KNOWLEDGE, ATTITUDE AND PERCEPTION TOWARDS UTERINE ARTERY EMBOLIZATION FOR TREATMENT OF UTERINE FIBROIDS AMONG HEALTHCARE WORKERS AND PATIENTS ATTENDING MUHIMBILI NATIONAL HOSPITAL

Fauzia Miraji Kapiteni, MBBS

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Department of Radiology and Imaging

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By

Fauzia Miraji Kapiteni (MBBS)

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A Dissertation Submitted in Partial Fulfillment of the Requirements for the Master of Medicine in Radiology at Muhimbili University of Health and Allied Sciences

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CERTIFICATION

The undersigned certifies that they have read and hereby recommends for acceptance by the University of Muhimbili Health and Allied Sciences a dissertation entitled ***"Knowledge, Attitude and Perception Towards Uterine Artery Embolization for treatment of Uterine Fibroid Among Healthcare Workers and Patients Attending Muhimbili National Hospital",*** in partial fulfillment of the requirements for the degree of Master of Science in Midwifery and Women's health.

_____

DR. BALOWA MUSA MD, Mmed, MSc (Interventional Radiology)

(Main Supervisor)

Date_____

_____

DR. IRENE MHALU MD, Mmed (Radiology)

(Co-supervisor)

Date_____

DECLARATION

I, **Fauzia Miraji Kapiteni**, declare that this dissertation is my own original work, and that it has not been submitted for a similar degree in any other University.

Signature…… Date:…….

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DEDICATION

In this work, I honor my beloved mother Hawa S. Lolila, my late father Miraji M. Kapiteni, my beloved brothers Abdul and Said, my darling children Farouq, Farhiya, and Fardin, and my amazing husband, Dr. Khalid Mtoro, for their love, care, and support throughout my academic career.

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ABSTRACT

Background: Uterine fibroids are a prevalent condition among women of child bearing age, often leading to significant morbidity and mortality. Uterine Artery Embolization (UAE) is a minimally invasive treatment option for uterine fibroids; knowledge, attitude and perception of UAE may influence its utilization. Despite availability at Muhimbili National Hospital (MNH), its proven efficacy and safety; the adoption of UAE in low-resource settings like Tanzania remain limited.

Objective: This study aimed to assess the knowledge, attitudes, and perceptions towards UAE between HCWs and patients (women diagnosed with uterine fibroids) at Muhimbili National Hospital from December 2023 to June 2024.

Materials and Methods: A cross-sectional study using a quantitative approach was conducted among 94 HCWs and 127 patients (women diagnosed with uterine fibroids) attending MNH's Radiology and Obstetrics/Gynaecology departments. Data were collected using structured questionnaires to obtain sociodemographic characteristics, knowledge of UAE, attitudes towards the procedure, and perceptions of its effectiveness and preference. With assistance of SPSS 26 software, descriptive statistics and chi-square tests were appropriately applied as statistical data analysis tools.

Results: Total of 221 participants were analyzed; 94 (42.5%) healthcare workers and 127 (57.5%) women diagnosed with uterine fibroids. Overall participants mean age was 33.99 years (SD ± 7.99), all (100%) participants reported having ever heard of UAE and they get information about the UAE procedure from Health care provider and from the internet (53% and 43% respectively).

In overall UAE procedural knowledge was low as about half of respondents knew UAE as: 47.3% a minimally invasive procedure; 52.6% performed by interventional radiologists; 57.5% tiny particles are used to block blood vessels supplying fibroids; 57.4% use of moderate sedation. Knowledge on indications of UAE was low; 48.3% mentioned symptomatic uterine

fibroid; 48.5% need to preserve the uterus and fertility and 40.9% treatment of postpartum hemorrhage. However, the knowledge on contraindications of UAE was adequate as; pregnancy, allergic to contrast media and uncorrectable coagulopathy reported by 70.9%, 67.6% and 66.0% respectively. About UAE complications, less than half know that allergy 47.4% and thrombosis 42.9% are complications. Most healthcare workers have a adequate knowledge about the UAE however, it is not reflected by patients.

Attitude towards UAE was poor as 42.1% thought it was a safe procedure; 38.6% novel alternative treatment option to myomectomy for fibroids and 40.7% proffered in patients seeking future pregnancies.

Perception of UAE was also inadequate; Less than half 42% participants believing UAE involves a shorter hospital stay and allows women to go back to work and other activities sooner. The results overall showed preference in recommendation to patient 145(66.5%) and more knowledge was equally preferred in more than one third of participants 86(45.3%).

Conclusion: Overall knowledge of UAE contraindication was up to standard however, knowledge on the procedure, indication and complications was low leading to poor attitude and perceptions toward UAE. Again HCWs as compared to women with fibroids exhibited significant knowledge on every aspect of UAE. Thus, IR and other stakeholders should prioritize comprehensive patient education regarding the UAE.

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LIST OF ABBREVIATIONS

ACOG	American College of Obstetrics and Gynaecology
EU	European Union
HCWs	Healthcare workers (healthcare providers (HCPs))
IVR	Interventional Vascular Radiology
MNH	Muhimbili National Hospital
MOH	Ministry of Health
MRI	Magnetic Resonance Imaging
MUHAS	Muhimbili University of. Health and Allied Sciences
n	Number of respondents in a subgroup
N	Total number of participants
NICE	National Institute for Health and Care Excellence
OBGYN	Obstetrics and Gynecology
PCP	Primary Care Physician
PVA	Polyvinyl Alcohol (a type of embolic agent used in UAE)
QoL	Quality of Life
UAE	Uterine Artery Embolization
US	United States

DEFINITION OF TERMS

Uterine Fibroid: Is a primary benign tumor of the uterine myometrium (1).

Perception: Perception refers to the way individuals interpret and understand information received through their senses. It encompasses how they see, hear, or become aware of something and form beliefs or images in their minds as a result (2) **In the context of this study, t**he perceptions specifically towards UAE, individuals interpret and understand the various aspects of UAE, including its procedural details, potential benefits, and associated risks.

Attitude: Attitude denotes the way individuals think and feel about someone or something, which in turn influences their behavior. It represents an evaluative stance towards a particular object, person, or situation, showing how one views, believes, and reacts to it(3). **In this study, a**ttitudes in this study pertain to the beliefs and feelings that healthcare workers and women with fibroids have towards UAE, including its safety, efficacy, and appropriateness as a treatment option for uterine fibroids, refers to the evaluative judgments and feelings that individuals hold regarding UAE, which shape their acceptance and advocacy of the procedure.

Knowledge on UAE; this involves the depth of understanding and awareness about the uterine artery embolization. This includes familiarity with how the procedure is performed, its indications (e.g., symptomatic uterine fibroids, postpartum hemorrhage), contraindications (e.g., pregnancy, active genital tract infection), and expected outcomes. For healthcare workers, this knowledge is critical in counseling patients and making clinical decisions. For women diagnosed with fibroids, understanding UAE helps in making informed treatment choices.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background:

Uterine fibroids, also known as leiomyomas or myomas, are the most common benign tumors affecting women of reproductive age. These tumors are monoclonal growths originating from the smooth muscle cells of the uterus and can include fibroblasts, vascular smooth muscle cells, and components of the extracellular matrix such as collagen and fibronectin (1,4). Uterine fibroids can be asymptomatic or cause significant symptoms like heavy menstrual bleeding, pelvic pain, and pressure symptoms, which can severely affect a woman's quality of life (1,4). Uterine Artery Embolization (UAE) is a minimally invasive procedure used to treat symptomatic fibroids by reducing their blood supply, leading to their shrinkage and alleviation of symptoms (4). This procedure offers several benefits, including preservation of the uterus, shorter recovery times, and significant reduction in fibroid-related symptoms, making it an attractive alternative to surgical options like hysterectomy (1,5).

Uterine fibroids are a global health issue, affecting an estimated 20% to 40% of women during their reproductive years(4). The prevalence of fibroids varies significantly across different regions and populations. Globally, the lifetime prevalence among women is approximately 70% by age 50(1,5,6). In high-income countries, such as the United States, the prevalence reported to be around 70-80% among women by the age of 50, with a higher incidence in Black women(1). In low and middle-income countries, the prevalence of uterine fibroids is less well documented but believed to be similarly high due to limited access to diagnostic services (6,7). In sub-Saharan Africa, the prevalence is estimated to be around 60-80%, with studies indicating a particularly high burden among women of African descent (8,9). In East Africa, the study done in Uganda showed that the prevalence of uterine fibroid is 28.2%(5). Tanzania, data on the exact prevalence of uterine fibroids are scarce, but hospital-based studies suggest a significant burden, with fibroids being a common indication for gynecological consultations (10).

The impact of uterine fibroids on women's health and quality of life can be profound. Globally, fibroids are a leading cause of gynecological morbidity, contributing to anemia, infertility, and complications during pregnancy (5,6,10). In high-income countries, fibroids are one of the most common reasons for hysterectomy, accounting for up to 40% of all such surgeries (11,12). In low and middle-income countries, the consequences are often more severe due to delayed diagnosis and limited access to effective treatments (7). In sub-Saharan Africa, uterine fibroids can lead to significant reproductive health issues, including severe menstrual bleeding, pelvic pain, and pregnancy complications, which can adversely affect women's economic and social well-being (13). In Tanzania, fibroids contribute to a high rate of gynecological surgeries and are a significant public health concern (10). Emerging as a standard of care option, uterine artery embolization is now used to manage symptomatic uterine fibroids and postpartum hemorrhage in Tanzania (14).

The exact etiology of uterine fibroids remains unclear, but several risk factors have been identified. Globally, genetic predisposition and hormonal factors, particularly estrogen and progesterone, play a crucial role in fibroid development (1). In high-income countries, lifestyle factors such as obesity, diet, and environmental exposures are also significant contributors (4). In low and middle-income countries, the risk factors include a combination of genetic, hormonal, and socio-economic factors, with limited access to healthcare exacerbating the condition(8). In sub-Saharan Africa, fibroids are more prevalent among women with early menarche, nulliparity, and higher body mass index (BMI)(8). In Tanzania, similar risk factors are observed, with additional challenges posed by limited healthcare resources and awareness (14).

Efforts to address the burden of uterine fibroids in sub-Saharan Africa, including Tanzania, involve a combination of medical, surgical, and minimally invasive treatments. Programs promoting awareness and early diagnosis are crucial in managing fibroids effectively (7). In Kenya, Rwanda, and Uganda, initiatives to improve access to gynecological care and advanced treatments like UAE are being implemented (15,16). In Tanzania, the focus is on enhancing healthcare infrastructure and training healthcare workers in advanced diagnostic and treatment

techniques, including UAE. Community-based education and outreach programs are also vital in improving awareness and early intervention for uterine fibroids (14).

Despite the efforts to address uterine fibroids in Tanzania, significant gaps remain. There is a lack of comprehensive data on the prevalence and impact of fibroids, which hampers effective planning and resource allocation (17). Additionally, there is limited access to advanced treatments like UAE, and a general lack of awareness among healthcare workers and patients about the benefits and availability of such options (14). The absence of standardized protocols for the management of uterine fibroids and inadequate training of healthcare professionals in minimally invasive techniques are also major challenges (14). These gaps highlight the need for targeted interventions to improve the management of uterine fibroids in Tanzania.

A suitably qualified and experienced interventional radiologist does the percutaneous, image-guided UAE technique. Embolization was once employed to lessen pelvic hemorrhage.(1) However, from 1995 UAE has been observed as a possible cure for menorrhagia concerning uterine fibroids. Prior to deciding on the procedure, appropriate diagnostic testing should be done to exclude pregnancy and most of gynaecological cancers.(1) Other contraindications are contrast medium allergy, renal insufficiency and coagulopathy.(1)

UAE procedure information is important in both patients and healthcare workers for a better decision-making process. Few studies have been done globally concerning knowledge and awareness of UAE (35) and no study has included patients and HCW’s assessment of knowledge as well as their attitudes and perceptions towards the procedure.

Despite its benefits and rising popularity, many patients are still unaware of the procedure. This lack of awareness/knowledge extends to healthcare providers as well as the system as revealed by a lack of developed standard plans for in-hospital care and follow-up, as well as processes for appropriate referral and assessment of suitable individuals on local and regional level in Tanzania.

Uterine fibroids are a prevalent and significant health concern for women globally, with a particular high burden in sub-Saharan Africa and Tanzania. The impact of fibroids on women's

health and quality of life is profound, and the available treatments vary in their invasiveness and effectiveness. Uterine Artery Embolization (UAE) offers a promising alternative to surgical interventions, preserving uterus and reducing recovery times. However, awareness and access to the UAE in Tanzania are limited, highlighting the need for increased education and improved healthcare infrastructure. This study aims to assess the knowledge, attitudes, and perceptions of healthcare workers and patients towards UAE at Muhimbili National Hospital, to inform strategies for improving the management of uterine fibroids in Tanzania.

