginal or laparoscopic abdominal hysterectomy found a prevalence 10.2%⁽²¹⁾. These later studies showed much lower pain prevalence probably because of the surgical technique used. Other differences in comparison with our study may be due the settings especially in the approaches to the management of acute post hysterectomy acute pain.

4.2. Risk factors to chronic pain

Different factors predisposing to post-hysterectomy chronic pain have been identified. They include age, quality of management of acute postoperative pain among others. In our study, age did not correlate with the prevalence of post-hysterectomy chronic pain as we did not find any association of age with chronic pain. However, different other studies showed that post surgical chronic pain incidence decreases with increasing age⁽²²⁾⁽²³⁾.

In contrast to other studies of post surgical chronic pain and risk factors, postoperative acute pain management strategies did not predict chronic pain in our study as well⁽¹⁴⁾⁽²⁴⁾. This was probably due to incomplete assessment of postoperative acute pain in our study or to the same quality of acute pain management to all patients enrolled in this study.

Similarly, the presence of preoperative pain did not predict the persistence of pain in our study. This also stands against findings in other studies conducted in Denmark, South Sweden and other various setting to evaluate factors associated to postsurgical chronic pain⁽²⁾⁽⁶⁾⁽²⁵⁻²⁶⁾.

Although our study has different strengths such as the fact of being the first study conducted in Rwanda to show the prevalence of chronic pain after abdominal hysterectomy and having included patients operated in the two major centers where majority of hysterectomies are performed, it has some limitations. The small sample size may have resulted in a poor discrimination of associated factors to chronic pain. Also, the lack of systematic recording of pain scores in patients' files did not allow us to make an objective comparison of quality of acute pain management and to identify whether there is any association with chronic pain. Finally, we could not meet in person the different study participants to objectively identify the impact of the pain in their quality of life or disability caused by the experienced pain.

CHAPTER5: CONCLUSION AND RECOMMENDATIONS

Our study reveals a higher prevalence of chronic pain after abdominal hysterectomy in public referral hospitals in Rwanda compared to that reported in literature. We did not identify any specific factors predisposing to that post operative chronic pain but poor quality of acute pain management could not be excluded because there were even some participants with non assessed postoperative pain. Further larger prospective studies with greater sample size are recommended to test if association factors found in other studies are also present in our setting to guide clinicians in the anticipation and appropriate follow up of patients undergoing abdominal hysterectomies. Gynecologist and anesthesiologist need to schedule appointments with patients after hysterectomy so that they find out those who suffer chronic pain post surgery and treat accordingly. Good preoperative and postoperative pain assessment is also needed.

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APPENDIX 1. QUESTIONNAIRE

I. Demographics.

- a) Patient identification number
- b) Age in years
- c) Residence: Province
District
- d) Contact phone

II. Indications of the hysterectomy:

- a) Uterine fibroids
- b) Abnormal uterine bleeding
- c) Cervical dysplasia
- d) Pelvic organ prolapse
- e) Adnexal mass

III. Type of anesthesia

- a) General anesthesia
- b) Spinal anesthesia

IV. Preoperative pain history

1. Pain history preoperatively

- a) Moderate to severe
- b) Pain not assessed
- c) No preoperative recorded pain

2. Preoperative pain medication History.

- a) Paracetamol
- b) NSAIDs
- c) Opioids
- d) Multimodal

3. Postoperative acute pain management approach used:

- a. WHO ladder I
- b. Opioids
- c. Fascia local anesthesia infiltration
- d. TAP block.
- e. Multimodal: Combination of 2 or more analgesics

4. Post operative pain status:

- a) Only marked as having pain.
- b) Pain score >2
- c) No pain status documented

V. Information from the phone calls

Persistence of pain at 3 months post abdominal hysterectomy

Yes

No

Can you rate your pain on scale from zero to ten, where zero means that there is no pain and ten means the worst pain you can imagine?

Where can you locate your pain on this scale?

- a) 0-3
- b) 4-6
- c) 7-10

Where can you locate this pain on your body?

Select all that apply

- a. Lower abdomen
- b. Lower back
- c. Incision scar
- d. Elsewhere



CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, 7th/05/2019

Dr UZAMUKUNDA Claudine
School of Medicine and Pharmacy, CMHS, UR

Approval Notice: No 181/CMHS IRB/2019

Your Project Title "*Prevalence and Factors of Chronic Pain after Abdominal Hysterectomy At Kigali And Butare University Teaching Hospitals*" has been evaluated by CMHS Institutional Review Board.

Name of Members	Institute	Involved in the decision		
		Yes	No (Reason)	
			Absent	Withdrawn from the proceeding
Prof Kato J. Njunwa	UR-CMHS	X		
Prof Jean Bosco Gahutu	UR-CMHS	X		
Dr Brenda Asiimwe-Kateera	UR-CMHS	X		
Prof Ntaganira Joseph	UR-CMHS	X		
Dr Tumusiime K. David	UR-CMHS	X		
Dr Kayonga N. Egide	UR-CMHS	X		
Mr Kanyoni Maurice	UR-CMHS	X		
Prof Munyanshongore Cyprien	UR-CMHS	X		
Mrs Ruzindana Landrine	Kicukiro district		X	
Dr Gishoma Darius	UR-CMHS	X		
Dr Donatilla Mukamana	UR-CMHS	X		
Prof Kyamanywa Patrick	UR-CMHS		X	
Prof Condo Umutesi Jeannine	UR-CMHS		X	
Dr Nyirazinyoye Laetitia	UR-CMHS	X		
Dr Nkeramihigo Emmanuel	UR-CMHS		X	
Sr Maliboli Marie Josee	CHUK	X		
Dr Mudenge Charles	Centre Psycho-Social	X		

After reviewing your protocol during the IRB meeting of where quorum was met and revisions made on the advice of the CMHS IRB submitted on 15th April 2019, **Approval has been granted to your study.**

Please note that approval of the protocol and consent form is valid for **12 months.**

You are responsible for fulfilling the following requirements:

1. Changes, amendments, and addenda to the protocol or consent form must be submitted to the committee for review and approval, prior to activation of the changes.
2. Only approved consent forms are to be used in the enrolment of participants.
3. All consent forms signed by subjects should be retained on file. The IRB may conduct audits of all study records, and consent documentation may be part of such audits.
4. A continuing review application must be submitted to the IRB in a timely fashion and before expiry of this approval
5. Failure to submit a continuing review application will result in termination of the study
6. Notify the IRB committee once the study is finished

Sincerely,

Date of Approval: The 7th May 2019

Expiration date: The 7th May 2020



Professor GAHUTU Jean Bosco
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