1.2 Problem Statement

Uterine fibroids are prevalent among women in resource-constrained countries, causing symptoms such as heavy menstrual bleeding and pelvic pain, significantly affecting quality of life. Traditional surgical options like hysterectomy are common, but Uterine Artery Embolization (UAE) offers a minimally invasive alternative with benefits such as shorter recovery times and preservation of the uterus (1,4)

Despite these advantages, there is a substantial lack of awareness and utilization of UAE among healthcare workers and patients at Muhimbili National Hospital in Tanzania. Many patients are unaware of UAE as a treatment option, while healthcare workers, including gynecologists and general practitioners, lack comprehensive knowledge about the procedure's benefits, risks, and indications (14,17). This gap contributes to the continued preference for more invasive surgical treatments, such as hysterectomy, even though UAE could offer a less invasive and equally effective solution.

In Tanzania, uterine fibroids are a leading cause of gynecological consultations and surgeries. However, UAE remains underutilized due to limited availability in healthcare facilities and inadequate training programs for healthcare workers (14). The healthcare system's challenges, including resource limitations and access barriers to advanced medical technologies, further hinder the widespread adoption of UAE as a viable treatment option (18).

Remains a persistent knowledge gap among healthcare workers and patients, Tanzania's national referral hospital and a role model for healthcare institutions across Tanzania and sub-

Saharan Africa. Many patients are unaware of UAE as a viable treatment option for uterine fibroids, while healthcare workers, including gynecologists and general practitioners, often lack comprehensive knowledge about the procedure's benefits, risks, and indications (1,4). This limited awareness contributes to the prevalent use of more invasive surgical options like hysterectomy, despite the UAE offering a less invasive and equally effective alternative (19).

This study aimed to address these gaps by assessing the current knowledge, attitudes, and perceptions of the UAE among healthcare workers and patients at MNH. By identifying the gaps, it may be useful in future for the targeted interventions to enhance awareness and utilization of UAE.

1.3 Conceptual framework

Conceptual frameworks provide a theoretical foundation that helps organize and understand complex relationships between variables in a study. In this research, the conceptual framework is designed to explore the knowledge, attitudes, and perceptions regarding the UAE among healthcare workers and women diagnosed with uterine fibroids.

Knowledge on UAE: This variable encompasses the understanding and familiarity of healthcare workers and women diagnosed with uterine fibroids with UAE, including procedural details, indications, and contraindications.

Attitudes towards UAE: This variable reflects the beliefs, views, and opinions held by healthcare workers and women diagnosed with fibroids towards the safety, efficacy, and suitability of UAE as a treatment option for uterine fibroids.

Perceptions of UAE: This variable explores how healthcare workers and women diagnosed with fibroids perceive the benefits, risks, and overall outcomes associated with UAE compared to other treatment modalities.

Relationships between Variables:

Knowledge of UAE → Attitudes towards UAE: It hypothesized that a higher level of knowledge among healthcare workers and women diagnosed with fibroids regarding UAE will

positively influence their attitudes towards the procedure, regarding it as a viable treatment option.

Knowledge of UAE → Perceptions of UAE: The understanding and awareness of UAE expected to shape perceptions regarding its benefits and risks, with better-informed individuals potentially perceiving UAE more favorably.

Attitudes towards UAE ↔ Perceptions of UAE: There exists a bidirectional relationship where positive attitudes towards UAE may enhance favorable perceptions of its outcomes, and vice versa.

This framework outlines how demographic factors, knowledge, attitudes, and perceptions interrelate leading to underutilization of UAE procedure.

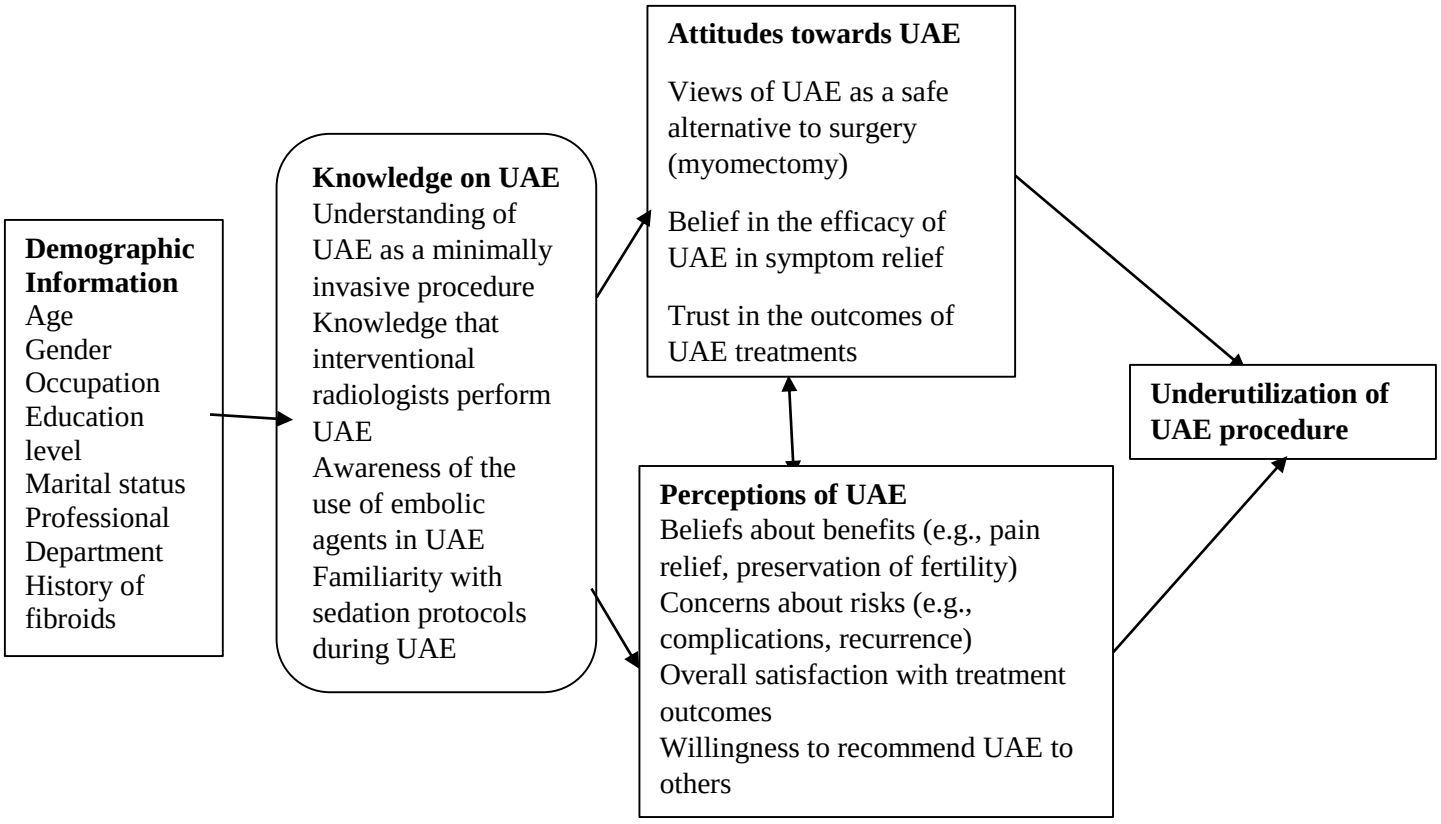


Figure 1: Conceptual framework

SOURCE: Own constructed based on study objectives and previous findings

1.4 Rationale

This study is crucial to address the gap in knowledge and awareness of UAE at MNH, a pivotal institution shaping healthcare practices in Tanzania and beyond. Through assessing the current understanding, attitudes, and perceptions of UAE among healthcare workers and patients, the study identified specific areas where education and intervention needed. This research will provide valuable insights for developing targeted educational programs, integrating UAE into standard treatment protocols, and advocating for improved access to minimally invasive treatment options. Ultimately, bridging these knowledge gaps can lead to enhanced patient care, reduced reliance on invasive surgeries, and improved health outcomes for women with uterine fibroids in Tanzania and similar healthcare settings across sub-Saharan Africa.

1.5 Research questions

1.5.1 Main research question

What is the knowledge, attitude and perception towards uterine artery embolization as a treatment option for uterine fibroid among women diagnosed with uterine fibroid and healthcare workers at MNH?

1.5.2 Specific research questions

1. What is the knowledge of women diagnosed with uterine fibroid and healthcare workers on uterine artery embolization as a treatment option for uterine fibroid attending MNH?
2. What is the attitude of women diagnosed with uterine fibroid and healthcare workers towards uterine artery embolization as a treatment option for uterine fibroid attending MNH?
3. What is the perception of women diagnosed with uterine fibroid and healthcare workers towards uterine artery embolization as a treatment option for uterine fibroid attending MNH?

1.6 Research objectives

1.6.1 Broad objective

To assess knowledge, attitude and perception towards uterine artery embolization as a treatment option for uterine fibroid among women diagnosed with uterine fibroid and healthcare workers at MNH.

1.6.2 The specific objectives

1. To assess knowledge of women diagnosed with uterine fibroid and healthcare workers on uterine artery embolization as a treatment option for uterine fibroid attending MNH from December to March, 2024.
2. To determine the attitudes of women diagnosed with uterine fibroid and healthcare workers towards uterine artery embolization as a treatment option for uterine fibroid attending MNH from December to March, 2024.
3. To determine the perceptions of women diagnosed with uterine fibroid and healthcare workers towards uterine artery embolization as a treatment option for uterine fibroid attending MNH from December to March, 2024.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Overview

Literature search for this study was conducted through reputable search engines such as Research for life (R4L) Portal, Google Scholars, PubMed, and Jane (20–23). The key terms UAE (uterine artery embolization), UFE (uterine fibroid embolization), knowledge, awareness, attitude and perceptions. The review is structured into three sub-sections based on the study objectives.

2.2 UAE knowledge

Globally, the knowledge of UAE among healthcare providers and patients is influenced by advancements in medical technologies and access to information. Ravina et al. (1995) were pioneers in introducing UAE as a minimally invasive treatment for uterine fibroids in France, which significantly contributed to the initial knowledge base among healthcare providers (24). This early research demonstrated that UAE could effectively reduce fibroid symptoms, thus encouraging gynecologists to consider it as a viable treatment option. A suitably qualified and competent interventional radiologist can conduct the UAE, a minimally invasive vascular radiologic technique. Over a long period, pelvic bleeding reduced via embolization. UAE has only been utilized as a possible treatment for symptomatic uterine fibroids since 1995. Prior to the procedure pregnancy and most gynecological cancers must be excluded. Other contraindications are contrast medium allergy, renal insufficiency and coagulopathy (14).

In the United States, a study last updated by Andrews Rezk et al. (2023) highlighted that despite the proven efficacy of UAE, comprehensive knowledge about the procedure remains limited among healthcare providers (25). This gap in knowledge restricts the frequency with which UAE is recommended to patients. Similarly, in a study conducted by Goodwin et al. (2014), only a fraction of gynecologists was fully aware of UAE's benefits and long-term outcomes, emphasizing the need for continued education and training in this area (26). Also a study done

in Amsterdam revealed that, on a local and regional level, there are no developed standard protocols for the proper referral and evaluation of potential patients, as well as strategies for in-hospital care (27). UK NICE guidelines (evidence-based recommendations for health and care in England) recommend that uterine artery embolization (UAE) can be taken into account as first-line therapy for symptomatic uterine fibroids under 3cm. In addition, the 2007 guidelines advise UAE for menorrhagia caused by significant fibroid-related bleeding in women who want to avoid surgery and/or preserve their uterus. However there is no study overseeing the knowledge of the patients with regards to UAE procedure.

A study conducted in Kenya (2020) to determine the long-term health related quality of life, symptom severity and follow up procedures after UAE. The study included 77 participants, and advised on providing adequate counseling to patients concerning subsequent follow up procedures and effects on fertility to guide them to make an informed choice (28).

In Tanzania, specific studies on UAE knowledge among healthcare workers and women are scarce. However, the general trend in Sub-Saharan Africa suggests that there is a critical need for educational initiatives and training programs to enhance the understanding and adoption of UAE among healthcare professionals. This can be inferred from the overall limited knowledge and acceptance of advanced medical procedures in the region.

2.3 Attitude on UAE

Attitudes towards UAE among healthcare providers and patients globally are influenced by clinical evidence and personal experiences with the procedure. Moss et al. (2007) in the United States found mixed attitudes among 200 gynecologists, with 65% hesitant to recommend UAE due to concerns about long-term efficacy and potential complications. However, the remaining 35% viewed it as a promising alternative to more invasive surgeries, particularly for patients seeking fertility preservation (29).

The study done by Netter et al. (2019) found a growing acceptance of UAE among interventional radiologists, though gynecologists remained skeptical. The study highlighted

that while interventional radiologists appreciated the minimally invasive nature of UAE, gynecologists often preferred traditional surgical methods due to familiarity and concerns about long-term outcomes (30).

Weighing the risks and benefits of UAE compared to the medical and surgical interventions, Gupta JK, et al showed that despite a greater risk of post-procedural problems and additional re-interventions in the UAE arm of the research, the satisfaction rates between the women who underwent surgery (myomectomy or hysterectomy) versus UAE were not significantly different (13). UAE has proved to be a safe alternative and efficient as compared to more invasive surgical procedures in terms of a shorter hospital stay, a faster return to normal activity, and a lower chance of needing a blood transfusion(26).(13,14). Nevertheless, it has a significant risk of re-intervention in the long run. This has been estimated to be at 7% in the first 12 months and 10-25% at 5 years follow up (16,31). Patients' attitudes towards UAE literature also are scarce.

In Tanzania, there is a need for more comprehensive studies on healthcare providers' and patients' attitudes towards UAE. However, based on regional trends, it is likely that attitudes towards UAE are influenced by limited knowledge and exposure to the procedure. Increasing awareness and providing detailed information about UAE could help improve attitudes and acceptance of this treatment option.

2.4 Perceptions on UAE

Post procedure assessment has shown that patients perceive that post UAE pain is severe or poorly managed by the physician performing these procedures. This has caused some primary care physicians to fail to include UAE among the patients' options or to drive patients away from this procedure (32).

Regarding the health care workers' perception and attitude towards UAE, there has been a changing trend among gynecologists. This was demonstrated by a Telephone survey study done in 2 phases in the United States; primary survey in 1998-2000 and secondary survey done

in 2000-2002. From these surveys improvement in gynecologists' favorable opinion was demonstrated from 33% to 76% in 2000 and 2002 respectively also the number of gynecologist's offering UAE improved from 5% in 2000 to 38% in the year 2000(33). Most patients whose gynecologists first disapproved of the UAE did not return to those doctors. Sixty two percent of individuals claimed they used the internet to do their research about the procedure, despite knowing about the UAE from the gynecologist. Participants claimed to have internet connection at home in 71% of cases.

In Tanzania, there is limited research on patients' and healthcare providers' perceptions of the UAE. Based on regional trends, improving the quality of information and counseling provided by healthcare providers could significantly enhance the perception and acceptance of UAE as a viable treatment option for uterine fibroids.

CHAPTER THREE

3.0 MATERIALS AND METHODS

3.1 Study design

This is a prospective cross-sectional study using a quantitative approach conducted at Muhimbili National Hospital (MNH), specifically within the Radiology and Obstetrics and Gynaecology departments. The study aimed to assess the knowledge, attitudes, and perceptions towards Uterine Artery Embolization (UAE) among women diagnosed with uterine fibroids and the healthcare workers managing them. A convergent parallel design chosen for analysis of both quantitative and qualitative data simultaneously and were analyzed separately. The design aims to create mutually exclusive sets of data that inform each other between the participant's in regards to knowledge, attitudes, and perceptions about the UAE.

3.2 Study area

The study was conducted at Muhimbili National Hospital (MNH), located in the Upanga area within the Ilala Municipality of Dar es Salaam, Tanzania. MNH, as the largest and most specialized national referral hospital in the country, has an admission capacity exceeding 1000 patients (34). The hospital provides advanced medical services across various specialties, including Radiology and Obstetrics and Gynaecology, which were integral to this study.

In the six months prior to the study, the Gynaecology Clinic at MNH managed 593 new cases and 667 follow-up cases of uterine fibroids, culminating in a total of 981cases. Within the same period, the Intervention Radiology Clinic handled 17 new cases and 8 follow-up cases, with 18 cases specifically involving uterine fibroid embolization (UAE) procedures.

MNH is staffed with highly skilled personnel across its departments. The Radiology Department is home to 5 Super Specialists, 3 Fellows, 7 Radiologists, 55 Radiology Residents, 18 Radiographers, and 3 Sonographers, along with 8 Radiology Nurses. The Obstetrics and Gynaecology Department comprises 7 Consultants, 19 Specialists, 4 Registrars, and 51 Obstetrics and Gynaecology Residents, supported by 8 nurses in the Gynaecology Clinic.

These departments' collective expertise and resources ensure comprehensive care for patients with uterine fibroids and facilitate the advanced intervention techniques necessary for procedures like UAE.

3.3 Study population

Patients Diagnosed with Uterine Fibroids:

This group comprised women diagnosed with uterine fibroids who were attending the Radiology and Obstetrics and Gynaecology departments at Muhimbili National Hospital (MNH) during the study period. These patients were included regardless of their treatment method, encompassing those undergoing various forms of management for uterine fibroids, whether it was medical treatment, surgical interventions, or follow-up care. This approach allowed for a comprehensive assessment of the knowledge, attitudes, and perceptions towards Uterine Artery Embolization (UAE) among a broader patient demographic, not limited to those who had undergone UAE.

Healthcare workers:

The second group included healthcare workers working in the Radiology and Obstetrics and Gynaecology departments at MNH. This group covered a wide range of professionals, including doctors, nurses, sonographers, and radiographers, who are involved in the diagnosis, treatment, and management of patients with uterine fibroids. Including this group was crucial to understanding the professional knowledge and attitudes towards UAE within the healthcare community at MNH.

3.4 Eligible criteria

3.4.1 Inclusion Criteria

Patients:

Women diagnosed with uterine fibroids, attending either the Radiology or Obstetrics and Gynaecology departments at MNH during the study period.

Those who provided their consent to participate in the study regardless of whether they had undergone UAE, or being treated, or monitored using other methods.

Healthcare workers:

All healthcare professionals working in the Radiology and Obstetrics and Gynaecology departments at MNH during the study period.

This included doctors, nurses, radiologists, radiographers, and other staff involved in the management of uterine fibroids.

Age group

The age of participants included in the study were from 18 years to below 60 years with the interval of 9 years in each group thus from 18 – 27, 28 – 37, 38 – 47, and 48 – 57 years.

3.4.2 Exclusion Criteria

Patients:

Women under 18 years old, as this study focused on adult patients who can independently provide consent and whose condition and treatment considerations might differ significantly from younger individuals.

Women with cognitive impairments or language barriers that would prevent them from understanding or completing the questionnaire, as this could affect the reliability of the data collected.

Patients with a history of gynecological cancers or other significant comorbidities that could confound their views or treatment options related to UAE, ensuring the study remained focused on fibroids and their management.

Healthcare workers:

Those who are not directly involved in the care or management of uterine fibroids, to focus on those with relevant professional insights into UAE.

Healthcare workers who were unavailable during the study period, such as those on leave or sabbatical, to ensure the data represented the current on-duty staff.

3.5 Sample size determination

For Patients:

The sample size for women diagnosed with uterine fibroids and undergoing UAE was determined using the **Cochran's formula** for estimating sample sizes for proportions. This formula is widely used in health research to determine an appropriate sample size based on expected proportions and desired confidence levels.

The formula given by:

$$n = \frac{Z^2 P(100 - P)}{\varepsilon^2}$$

Where:

n = estimated sample size,

Z = standard normal deviate at 95% confidence level, which is 1.96,

P = estimated proportion of the population with the characteristic of interest (knowledge on UAE). Based on the pilot study findings, the proportion of women with good knowledge about the UAE was 14% (P=14%).

ε = margin of error, which is adjusted to 6.4%.

Substituting the values into the formula:

$$n = \frac{1.96^2 * 14(100-14)}{6.4^2} \approx 113$$

Therefore, the initial calculated sample size was approximately 113 women. Considering an addition of 14 (≈ 10%) for Non-Response, thus a sample size of 127 women diagnosed with

fibroids were included in the study. This adjustment ensures that the study retains sufficient power and representation, even if some information bias.

For Healthcare workers:

For healthcare workers, the sample size was determined. A simplified Yamane formula was used to calculate the desired sample given by: -

$$n = \frac{N}{1 + N(e^2)}$$

Where:

n is the required sample size,

N is the population size (total number of healthcare workers in specified departments: Radiology and Obstetrics and Gynaecology),

e is the level of precision assumed, set at 5%.

The goal was to ensure representation across different professional roles within each department:

Radiology Department:

Total population $N_{radiology}$=99

Categories: 5 super specialists, 3 fellows, 7 radiologists, 55 residents, 18 radiographers, 3 sonographers, and 8 nurses.

Obstetrics and Gynecology Department:

Total population N_{OBGY}=89

Categories: 7 consultants, 19 specialists, 4 registrars, 51 residents, and 8 nurses.

Combined, the total population size N=188 HCWs were identified from these departments.

Given e=0.05 (5% precision level), the calculation was:

Thus, $n = \frac{188}{1+188(0.05^2)} \approx 128$. However, 34 HCWs were excluded from the analysis due to eligibility criteria, resulting in a final sample size of 94 healthcare professionals included in the study's analysis.

3.6 Sampling methods

For patients:

The sampling approach for women diagnosed with uterine fibroids at Muhimbili National Hospital (MNH) employed a non-probability sampling method. Firstly, a list of all eligible patients diagnosed with uterine fibroids attending the Radiology and Obstetrics and Gynaecology departments of MNH during the study period compiled. The total number of patients visiting these departments for fibroid-related care over the past six months, including both new cases and follow-up visits, was recorded. From this comprehensive list, a convenient sampling technique was applied, whereby anyone among in the list who was willing to participate in the research was included in the study. This method ensured a representative sample of patients undergoing various treatments and management strategies for uterine fibroids at MNH, capturing a diverse range of experiences and outcomes.

For healthcare workers:

The sampling method for healthcare workers (HCWs) at MNH focused on including professionals directly involved in the care and management of patients with uterine fibroids, and not particularly those participating in uterine artery embolization (UAE) procedures. A census of all healthcare workers in the Radiology and Obstetrics and Gynaecology departments was conducted to establish the total number of eligible HCWs. This included specialists, consultants, registrars, residents, radiologists, radiographers, sonographers, and nurses working in these departments. From this population, a sample size of 94 HCWs were selected using purposive sampling to ensure representation across different professional roles involved in the diagnosis, treatment, and care of patients with uterine fibroids. This sampling strategy aimed to gather insights into the knowledge, attitudes, and perceptions of healthcare workers regarding UAE as a treatment option for uterine fibroids at MNH.

3.7 Study variables and measurements

3.7.1 Variables:

Key Areas	Variables
Demographic Information	Age, gender, occupation, education level, marital status, professional, department, history of fibroids
Knowledge on UAE	Understanding of UAE as a minimally invasive procedure, performed by interventional radiologists, use of embolic agents, sedation protocols
Attitudes towards UAE	Views of UAE as a safe alternative to surgery (myomectomy), efficacy in symptom relief, trust in UAE outcomes
Perceptions of UAE	Beliefs about benefits (e.g., pain relief, preservation of fertility), concerns about risks (e.g., complications, recurrence), overall satisfaction with treatment outcomes, willingness to recommend to others

3.8 Measurements:

Knowledge Assessment: Respondents were scored based on their correct responses to knowledge items related to UAE. An adequate level of average good knowledge was defined as achieving around 70% or more correct responses across knowledge items.

Attitude Assessment: Attitudes were measured using Likert scale questions where respondents indicated their agreement or disagreement with statements about UAE.

Perception Assessment: Perceptions were evaluated through questions asking respondents to rate their beliefs about various aspects of UAE on a Likert scale.

3.9 Data collection methods

Trained research assistants conducted face-to-face interviews with the participants using the structured questionnaires. This approach allowed for clarification of questions and ensured uniformity in data collection procedures across all participants. The interviews were conducted in a private and conducive environment to encourage open and honest responses.

3.9.1 Data collection tools

The questionnaires were meticulously developed based on a review of relevant literature and consultation with subject matter experts. They were structured to capture socio-demographic information, as well as specific aspects related to knowledge, attitudes, and perceptions towards the UAE. Questions were designed to assess participants' understanding of UAE procedures, indications, contraindications, and their attitudes towards its use as a treatment option.

3.10 Validity and Reliability of the Study Tool

3.10.1 Validity:

The validity of the study tool was ensured through several methods. Content validity was established by reviewing the questionnaire items against existing literature and expert opinions to ensure that all relevant aspects of UAE knowledge, attitudes, and perceptions were adequately covered. Additionally, the questionnaire was pilot-tested among a small sample of participants to assess clarity, relevance, and comprehensiveness of the questions.

3.10.2 Reliability:

To ensure reliability, internal consistency of the questionnaire was evaluated using Cronbach's alpha coefficient. This statistical measure assesses the extent to which questionnaire items consistently measure the same construct. A Cronbach's alpha value above 0.70 was considered acceptable, indicating good reliability of the questionnaire. Furthermore, test-retest reliability was assessed by administering the questionnaire to a subset of participants on two separate occasions, with a reasonable time interval between tests, to ensure stable responses over time.

3.11 Data analysis

The data analysis for this study was conducted using Stata 26 statistical software. Initially, descriptive statistics were computed to summarize the demographic characteristics of both healthcare workers and women diagnosed with uterine fibroids. This included calculating

means and standard deviations for continuous variables such as age, and frequencies and percentages for categorical variables such as gender, marital status, education level, and occupational status. Further analysis per specific objectives as described below.

Knowledge Analysis: Descriptive statistics such as frequencies and percentages were computed to summarize the level of knowledge about UAE among both groups. Variables included understanding of the procedure (minimally invasive nature, performed by interventional radiologists, procedure details), indications (symptomatic fibroids, fertility preservation), and contraindications (infections, pregnancy). Average scores were calculated to determine adequate knowledge (around 70% correct responses).

Attitude Analysis: Likert scale values ranging 1 to 5 for strongly disagree to strongly agreed was summarized into frequency and percentage and the median. Chi-square tests were employed to compare attitudes towards UAE between healthcare workers and patients. Statements included the attitude on UAE as a safe alternative to hysterectomy, its impact on future pregnancies, and its effectiveness in reducing symptoms like pain and bleeding. Median scores were used to interpret the strength of agreement or disagreement.

Perception Analysis: Frequencies and percentages were used to analyze perceptions of UAE effectiveness and risks, including its impact on fertility, potential complications, and preference for recommending UAE to others. Chi-square tests were applied to identify significant differences in perceptions between healthcare workers and patients.

Statistical Significance: A significance level of $\alpha = 0.05$ was used throughout the analysis to determine statistical significance, ensuring robustness in interpreting the findings and understanding the factors shaping attitudes and perceptions towards UAE among the study participants.

3.12 Ethical Consideration

The ethical considerations for this study were upheld in accordance with guidelines and standards set forth by the institutional review boards (IRBs) of Muhimbili University of Health

and Allied Science (MUHAS). Ethical approval was obtained from [Ref. No. DA 282/298/01.C/1969] prior to commencing data collection. Informed consent was obtained from all participants, ensuring they were fully informed about the study's purpose, procedures, potential risks, and benefits. Participants were assured of confidentiality, with all data anonymized and stored securely. They were also informed of their right to withdraw from the study at any point without reprisal. The study adhered to principles of beneficence, respect for persons, and justice throughout the research process, prioritizing the welfare and rights of participants.

3.13 Limitations and mitigations

Potential limitations included the reliance on self-reported data, which may be subject to recall bias or social desirability bias. Efforts were made to mitigate these biases through structured questionnaires and trained interviewers.

CHAPTER FOUR

4.0 RESULTS

4.1 Sociodemographic Characteristics of the Participants

The study included 221 participants; 94(42.5%) Healthcare workers and 127(57.5%) women diagnosed with uterine fibroids, with an overall mean age of 33.99 years (SD ± 7.99). Majority (71.5%) were in the age group 35+, females dominating (81.9%) and most participants (63.8%) were living with a partner. All (100%) HCWs had college or university education however, the majority (59.8%) of women diagnosed with fibroids had secondary education. Occupation wise all (100%) HCWs were employed and only few (19.7%) women diagnosed with fibroids were employed. All shown in Table 1.

Table 1: Sociodemographic characteristics among ealthcare workers and women diagnosed with fibroid attending MNH (N=221)

Variable	Healthcare Workers (N=94) n(%)	Women with Fibroid (N=127) n(%)	Total (N=221) n(%)
Age (mean ± SD)	33.5 ± 8.1 years	34.7 ± 8.0 years	33.99 ± 7.99
Age Group			
<35	19 (20.2)	44 (34.6)	63 (28.5)
35+	75 (79.8)	83 (65.4)	158 (71.5)
Gender			
Male	40 (42.6)	0(0.0)	40 (18.1)
Female	54 (57.4)	127 (100.0)	181 (81.9)
Marital Status			
Living with partner	61 (64.9)	80 (63.0)	141 (63.8)
Living without partner	33 (35.1)	47 (37.0)	80 (36.2)
Education Level			
Primary/below	0 (0.0)	30 (23.6)	30 (13.6)
Secondary	0 (0.0)	76 (59.8)	76 (34.4)
College/University	94 (100.0)	21 (16.5)	115 (52.0)
Occupational Status			
Employed	94 (100.0)	25 (19.69)	119 (53.8)
Unemployed	0 (0.0)	102 (80.31)	102 (46.2)

4.2 Departmental and professional distribution of the Healthcare workers

Among the Healthcare workers, the distribution between departments was nearly even, with (52.1%:47.9%) from the Obstetrics and Gynecology department and the Radiology department respectively. Among the professionals, the majority (56.4%) were from medical doctors as shown in the table 2 below.

Table 2: Departmental and Profession distribution of attended Healthcare workers participants at MNH (N=94)

Variable			**Number (%)**
Department			
Obstetrics & Gynecology			49(52.1)
Radiology			45(47.9)
Total			**94(100)**
Profession			
	Obstetrics & Gynaecology	Radiology	
Medical specialists	5	13	18(19.2)
Medical doctors(Registrar and Resident)	37	16	53(56.4)
Allied health professionals(Radiographers and sonographers)	0	12	12(12.8)
Nurses	7	4	11(11.7)
Total			**94(100)**

4.3 Knowledge of Uterine Artery Embolization

4.3.1 Awareness of Uterine Artery Embolization (UAE)

The results showed that all (100.0%) of the participants (Healthcare workers and women diagnosed with fibroid) were aware (heard) of the uterine artery embolization (UAE) as in the Table 3 below.

Table 3: Awareness of Uterine Artery Embolization (UAE) among Healthcare workers and women with fibroid attending MNH (N=221)

Ever heard of UAE	Health Workers (N=94) n(%)	Women with Fibroids (N=127) n(%)	Overall (N=221) n(%)	Chi-square (χ^2)	p-value
Yes	94(100.0)	127(100.0)	221(100.0)	a	
Total	**94**	**127**	**221**		

a. No statistical data computed because awareness of UAE is a constant

4.3.2 Source of Information about uterine artery embolization (UAE)

Overall participants more than half get information about the UAE procedure from healthcare workers (53%) and more than a third from the internet (43%). HCW's were more likely to get information from professional sources meanwhile, patients had lower engagement with professional and digital sources thus; medical symposiums (74.0% vs. 4.3%), conferences (81.6% vs. 6.1%), and hospital meetings (69.7% vs. 4.3%) all with P<0.05. (Table 4)

Table 4: Source of Information about Uterine Artery Embolization (UAE) among health workers and women with fibroid attending MNH (N=221)

Source		Health Worker n(%)	Women with Fibroid n(%)	Overall n(%)	Chi-square (χ^2)	p-value
Healthcare providers	Yes	76(89.4)	36(29.3)	112(53.8)	73.160	0.000
	No	9(10.6)	87(70.7)	96(46.2)		
	Total*	**85**	**123**	**208**		
Family member	Yes	11(15.3)	24(15.3)	35(18.0)	0.591	0.442
	No	61(84.7)	98(80.3)	159(82.0)		

	Total*	**72**	**122**	**194**		
Internet or YouTube	Yes	59(75.6)	27(22.1)	86(43.0)	55.584	0.000
	No	19(24.4)	95(77.9)	114(57.0)		
	Total*	**78**	**122**	**200**		
Media outlet	Yes	16(22.9)	10(8.5)	26(13.9)	7.492	0.006
	No	54(77.1)	107(91.5)	161(86.1)		
	Total*	**70**	**117**	**187**		
Television	Yes	13(18.1)	9(7.8)	22(11.7)	4.559	0.033
	No	59(81.9)	107(81.9)	166(88.3)		
	Total*	**72**	**116**	**188**		
Radio	Yes	12(16.9)	8(6.9)	20(10.7)	4.616	0.032
	No	59(83.1)	108(93.1)	167(89.3)		
	Total*	**71**	**116**	**187**		
Newspaper	Yes	12(16.7)	7(6.1)	19(10.2)	5.429	0.020
	No	60(83.3)	108(93.9)	168(89.8)		
	Total*	**72**	**115**	**187**		
Hospital meetings	Yes	53(69.7)	5(4.3)	58(30.4)	92.528	0.000
	No	23(30.3)	110(95.7)	133(69.6)		
	Total*	**76**	**115**	**191**		
Clinical consultation	Yes	49(65.3)	7(6.1)	56(29.6)	76.020	0.000
	No	26(34.7)	107(93.9)	133(70.4)		
	Total*	**75**	**114**	**189**		
Medical symposium	Yes	57(74.0)	5(4.3)	62 (32.0)	103.904	0.000
	No	20(26.0)	112(95.7)	132(68.0)		
	Total*	**77**	**117**	**194**		

Conferences	Yes	62(81.6)	7(6.1)	69 (36.1)	113.015	0.000
	No	14(18.4)	108(93.9)	122(63.9)		
	Total *	**76**	**115**	**191**		
Hospital advert	Yes	36(50.7)	9(8.0)	45(24.5)	43.111	0.000
	No	35(49.3)	104(92.0)	139(75.5)		
	Total*	**71**	**113**	**184**		
Medical training	Yes	61(82.4)	7(6.0)	68(35.8)	114.746	0.000
	No	13(17.6)	109(94.0)	122(64.2)		
	Total*	**74**	**116**	**190**		

**** One participant may respond to more than one variable***

4.3.3 Knowledge of UAE Procedures in general

In overall knowledge less than two third knows UAE as a minimally invasive procedure (47.3%) and being performed by interventional radiologists (52.6%). Healthcare workers showed a significantly better understanding of the detailed mechanisms and sedation used in the UAE. For example, 60 (81.1%) of Healthcare workers knew that moderate sedation is used during the procedure, compared to only 12 (10.1%) of women with fibroids (p-value 0.000). Additionally, the understanding that tiny particles are injected to cut off blood flow to fibroids, causing them to shrink, was correctly identified by 75 (92.6%) of Healthcare workers versus just 13 (10.7%) of women with fibroid (p-value 0.0001). This indicates that while basic awareness of UAE is high, detailed knowledge is much lower among patients compared to healthcare professionals (Table 5).

Table 5: General Knowledge of Uterine Artery Embolization among health workers and women with fibroid attending MNH (N=221)

About UAE		Health Worker n(%)	Women with Fibroid n(%)	Overall n(%)	Chi-square (χ^2)	p-value
Minimally invasive procedure	Yes	72(88.9)	24(19.7)	96(47.3)	93.564	0.000
	No	9(11.1)	98 (80.3)	107(52.7)		
	Total*	**81**	**122**	**203**		
UAE is a gynecologic procedure	Yes	33(40.2)	18(15.0)	51(25.2)	16.448	0.000
	No	49(59.8)	102(85.0)	151 (74.8)		
	Total*	**82**	**120**	**202**		
Performed by interventional radiologist	Yes	81(93.1)	29(23.8)	110(52.6)	97.921	0.000
	No	6(6.9)	93(76.2)	99 (47.4)		
	Total*	**87**	**122**	**209**		
Accessing arteries and using equipment	Yes	72(91.1)	13(10.9)	85(42.9)	124.696	0.000
	No	7(8.9)	106(89.1)	113(57.1)		
	Total*	**79**	**119**	**198**		
Tiny particles injected into blood vessels	Yes	61(79.2)	7(5.8)	68(34.3)	112.539	0.000
	No	16(20.8)	114(94.2)	130(65.7)		
	Total*	**77**	**121**	**198**		
Particles cut off blood flow to fibroids	Yes	75(92.6)	13(10.7)	88(43.3)	133.082	0.000
	No	6(7.40)	109(89.3)	115(56.7)		
	Total*	**81**	**122**	**203**		
Uses moderate sedation	Yes	60(81.1)	12(10.1)	72 (37.3)	98.333	0.000
	No	14(18.9)	107(89.9)	121(62.7)		
	Total*	**74**	**119**	**193**		

**** One participant may respond to more than one variable***

4.3.4 Knowledge on indications for Uterine Artery Embolization

In terms of indications, the symptomatic uterine fibroid is known by 48.3% and a need to preserve the uterus by 48.5% in overall participants. Less than 50% know that the need to preserve fertility and use in treating postpartum hemorrhage is among the indications of UAE 99(48.5) and 81(40.9%) respectively. There were similarly wide gaps in knowledge about UAE's indications for adenomyosis was 39(47.0) in health workers and 9(7.6) in women with uterine fibroid, (p-value 0.000). These findings suggest that in overall there is low understanding of the various clinical scenarios in which UAE can be beneficial (Table 6)

Table 6: Knowledge on Symptoms and condition Indications for Uterine Artery Embolization among health workers and women with fibroid attending MNH (N=221)

Indication		Health Worker n(%)	Women with Fibroid n(%)	Overall n(%)	Chi-square (χ^2)	p-value
Symptomatic uterine fibroid	Yes	78(90.7)	23(18.7)	101(48.3)	105.063	0.000
	No	8(9.3)	100 (81.3)	108(51.7)		
	Total*	**86**	**123**	**209**		
Postpartum haemorrhage	Yes	62(72.1)	15(12.5)	77(37.4)	76.008	0.000
	No	24(27.1)	105(87.5)	129(62.6)		
	Total*	**86**	**120**	**206**		
Adenomyosis	Yes	39(47.0)	9(7.6)	48(23.4)	46.261	0.000
	No	44(53.0)	109(92.4)	153(76.1)		
	Total*	**83**	**118**	**201**		
A need to keep the uterus	Yes	78(92.9)	21(17.5)	99(48.5)	112.335	0.000
	No	6(7.1)	99(82.5)	105(51.5)		
	Total*	**84**	**120**	**204**		
A need to preserve fertility	Yes	68(85.0)	13 (11.0)	81(40.9)	107.952	0.000
	No	12(15.0)	105 (89.0)	117(59.9)		
	Total*	**80**	**118**	**198**		

Very young female	Yes	55(68.8)	13 (10.9)	68(34.2)	71.113	0.000
	No	25(31.3)	106 (89.1)	131(65.8)		
	Total*	**80**	**119**	**199**		
Old aged female	Yes	21(26.3)	14 (11.7%)	35(17.5)	7.071	0.008
	No	59(73.8)	106 (88.3)	165(82.5)		
	Total*	**80**	**120**	**200**		
Profuse menstruation	Yes	52(64.2)	16(13.2)	68(33.7)	56.456	0.000
	No	29(35.8)	105(86.8)	134(66.3)		
	Total*	**81**	**121**	**202**		
Prolonged menstruation	Yes	54(66.7)	14(11.6)	68(33.7)	65.956	0.000
	No	27(33.3)	107(88.4)	134(66.3)		
	Total*	**81**	**121**	**202**		
Dysmenorrhoea	Yes	46(57.5)	10(8.3)	56(28.0)	57.556	0.000
	No	34(42.5)	110(91.7)	144(72.0)		
	Total*	**80**	**120**	**200**		
Dyspareunia	Yes	28(35.4)	10 (8.3)	38(19.1)	22.662	0.000
	No	51(64.6)	110 (91.7)	161(80.9)		
	Total*	**79**	**120**	**199**		
Frequent urination	Yes	23(29.9)	8(6.8)	31(16.0)	18.349	0.000
	No	54(70.1)	109(93.2)	163(84.0)		
	Total*	**77**	**117**	**194**		
Urinary retention	Yes	33(42.9)	7(6.0)	40(20.6)	38.578	0.000
	No	44(57.1)	110(94.0)	154(79.4)		
	Total*	**77**	**117**	**194**		
Constipation	Yes	31(41.3)	5 (4.5)	36(19.5)	38.508	0.000
	No	44(58.7)	105(95.5)	149(80.5)		
	Total*	**75**	**110**	**185**		

**** One participant may respond to more than one variable***

4.3.5 Knowledge of Contraindicating Uterine Artery Embolization (UAE)

The contraindications of it was known in more than half of overall participants, thus pregnancy, allergic to contrast media and uncorrectable coagulopathy by 70.9%, 67.6% and 66.0% respectively. Health workers have some knowledge of doubt on diagnosis 51(69.9) and uterine or cervical carcinoma 43(60.6) both with p-value 0.000. Majority 110(86.6%) of women with uterine fibroid do not have knowledge of contraindication of uterine artery embolization in comparison to health workers 29(34.1%) which was statistically significant. (Table 7).

Table 7: Knowledge of Contraindicating for Uterine Artery Embolization (UAE) among health workers and women with fibroid attending MNH (N=221)

Contraindication		Health Worker n(%)	Women with Fibroid n(%)	Overall n(%)	Chi-square (χ^2)	p-value
Genital tract infection	Yes	29(41.4)	11(31.4)	40(38.1)	0.989	0.032
	No	41(58.6)	24(68.6)	65(61.9)		
	Total*	**70**	**35**	**105**		
Pregnancy	Yes	62(82.7)	16(45.7)	78(70.9)	15.797	0.000
	No	13(17.3)	19(54.3)	32(29.1)		
	Total*	**75**	**35**	**110**		
Uterine or cervical carcinoma	Yes	43(60.6)	8(22.2)	51(47.7)	14.077	0.000
	No	28(39.4)	28(77.8)	56(52.3)		
	Total*	**71**	**36**	**107**		
Doubts about diagnosis	Yes	51(69.9)	9(25.7)	60(44.4)	18.675	<0.001
	No	22(30.1)	26(74.3)	48(44.4)		
	Total*	**73**	**35**	**108**		
Allergy to contrast media	Yes	55(76.4)	18(50.0)	73(67.6)	7.630	0.006
	No	17(23.6)	18(50.0)	35(32.4)		
	Total*	**72**	**36**	**108**		
Uncorrected coagulopathy	Yes	60(84.5)	10(28.6)	70(66.0)	32.705	0.000
	No	11(15.5)	25(71.4)	36(34.0)		
	Total*	**71**	**35**	**106**		

No knowledge on contraindication	Yes	29(34.1)	110(86.6)	139(65.6)	62.156	0.000
	No	56(65.9)	17(13.4)	73(34.4)		
	Total*	**85**	**127**	**212**		

**** One participant may respond to more than one variable***

4.3.6 Knowledge on the procedure of uterine artery embolization

The procedure was known by more than 50% of all participants that there is, the use of angio suite 86(75.4%), use of moderate sedation 66(57.4%), a small needle used to access the artery 60(55.0%), a small wire used to exchange needle to maintain the access 57(52.3%) and particles block blood supply to the fibroid 65(57.5%). Patients 104 (83.2%) compared to health care workers 34 (41.5%) accept that they have no knowledge on uterine artery embolization procedures which is statistically significant p-value 0.000 (Table 8).

Table 8: Knowledge of procedure for Uterine Artery Embolization (UAE) among health workers and women with fibroid attending MNH (N=221)

Procedure		**Health Worker n(%)**	**Women with Fibroid n(%)**	**Overall n(%)**	**Chi-square (χ^2)**	**p-value**
Use of Angio-suite or fluoroscopy guidance	Yes	68(87.2)	18(50.0)	86(75.4)	18.376	0.000
	No	10(12.8)	18(50.0)	28(24.6)		
	Total*	**78**	**36**	**114**		
A very small needle accesses the artery	Yes	51(69.9)	9(25.0)	60(55.0)	19.610	0.000
	No	22(30.1)	27(75.0)	49(45.0)		
	Total*	**73**	**36**	**109**		
A wire is used to exchange the needle to maintain access	Yes	52(72.2)	5(13.5)	57(52.3)	33.767	0.000
	No	20(27.8)	32(86.5)	52(47.7)		
	Total*	**72**	**37**	**109**		
A wire is used to pass a catheter into the uterine artery	Yes	51(71.8)	4(10.8)	55(50.9)	36.240	0.000

	No	20(28.2)	33(89.2)	53(49.1)		
	Total*	**71**	**37**	**108**		
Use catheter to put tiny particles into uterine artery	Yes	49(70.0)	5(13.5)	54 (50.5)	30.896	0.000
	No	21(30.0)	32(86.5)	53(49.5)		
	Total*	**70**	**37**	**107**		
Particles block blood supply to the fibroid	Yes	60(82.2)	5(12.5)	65(57.5)	51.365	0.000
	No	13(17.8)	35(87.5)	48(42.5)		
	Total*	**73**	**40**	**113**		
Use local anesthesia	Yes	45(61.6)	10(24.4)	55(48.2)	14.593	0.000
	No	28(38.4)	31(75.6)	59(51.8)		
	Total*	**73**	**41**	**114**		
Use moderate sedation	Yes	60(81.1)	6(14.6)	66(57.4)	47.635	0.008
	No	14(18.9)	35(85.4)	49(42.6)		
	Total*	**74**	**41**	**115**		
Very rarely use general anesthesia	Yes	45(61.6)	8(21.1)	53(47.7)	16.504	0.000
	No	28(38.4)	30(78.90%)	58(52.3)		
	Total*	**73**	**38**	**111**		
No knowledge on procedure	Yes	34(41.5)	104(83.2)	138(66.7)	38.815	0.000
	No	48(58.5)	21(16.8)	69(33.3)		
	Total*	**82**	**125**	**207**		

**** One participant may respond to more than one variable***

4.3.7 Knowledge of complications after uterine artery embolization

About UAE complications, less than half know that allergy 92(47.4%) and thrombosis 84(42.9%) are complications. More than two third women diagnosed with uterine fibroid do not know the complication 91(74.60%), and this is shown in (Table 9).

Table 9: Knowledge on common complication of Uterine Artery Embolization (UAE) among health workers and women with fibroid attending MNH (N=221)

Complication		Health Worker n(%)	Women with Fibroid n(%)	Overall n(%)	Chi-square (χ^2)	p-value
Allergy	Yes	70(83.3)	22(20.0)	92(47.4)	76.621	0.000
	No	14(16.7)	88(80.0)	102(52.6)		
	Total*	**84**	**110**	**194**		
Swelling at site of catheterization for embolization	Yes	67(84.8)	12(11.0)	79(42.0)	102.396	0.000
	No	12(15.2)	97(89.0)	109(58.0)		
	Total*	**79**	**109**	**188**		
Abdominal pain	Yes	58(74.4)	9(8.3)	67(35.8)	86.405	0.000
	No	20(25.6)	100(91.7)	120(64.2)		
	Total*	**78**	**109**	**187**		
Pelvic pain	Yes	58(73.40%)	9(8.30%)	67(35.60%)	84.786	0.000
	No	58(73.40%)	9(8.30%)	67(35.60%)		
	Total*	**79**	**109**	**188**		
Fever	Yes	50(62.50%)	11(10.10%)	61(32.30%)	57.975	0.000
	No	30(37.50%)	98(89.90%)	128(67.70%)		
	Total*	**80**	**109**	**189**		
Nausea	Yes	47(60.30%)	3(2.80%)	50(27.00%)	75.503	0.000
	No	31(39.70%)	104(97.20%)	135(73.00%)		
	Total*	**78**	**107**	**185**		
Vomiting	Yes	48(62.30%)	4(3.70%)	52(28.30%)	75.840	0.000
	No	29(37.70%)	103(96.30%)	132(71.70%)		
	Total*	**77**	**107**	**184**		
Hypertension	Yes	35(44.30%)	6(5.60%)	4(22.00%)	39.601	0.000

	No	44(55.70%)	101(94.40%)	145(78.00%)		
	Total*	**79**	**107**	**186**		
Infection	Yes	58(72.50%)	6(5.50%)	64(33.90%)	92.465	0.000
	No	22(27.50%)	103(94.50%)	125 (66.10%)		
	Total*	**80**	**109**	**189**		
Thrombosis	Yes	72(83.70%)	12(10.90%)	84(42.90%)	104.485	0.000
	No	14(16.30%)	98(89.10%)	112(57.10%)		
	Total*	**86**	**110**	**196**		
Change in color of patient leg	Yes	48(60.00%)	6(5.50%)	54(28.60%)	67.138	0.000
	No	32(40.00%)	103(94.50%)	135(71.40%)		
	Total*	**80**	**109**	**189**		
I don't know any complication	Yes	23(29.50%)	91(74.60%)	114(57.00%)	39.490	0.000
	No	55(70.50%)	31(25.40%)	86(43.00%)		
	Total*	**78**	**122**	**200**		

**** One participant may respond to more than one variable***

4.4 Attitudes towards Uterine Artery Embolization

Less than half of all participants exhibited a positive attitude towards UAE see it as a safe procedure 88(42.1%), novel alternative treatment option to myomectomy for fibroids 81(38.6%) and proffered in patients seeking future pregnancies 85(40.7%).This differed notably between Healthcare workers and women diagnosed with fibroids, suggesting that HCWs have a positive attitude in the UAE while patients might be less informed hence have a negative attitude. More illustration about attitude in (Table 10)

Table 10: Attitudes towards Uterine Artery Embolization among health workers and women with fibroid attending MNH (N=221)

Attitude Statement		Health Worker n(%)	Women with Fibroid n(%)	Overall n(%)	Chi-square (χ^2)	p-value
UAE is safe procedure	Yes	57(69.50%)	31(24.40%)	88(42.10%)	41.582	0.000
	No	25(30.50%)	96(75.60%)	121(57.90%)		
	Total*	**82**	**127**	**209**		
UAE is a novel alternative treatment option to myomectomy for fibroids.	Yes	69(83.10%)	12(9.40%)	81(38.60%)	115.019	0.000
	No	14(16.90%)	115(90.60%)	129(61.40%)		
	Total*	**83**	**127**	**210**		
UAE proffered in patients seeking future pregnancies.	Yes	67(81.70%)	18(14.20%)	85(40.70%)	94.182	0.000
	No	15(18.30%)	109(85.80%)	124(59.30%)		
	Total*	**82**	**127**	**209**		
Most of patients gets relief of reduce pain, pressure, and bleeding symptoms after UAE	Yes	64(80.00%)	2(1.60%)	66(32.20%)	137.350	0.000
	No	16(20.00%)	123(98.40%)	139(67.80%)		
	Total*	**80**	**125**	**205**		
UAE may reduce pain from fibroids earlier	Yes	64(80.00%)	5(4.00%)	69(33.70%)	126.181	0.000
	No	16(20.00%)	120(96.00%)	136(66.30%)		
	Total*	**80**	**125**	**205;**		
UAE may reduce bleeding from fibroids earlier	Yes	67(83.80%)	12(9.40%)	79(38.20%)	114.820	0.000
	No	13(16.30%)	115(90.60%)	128(61.80%)		
	Total*	**80**	**127**	**207**		
UAE may slowly reduce pressure from fibroids	Yes	64(81.00%)	11(8.70%)	75(36.60%)	109.349	0.000
	No	15 (19.00%)	115(91.30%)	130(63.40%)		
	Total	**79**	**126**	**205**		
Increased risk of pregnancy (obstetric)	Yes	26(33.80%)	1(0.80%)	27(13.40%)	44.378	0.000

complications after UAE.						
	No	51 (66.20%)	123(99.20%)	174(86.60%)		
	Total*	**77**	**124**	**201**		
Increased rate of miscarriage after UAE	Yes	13(16.50%)	1(0.80%)	14(6.90%)	18.405	0.000
	No	66(83.50%)	123(99.20%)	189(93.10%)		
	Total*	**79**	**124**	**203**		
Increased rates of preterm delivery after UAE	Yes	11(13.90%)	8(6.50%)	19(9.40%)	3.176	0.075
	No	68 (86.10%)	116(93.50%)	184(90.60%)		
	Total*	**79**	**124**	**203**		
There is increased risk of intrauterine growth restriction after UAE.	Yes	15(19.00%)	5(4.00%)	20(9.90%)	12.152	0.000
	No	64(81.00%)	119(96.00%)	183(90.10%)		
	Total*	**79**	**124**	**203**		
Increased risk of malpresentation after UAE	Yes	12(15.00%)	5(4.10%)	17(8.40%)	7.554	0.006
	No	68(85.00%)	118(95.90%)	186(91.60%)		
	Total*	**80**	**123**	**203**		
Increased risk of abnormal placentation after UAE	Yes	12(15.20%)	3(2.40%)	15(7.40%)	11.624	0.001
	No	67 (84.80%)	122(97.60%)	189(92.60%)		
	Total*	**79**	**125**	**204**		
Increased risk of postpartum hemorrhage after UAE.	Yes	10(12.70%)	4(3.20%)	14(6.90%)	6.687	0.010
	No	69(87.30%)	120(96.80%)	189(93.10%)		
	Total*	**79**	**124**	**203**		
Increased risk of cesarean section after UAE	Yes	7(8.90%)	6(4.80%)	13(6.40%)	1.338	0.247
	No	72(91.10%)	119(95.20%)	191(93.60%)		
	Total*	**79**	**125**	**204**		

UAE does not diminish uterine fibroids totally	Yes	16(20.50%)	6(4.80%)	22(10.90%)	12.121	0.000
	No	62 (20.50%)	118(4.80%)	180(10.90%)		
	Total*	**78**	**124**	**202**		
UAE does not diminish pregnancy complications associated with fibroids	Yes	20(26.00%)	5(4.00%)	25(12.30%)	21.432	0.000
	No	57(74.00%)	121(96.00%)	178(87.70%)		
	Total*	**77**	**126**	**203**		
High pregnancy rates after UAE	Yes	21(26.90%)	5(4.10%)	26(12.90%)	22.144	0.000
	No	57(73.10%)	118(95.90%)	175(87.10%)		
	Total*	**78**	**123**	**201**		
UAE does not limit reproductive plans compared to myomectomy	Yes	31(40.30%)	12(9.60%)	43(21.30%)	26.732	0.000
	No	46(59.70%)	113(90.40%)	159(78.70%)		
	Total*	**77**	**125**	**202**		
Menopause after UAE occurs in patients older than 45 years.	Yes	13(16.70%)	5(4.00%)	18(8.90%)	9.416	0.002
	No	65(83.30%)	119(96.00%)	184(91.10%)		
	Total*	**78**	**124**	**202**		
I don't have any attitudes	Yes	49(62.80%)	42(33.30%)	91(44.60%)	16.953	0.000
	No	29(37.20%)	84(66.70%)	113(55.40%)		
	Total*	**78**	**126**	**204**		

**** One participant may respond to more than one variable***

4.4.1 Perceptions towards Uterine Artery Embolization

The perception results in less than half overall participants believing UAE involves a shorter hospital stay 86(42%) and allows women to go back to work and other activities sooner 87(42%). A need for more knowledge about the UAE was seen in both groups with an overall of 176(95.7%) of all participants. Healthcare workers had a higher confidence level than women with fibroids in terms of perceptions. This reflects a need for better patient education to align their perceptions with those of medical professionals (Table 11).

Table 11: Perceptions towards Uterine Artery Embolization among health workers and women with fibroid attending MNH (N=221)

Perception		Health Worker n(%)	Women with Fibroid n(%)	Overall n(%)	Chi-square (χ^2)	p-value
UAE can treat many fibroids at the same time.	Yes	58(73.40%)	11(8.80%)	69(33.80%)	90.300	0.000
	No	21(26.60%)	114(91.20%)	135(66.20%)		
	Total*	**79**	**125**	**204**		
UAE is less painful than a hysterectomy.	Yes	61(77.20%)	21(16.50%)	82(39.80%)	74.843	0.000
	No	18 (22.80%)	106(83.50%)	124(60.20%)		
	Total*	**79**	**127**	**206**		
UAE involves a shorter hospital stay.	Yes	66(82.50%)	20(16.00%)	86(42.00%)	88.583	0.000
	No	14(17.50%)	105(84.00%)	119(58.00%)		
	Total*	**80**	**125**	**205**		
UAE allows women to go back to work and other activities sooner.	Yes	67(83.80%)	20 (15.70%)	87 (42.00%)	93.155	0.000
	No	13(16.30%)	107(84.30%)	120(58.00%)		
	Total*	**80**	**127**	**207**		
UAE has lower rates of blood transfusion.	Yes	59(73.80%)	9(7.20%)	68(33.20%)	97.459	0.000
	No	21(26.30%)	116(92.80%)	137(66.80%)		
	Total*	**80**	**125**	**205**		
A few patients may need another procedure or surgery after UAE.	Yes	50(62.50%)	6(4.80%)	56(27.30%)	81.796	0.000
	No	30(37.50%)	119(95.20%)	149(72.70%)		
	Total*	**80**	**125**	**105**		

UAE has a risk of bleeding at access site	Yes	54 (71.10%)	9 (7.30%)	63(31.50%)	88.873	0.000
	No	22 (28.90%)	115(92.70%)	137(68.50%)		
	Total*	**76**	**124**	**200**		
UAE has a risk of infection.	Yes	51(64.60%)	7(5.60%)	58(28.60%)	82.064	0.000
	No	28(35.40%)	117(94.40%)	145(71.40%)		
	Total*	**79**	**124**	**203**		
UAE has a risk of injury to an artery of the uterus.	Yes	55(69.60%)	9(7.30%)	64(31.70%)	86.267	0.000
	No	24(30.40%)	114(92.70%)	138(68.30%)		
	Total*	**79**	**123**	**202**		
UAE has a risk of delayed diagnosis of a rare cancer mistaken for fibroids.	Yes	37(48.10%)	3(2.40%)	40(20.00%)	61.577	0.000
	No	40(51.90%)	120(97.60%)	160(80.00%)		
	Total*	**77**	**123**	**200**		
UAE has a risk of passing fibroid tissue through vagina.	Yes	29(38.20%)	3(2.50%)	32(16.20%)	44.044	0.000
	No	47(61.80%)	119(97.50%)	166(83.80%)		
	Total*	**76**	**122**	**198**		
UAE has a risk of uterine abscess	Yes	42(54.50%)	4(3.30%)	46(23.40%)	68.730	0.000
	No	35(45.50%)	116(96.70%)	151(76.60%)		
	Total*	**77**	**120**	**197**		
UAE has a risk of problems with a future pregnancy.	Yes	27(34.60%)	7(5.80%)	34(17.20%)	27.534	0.000
	No	51(65.40%)	113(94.20%)	164(82.80%)		
	Total*	**78**	**120**	**198**		

UAE has a risk of problems with ovaries in 45 years or older patients.	Yes	25(32.50%)	4(3.30%)	29(14.50%)	32.603	0.000
	No	52(67.50%)	119(96.70%)	171(85.50%)		
	Total *	**77**	**123**	**200**		
UAE may negatively influence ovarian function	Yes	25(32.1%)	4(3.3%)	29(14.4)	32.065	0.000
	No	53(67.9)	119(96.7)	172 (85.6)		
	Total *	**78**	**123**	**201**		
Pregnancy rates after UAE are comparable to general population	Yes	31(40.80%)	7(5.70%)	38(19.20%)	37.098	0.000
	No	45(59.20%)	115(94.30%)	160(80.80%)		
	Total *	**76**	**122**	**198**		
Lower rate of reproductive or fertility outcome after UAE compared to myomectomy.	Yes	25(33.30%)	3(2.50%)	28(14.20%)	36.311	0.000
	No	50(66.70%)	119(97.50%)	169(85.80%)		
	Total *	**75**	**122**	**197**		
Risk of fibroid recurrence after UAE.	Yes	28(36.80%)	4(3.30%)	32(16.10%)	39.276	0.000
	No	48 (63.20%)	119(96.70%)	167(83.90%)		
	Total *	**76**	**123**	**199**		
Risk of re-intervention after UAE.	Yes	30(39.50%)	5(4.10%)	35(17.70%)	40.270	0.000
	No	46(60.50%)	117(95.90%)	163(82.30%)		
	Total *	**76**	**122**	**198**		
Requirement of further surgical	Yes	24(32.00%)	1(0.80%0	25(12.80%)	40.433	0.000

intervention after UAE.	No		120(99.20%)	171(87.20%)		
	Total *	**75**	**121**	**196**		
Impact of the UAE on fertility is controversial.	Yes	16(20.50%)	8(6.50%)	24(11.90%)	8.909	0.003
	No	62(79.50%)	115(93.50%)	177(88.10%)		
	Total *	**78**	**123**	**201**		
Impact of UAE on conception is controversial	Yes	11(14.30%)	6 (4.90%)	17(8.50%)	5.389	0.020
	No	66(85.70%)	117(95.10%)	183(91.50%)		
	Total *	**77**	**123**	**200**		

**** One participant may respond to more than one variable***

4.4.2 Perception towards Uterine Artery Embolization (UAE) in preferences

The results showed high preference in recommendation to patient 145(66.5%), friend 145(66.5%), relative 125(59.8%), yourself/ your wife 125(60.4%), someone else 118(56.5%) in overall. More knowledge was equally preferred in more than one third of participants 86(45.3%), as shown in the Table 12 below.

Table 12: Perception of Uterine Artery Embolization (UAE) in preferences among Healthcare workers and women with fibroid attending MNH (N=221)

Recommendation		Health worker n(%)	Women with Fibroid n(%)	Overall n(%)	Chi-square (χ^2)	p-value
Patient	Yes	81(89.0%)	64(50.4%)	145(66.5%)	35.496	0.000
	No	10(11.0%)	63(49.6%)	73(33.5%)		
	Total*	**91**	**127**	**218**		
Friend	Yes	63(75.0%)	63(50.0%)	145(66.5%)	13.125	0.000
	No	21(25.0%)	63(50.0%)	84(40.0%)		
	Total*	**84**	**126**	**210**		
Relative	Yes	62(74.7%)	63(50.0%)	125(59.8%)	12.699	0.000
	No	21(25.3%)	63(50.0%)	84(40.2%)		
	Total*	**83**	**126**	**209**		
Yourself/ Your wife	Yes	51(63.0%)	74(58.7%)	125(60.4%)	0.369	0.543
	No	30(37.0%)	52(41.3%)	82(39.6%)		
	Total*	**81**	**126**	**207**		
Someone else	Yes	57(68.7%)	61(48.4%)	118(56.5%)	8.357	0.004
	No	26(31.3%)	65(51.6%)	91(43.5%)		
	Total*	**83**	**126**	**209**		
I prefer/ would prefer UAE over other treatment options for uterine fibroids	Yes	37(56.1%)	49(39.5%)	86(45.3%)	4.759	0.029
	No	29(43.9%)	75(60.5%)	104(54.7%)		
	Total*	**66**	**124**			

We need more knowledge about UAE	Yes	57(93.4)%	119(96.7%)	176(95.7%)	1.071	0.301
	No	4(6.6%)	4(3.3%)	8(4.3%)		
	Total*	**61**	**123**	**184**		

**** One participant may respond to more than one variable***

CHAPTER FIVE

5.0 DISCUSSION

5.1 Discussion of the key findings

The aim of this study was to assess the knowledge, attitude and perception of UAE as a treatment option of uterine fibroids among health care workers and patients (women diagnosed with uterine fibroid)

This study indicates a higher level of awareness of UAE among respondents 221(100%) heard about UAE, this finding is contrary to a study conducted by Alreshidi et al., in which only 33.9% were aware of UAE(35). This difference could be explained by variability in sampling technique and sample size.

The study revealed that the source of information about UAE was healthcare provider 53.8% followed by internet 43%, this finding is different from what has been found by Alreshidi et al. in which the major source of information was internet 24.9% followed by healthcare worker 24.3%. Also the study done by the society of intervention of radiology which the major source is friends and family 32% followed by healthcare workers 27%(35,36) appear to differ from this current study. Difference in geographical locations could be the reason, where accessibility to online platforms such as medical websites and social media differ. In addition, since Tanzania is a low-income country it is easier to have access to healthcare workers than to have access to the internet.

In this study, more than a third of the participants 34.3% responded to general knowledge on uterine fibroid embolisation (UFE) as tiny particles injected into blood vessels. This is overall poor knowledge compared to the study in Saudi Arabia (37). However more than two thirds of health workers were aware of UFE which was good knowledge compared to Saudi Arabian study (37). The differences in these studies could be due to differences in study population composition between these studies.

Awareness of uterine fibroid embolisation being performed by interventional radiologists was observed in more than half of participants, this was similar to a study done in Saudi Arabia (37). The similarities could be attributed to study setting being conducted in tertiary hospitals with interventional radiology services.

In the comparison study of uterine fibroid embolization and myomectomy it revealed that of the total number of 121 patients, it was found that 110 patients were symptomatic 90.9%(38), whereas our study revealed that knowledge on indications to UAE procedure for symptomatic uterine fibroid in patients was lower than that, with only 101 participants 48.3% demonstrating awareness. No study found overseeing the knowledge on indication of UAE.

The study ranking contraindications of UAE (39), reported that other studies consistently consider the strongest rank as absolute contraindication of UAE. This opinion aligns with the present study findings whereby more than a half of the respondents know about contraindications: pregnancy 70.9%, allergic to contrast media 67.6%, and uncorrectable coagulopathy 66%.

The procedure usually done by the transcatheter embolization, which is performed in a digital subtraction angiography (DSA) suite, moderate sedation administration followed by selective and superselective arteriography then embolic materials are injected with iodinated contrast material (40). No research done concerning UAE procedure knowledge in either healthcare providers or patients. However, in this study more than half of overall participants know about the use of angio suite 75.4%, use of moderate sedation 57.4%, a small needle used to access the artery 60(55.0), a small wire used to exchange needle to maintain the access 52.3% and particles block blood supply to the fibroid 57.5%.

The UAE procedure is described as “a safe alternative to hysterectomy in young women wishing to preserve the uterus” by Nikita et al.(43). This is same in this study whereby, participants' views on UAE shows that; a safe procedure 42.1%, proffered on patients seeking future pregnancy 40.7%, and a novel alternative treatment option to myomectomy on fibroid 38.6%.

In a randomized trial comparing uterine-artery embolization and surgery in women with symptomatic uterine fibroids, the patients who undergo UAE procedure had a shorter median duration of hospitalization than the surgical group (1 day vs. 5 days, $P<0.05$) and a shorter time before returning to work ($P<0.05$)(44). This was equally perceived in more than third percentile in our study by 86(42%) and 87(42%) respectively. Lack of awareness or misconceptions about the procedure and its outcomes contributed to negative perceptions among patients. These differing perceptions highlight the need for improved patient education and shared decision-making between healthcare providers and women diagnosed with uterine fibroids.

Patients were very satisfied with their treatment (would recommend the treatment to a friend): with scores of more than third quarter, 90% for UAE reported in the study of the current concept in uterine fibroid (45). In this study, the procedure recommendation to another patient or a friend was accepted by more than half of respondents (66.5%) in both categories. For healthcare workers, continued medical education and training on the latest advancements in UAE, its clinical outcomes, and patient selection criteria can help strengthen their knowledge and confidence in recommending this treatment option. For women diagnosed with uterine fibroids, patient-centered educational materials, counseling sessions, and shared decision-making approaches can empower them to make informed choices about their treatment options, including UAE. Additionally, efforts to improve the accessibility and affordability of UAE services can further enhance its acceptability and utilization among the target population (46).

Among participants more than one third 43.1% said that they would very much benefit from more knowledge about interventional radiologists in the study done in Saudi Arabia (37). This was corresponded higher in this study, where by participants more than third quarter 95.7% report on the need for more knowledge of UAE. This mutual need of understanding about the UAE will contribute to ethical conduct and success of research studies.

Healthcare providers generally possessed comprehensive knowledge about the UAE, viewing it positively as a safe and effective alternative to myomectomy, and were more confident in its benefits such as shorter hospital stays and quicker recovery times. A substantial proportion of

women with fibroids were less informed about UAE, leading to less favorable attitudes and perceptions. The findings also indicated that healthcare providers held a more positive attitude towards UAE, recognizing it as a novel treatment option and being more likely to recommend it. Conversely, patients exhibited more negativity, likely due to a lack of information. Additionally, perceptions of UAE's effectiveness and associated risks varied, with healthcare providers expressing higher confidence in the procedure's outcomes.

5.2 Strengths and limitations of the study

5.2.1 Strengths of the Study:

This study was able to collect two types of data simultaneously making an advantage in use of both methods (qualitative and quantitative). In addition, the study employed a structured questionnaire based on a comprehensive literature review and expert consultation ensured that the data collection tool aligned with current knowledge and practices in UAE for uterine fibroids that provide the reliability and validity of the findings. The inclusion of both healthcare workers and women diagnosed with fibroids from a diverse demographic background at the study site provided a broad perspective on knowledge, attitudes, and perceptions towards UAE that highlight the key areas for interventions.

5.2.2 Limitations of the Study

Despite its strengths, this was a cross-sectional design that provided only a snapshot of knowledge, attitudes, and perceptions at a specific point in time. It also relied on self-reported data from participants that may introduce response bias or inaccuracies based on participants' subjective interpretations of questions. Additionally, the study was conducted at a single hospital, which may limit the generalizability of findings to other settings or populations with different healthcare access and socio-cultural contexts.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Substantial disparities towards UAE between healthcare workers and patients identified. While HCWs exhibited comprehensive knowledge and positive attitudes and perception towards UAE, recognizing its benefits and potential risks. Women with fibroids exhibited limited knowledge and negative attitude and perception due to insufficient information. Thus, IR and other stakeholders should prioritize comprehensive patient education regarding the UAE.

6.2 Recommendations

For Clinical Practice: Interventional Radiology team and other stakeholders should prioritize comprehensive patient education regarding UAE, emphasizing its benefits, risks, and potential outcomes. Providing detailed, easily understandable information can help address patients' misconceptions and improve the attitudes and perceptions towards the procedure. Implementing pre-procedure counseling sessions and distributing informative materials to other healthcare workers (not in the IR department) can bridge the knowledge gap and foster better patient-provider communication.

For Media Outreach: MNH in collaboration with MOH and other stakeholders should keep more effort to ensure enough social media coverage that raises awareness of UAE also work to ensure that UAE is incorporated into clinical guidelines and covered by insurance to improve affordability and utilization.

For Policy Makers: Policy makers should advocate for the integration of UAE information into public health education campaigns. By raising awareness about UAE as a viable treatment option for fibroids. Additionally, policies should support the development of training programs for healthcare providers to ensure they are well-equipped to educate and counsel patients about the UAE effectively.

For Future Research: Future research should focus on the impact of targeted educational interventions on patient knowledge, attitudes, and perceptions of UAE. Longitudinal studies

could assess how enhanced patient education influences treatment outcomes and satisfaction. Additionally, investigating the barriers to effective communication between healthcare providers and patients can inform strategies to improve patient education and engagement in the decision-making process.

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APPENDICES

APPENDIX I. Consent Form

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

DIRECTORATE OF RESEARCH AND PUBLICATIONS,
MUHAS

ID-NO…….

Consent to Participate in a Study

Hellow

My name is Dr. Fauzia Miraji Kapiteni, I am conducting a study on the knowledge, attitudes and perceptions of patients diagnosed with uterine fibroid attending Muhimbili National Hospital and healthcare workers towards uterine artery embolization.

Study Purpose

The study is conducted as a partial fulfillment of the requirements for the degree of Master of Medicine in Radiology at MUHAS. This study aims to assess knowledge, attitude and perception towards uterine artery embolization as a treatment option for uterine fibroid among women diagnosed with uterine fibroid and healthcare workers at MNH. This is important as it will shed light on how the treatment option is perceived, given its rising popularity as an alternative to traditional hysterectomy.

How to be involved

The Patients who agree to participate in this study will be required to sign the consent form, then interviewed after that.

Confidentiality

The information obtained from you will be confidential. No name will appear on any document of this study instead Identification numbers will be used.

Participation and Right to Withdraw

Involvement in this study is voluntary. You can participate or refuse to participate in this study. Refusal to participate in this study will not interfere with your management.

Benefits

Collectively, the findings of this study will provide statistical evidence-based suggestions and recommendations on ways to maximize the benefits of this procedure. Consequently, thus the study results will help to improve patients' management thus improve quality of life.

Risk

No risk in participating in this study.

Contact Personally

If you ever have questions about this study, you should contact the Principal Investigator, Dr. Fauzia Miraji Kapiten, Muhimbili University of Health and Allied Sciences, P. O. Box 65001, Email: doctorfau@gmail.com.

In case you have questions about your rights of participation in this study, you may contact Dr. Irene Mhalu, who is the supervisor of this study, Email reneesolo@gmail.com.

Also further clarification and questions you can contact Director of Research and Publications at Muhas through :E-mail:drp@muhas.ac.tz or Tel.G/Line:+255-22-2150302/6 or Direct line:255-22-2152489

Participant agrees.

I ……. have read the contents in this form. My questions have been answered. I am willing to participate in this study.

Signature of participant: …… **Date:** ……..……

Signature of Researcher: ……... **Date:** …….

NYONGEZA II: FomU ya Idhini (Swahili Version)

CHUO KIKUU CHA AFYA NA SAYANSI SHIRIKISHI MUHIMBILI

KURUGENZI YA TAFITI NA UCHAPISHAJI,
MUHAS
NAMBA YA UTAMBULISHO…….

Ridhaa ya kushiriki kwenye utafiti

Habari,

Naitwa Daktari Fauzia Miraji Kapiteni, ninafanya utafiti kuhusu elimu/maarifa, maoni, na mitazamo kwa wagonjwa waliogundulika kuwa na uvimbe kwenye mfuko wa uzazi wanaohudhuria Hospitali ya Taifa Muhimbili pamoja na watoa huduma za afya kuhusu matibabu ya uvimbe kwenye kizazi kwa njia ya kuziba mishipa ya damu inayopeleka damu kwenye uvimbe.

Malengo ya utafiti

Utafiti huu unafanywa kama utimilifu wa sehemu ya mahitaji ya Shahada ya Uzamili ya Tiba katika Vipimo yakinifu vya Mionzi katika Chuo Kikuu Cha Afya Na Sayansi Shirikishi Muhimbili (MUHAS). Utafiti huu unalenga kutathmini elimu, utambuzi na mitazamo kwa wagonjwa waliogundulika kuwa na uvimbe kwenye mfuko wa uzazi wanaohudhuria Hospitali ya Taifa Muhimbili pamoja na watoa huduma za afya kuhusu matibabu ya uvimbe kwenye kizazi kwa njia ya kuziba mishipa ya damu inayopeleka damu kwenye uvimbe. Hili ni muhimu kwa kuwa litaangazia jinsi chaguo la matibabu linavyochukuliwa, kutokana na umaarufu wake unaoongezeka kama njia mbadala ya upasuaji.

Taratibu za Ushiriki

Utahitajika kutia sahihi katika nakala za fomu hii ili kuonyesha uhiyari na utayari wako katika utafiti, kabla ya kushiriki kwenye utafiti.

Usalama na usiri wa taarifa zako

Utakaposhiriki katika utafiti huu, taarifa utakazotoa zitakuwa siri na salama. Taarifa kama vile majibu ya vipimo, majina na utambuzi wowote utakuwa katika usiri unazingatia kanuni za utafiti.

Haki ya Kujitoa au kusitisha ushiriki katika utafiti

Ushiriki wako ni wa hiyari, unaweza kushiriki au kutoshiriki. Na kama atachagua kuto kushiriki katika utafiti huu, haitoathiri chochote katika mambo yako ya kazi.

Manufaaa

Matokeo ya pamoja ya utafiti huu yatatoa ushauri na mapendekezo yanayoungwa mkono na takwimu kuhusu jinsi ya kuongeza manufaa ya mbinu(tiba) hii. Matokeo yake, matokeo ya utafiti yatasaidia usimamizi katika kuimarisha/kuboresha matibabu ya wagonjwa.

Hatari

Hakuna hatari yoyote endapo hutoshiriki utafiti huu

Nani wa kuwasiliana naye

Kama una maswali kuhusiana na utafiti huu, wasiliana na mtafiti mkuu, Dr. Fauzia Miraji Kapiteni, Chuo Kikuu cha Afya na Sayansi shirikishi Muhimbili, S. L. P. 65001, Dar es Salaam. Barua pepe doctorfau@gmail.com

Endapo utahitaji taarifa zaidi kuhusu haki ya ushiriki wako katika utafiti huu wasiliana na Dr.Irene Mhalu, ambae ni msimamizi wa utafiti huu. Barua pepe reneesolo@gmail.com

Na kwa maelezo zaidi pia unaweza wasiliana na mkurugenzi wa utafiti na uchapishaji MUHAS kwa

S.L.P 65001 DAR ES SALAAM. au

kwa barua pepe drp@muhas.ac.tz au

Simu: +255 22 2150302/6 Au pia simu: +255 22 2152489

Mshiriki nimekubali

Mimi..... nimesoma maelezo ya fomu hii nime elewa nakubali kushiriki katika utafiti huu.

Sahihi ya mshiriki…… **Tarehe ya kutia sahihi…….....**

Sahihi ya mtafiti…… **Tarehe ya kutia sahihi…..….....**

APPENDIX III: Data Collection Tool

QUESTIONNAIRE:

Attending clinic_____

Socio-demographic details

1. What is your age? _____
2. What is your gender □ Male □ Female
3. Marital status
   □ Single □ Divorced
   □ Married □ Widowed
4. Level of education
   0. No formal education
   1. Primary education
   2. Secondary education
   3. College/ university
5. Occupational status
   □ Employed □ Self-employed □ Non-employed
6. Are you a health professional? □ Yes □ No
   What is your designation? Please specify
7. Department: □ OBGY □ Radiology □ Others_____
8. Profession: □ Specialist □ Resident □ Registrar □ Nurse □ Ultrasonographer □ Radiographer
   □ Other(specify)_____

Knowledge of uterine fibroids

9. Have you ever had uterine fibroid?
   □ Yes □ No □ Not applicable
10. Have you ever heard of patients with uterine fibroids? □ Yes □ No
11. How did you heard of uterine fibroids
    1. Family history of uterine fibroid
    2. No family history of fibroids
    3. Mother with uterine fibroid
    4. Sister with uterine fibroid
    5. Other relative with uterine fibroid
    6. Patient with uterine fibroid
12. What is the significant source of information you have on uterine fibroids
    □ Internet □ Religious congregation
    □ Family and friends □ Radio or TV
    □ Physicians or nurses □ Books or curriculum
13. What are risk factors of uterine fibroids you know:
    1) Race □Yes □No
    2) Older age □Yes □No
    3) Premenopausal state □Yes □No
    4) Nonparity □Yes □No
    5) Family history of uterine fibroids □Yes □No
    6) Hypertension □Yes □No
    7) Food additives □Yes □No
    8) Use of contraceptives □Yes □No
    9) Obesity □Yes □No
    10) Vitamin D deficiency □Yes □No
    11) Hypervitaminosis E □Yes □No
    12) Tobacco smoking □Yes □No
    13) Alcohol abuse □Yes □No
    14) Multiple sexual partners □Yes □No
    15) Early menarche □Yes □No
    16) Altered reproductive tract microbiome □ Yes □ No
14. What are symptoms of uterine fibroids
    1. No symptoms □ Yes □ No
    2. Abnormal uterine bleeding □ Yes □ No
    3. Abdominal/ Pelvic pain □ Yes □ No
    4. Abdominal mass □ Yes □ No
    5. Abdominal distortion □ Yes □ No
    6. Frequent urination □ Yes □ No
    7. Constipation □ Yes □ No
    8. Anemia □ Yes □ No
    9. Subfertility/Infertility □ Yes □ No
    10. Miscarriages □ Yes □ No
    11. Pain during intercourse □ Yes □ No
    12. Recurrent UTI □ Yes □ No
    13. Other symptoms_____
15. How will the woman be certain that she has Uterine fibroid
    1. Family history □ Yes □ No
    2. Classical symptoms □ Yes □ No
    3. Physical examination by a physician □ Yes □ No
    4. Undergoing medical imaging □ Yes □ No
16. Which examination the health professional may use to know if a patient has uterine fibroid?
    1. Clinical history and physical examination □ Yes □ No
    2. Ultrasound □ Yes □ No
    3. Hysterosalpingography □ Yes □ No
    4. Hysteroscopy □ Yes □ No
    5. Plain/KUB X- ray □ Yes □ No
    6. CT □ Yes □ No
    7. MRI □ Yes □ No
17. What treatments a patient with uterine fibroids might receive.
    1. Iron supplement □ Yes □ No
    2. Blood Transfusion □ Yes □ No
    3. Hormonal therapy □ Yes □ No
    4. Myomectomy □ Yes □ No
    5. Hysterectomy □ Yes □ No
    6. Hysteroscopic resection □ Yes □ No
    7. Focused ultrasound Ablation □ Yes □ No
    8. Uterine artery embolization □ Yes □ No
    9. Endometrial ablation □ Yes □ No
18. What are complications of uterine fibroids?

1. Inability to conceive □ Yes □ No
2. Abortions □ Yes □ No
3. Miscarriages □ Yes □ No
4. Inability to have normal vaginal delivery □ Yes □ No
5. Risk of caesarean delivery□ Yes □ No
6. Significant blood loss during delivery □ Yes □ No
7. Significant blood loss after delivery □ Yes □ No
8. Risk of premature delivery □ Yes □ No
9. Severe pain during pregnancy □ Yes □ No

19. What other diseases can mimic uterine fibroids?
    1. Cervical cancer □ Yes □ No
    2. Endometriosis □ Yes □ No
    3. Adenomyosis □ Yes □ No
    4. Pelvic Infection □ Yes □ No
    5. IUD □ Yes □ No
20. Is there a need to perform pap smear to all women with severe PV bleeding? □ Yes □ No

What are your concerns about uterine fibroids?	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
1. Having no control over the fibroids.					
2. Being psychologically stressed by the fibroids.					
3. To lose large amounts of blood due to the fibroids.					
4. The fibroids could become malignant.					
5. The quality of life could deteriorate.					
6. The fibroids might grow bigger.					
7. Having a miscarriage or premature birth.					
8. No longer being able to fall pregnant.					
9. The fibroids may increase in number.					
10. I may pass fibroids on to my children.					
11. Negative effects on sexuality.					
12. Having a foreign body inside of me.					
13. About the need for treatment.					
14. Negative effects on women's general health.					
15. Side-effects of treatment.					
16. Gaining weight because of the fibroids.					
17. Having (continuing to have) pain from the fibroids.					
18. Being negatively stressed by the fibroids.					
19. To lose the womb.					
20. Missing something serious (by not undergoing treatment).					

21. Increased risk of complications of pregnancy					
22. Increased risk of malpresentation					
23. Increased risk of abnormal placentation					
24. Increased risk of preterm delivery					
25. Increased risk of miscarriages					
26. Increased risk of intrauterine growth restriction					
27. Increased risk of postpartum hemorrhage					
28. Increased risk of cesarean section					

UTERINE ARTERY EMBOLIZATION KNOWLEDGE, ATTITUDE AND PRACTICE

. Have you ever heard of uterine fibroid mbolization?		**Yes**		**No**		
2. Where did you get or receive knowledge about the UAE?		**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
1	Healthcare worker					
2	Family members and friends					
3	Internet/YouTube					
4	Media outlets (significantly from)					
4a	TV					
4b	Radio					
4c	Newspaper					
5	Hospital meeting					
6	Clinical consultation					
7	Gynecologicosium					
8	Medical or health Conference					
9	Hospital adverts					
10	Medical training					
11	Other, please specify					
3. What is uterine artery embolization?						
1	Gynecologic surgery procedure					
2	Minimally invasive procedure					
3	Performed by interventional radiologists.					
4	Accessing arteries and using equipments to reach blood vessels supplying the uterus					
5	Tiny particles are injected into the blood vessels supplying the uterus.					
6	Tiny particles cut off blood flow to uterine fibroids, causing them to shrink.					
7	Uses moderate sedation					
4. What are the indications for uterine artery embolization?		**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
1	Symptomatic uterine fibroids					
2	Postpartum hemorrhage					
3	Adenomyosis					
4	A woman with uterine fibroids needs to keep the uterus					
5	The need to preserve fertility.					
6	Very young females					
7	Old-age female					
8	Profuse menstruation / PV bleeding					
9	Prolonged menstruation or PV bleeding					
10	Dysmenorrhea					
11	Dyspareunia					
12	Frequent urination					
13	Urinary retention					
14	Constipation:					

5. What are absolute contraindication for UAE		**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
1	I don’t know					
2	Genital tract infection					
3	Pregnancy					
4	Uterine or cervical carcinoma					
5	Doubts about the diagnosis					
6	Allergy to contrast media					
7	Uncorrectable coagulopathy					
6. How uterine artery embolization is done		**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
1	I don’t know					
2	Use of Angio Suite or fluoroscopy guidance					
3	A very small needle accesses the artery.					
4	A wire is used to exchange the needle to maintain access.					
5	A wire is used to pass a catheter into the uterine artery.					
6	A catheter is used to put tiny particles into uterine artery					
7	Particles block blood supply to the fibroids					
8	Uses local anesthesia					
9	Uses moderate sedation					
10	Very rarely use general anesthesia					
7. What are some common complications after someone undergone uterine artery embolization		**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
1	Allergy					
2	Swelling at the site of catheterization for embolization					
3	Abdominal pain					
4	Pelvic pain					
5	Fever					
6	Nausea					
7	Vomiting					
8	Hypertension					
9	Infection (pelvic / site of wound / systemic)					
10	Thrombosis					
11	Change in color or temperature of either of patient's legs					
12	I don’t know					
8. What attitudes and perception do you have towards uterine artery embolization (UAE)		**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
1	I don’t have any attitudes.					
2	UAE is safe procedure					
3	UAE is a novel alternative treatment option to myomectomy for fibroids.					
4	UAE is proffered in patients seeking future pregnancies.					
5	Most of patients gets relief of reduce pain, pressure, and bleeding symptoms after UAE					

6	UAE may reduce pain from fibroids earlier					
7	UAE may reduce bleeding from fibroids earlier					
8	UAE may slowly reduce pressure from fibroids					
9	UAE can treat many fibroids at the same time.					
10	UAE is less painful than a hysterectomy.					
11	UAE involves a shorter hospital stay.					
12	UAE allows women to go back to work and other activities sooner.					
13	UAE has lower rates of blood transfusion.					
14	A few patients may need another procedure or surgery after UAE.					
15	UAE has a risk of bleeding at access site					
16	UAE has a risk of infection.					
17	UAE has a risk of injury to an artery of the uterus.					
18	UAE has a risk of delayed diagnosis of a rare cancer mistaken for fibroids.					
19	UAE has a risk of passing fibroid tissue through vagina.					
20	UAE has a risk of uterine abscess					
21	UAE has a risk of problems with a future pregnancy.					
22	UAE has a risk of problems with ovaries in 45 years or older patients.					
23	UAE may negatively influence ovarian function					
24	UAE may result in premature menopause					
25	Pregnancy rates after UAE are comparable to general population					
26	Lower rate of reproductive or fertility outcome after UAE compared to myomectomy.					
27	Risk of fibroid recurrence after UAE.					
28	Risk of re-intervention after UAE.					
29	Requirement of further surgical intervention after UAE.					
30	Increased risk of pregnancy (obstetric) complications after UAE.					
31	Increased rate of miscarriage after UAE					
32	Increased rates of preterm delivery after UAE					
33	There is increased risk of intrauterine growth restriction after UAE.					
34	Increased risk of malpresentation after UAE					
35	Increased risk of abnormal placentation after UAE					
36	Increased risk of postpartum hemorrhage after UAE.					
37	Increased risk of cesarean section after UAE					
38	UAE does not diminish uterine fibroids totally.					
39	UAE does not diminish pregnancy complications associated with fibroids					
40	High pregnancy rates after UAE					
41	UAE does not limit reproductive plans compared to myomectomy.					

42	Menopause after UAE occurs in patients older than 45 years.					
43	Impact of the UAE on fertility is controversial.					
44	Impact of UAE on conception is controversial					
9. Will you recommend UAE to		**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
1	Patients.					
2	Friends					
3	Relatives					
4	Yourself/ your wife					
5	Someone else					
10. I prefer/would prefer UAE over other treatment options for uterine fibroids						
11. We need more knowledge about UAE						

Participant Signature_____

NYONGEZA IV: Zana ya Kukusanya

Taarifa

DODOSO: Kliniki unayohudhuria_____

Maelezo ya kijamii

1.Una umri gani?_____

2. Jinsia yako ni □ Me □ Ke

3. Hali ya mahusiano?

□ Sina mwenza □ Tumeachana

□ Nimeolewa □ Mjane

4. Elimu yako

0. Elimu isiyo katika mfumo rasmi

1. Elimu ya msingi 2. Elimu ya sekondari

3. Elimu ya chuo

5. Hali ya kazi

□ Nimeajiriwa □ Nimejiajiri □ Sina ajira

6. Wewe ni mtoa huduma ya afya?

□ Ndio □ Hapana

Cheo chako ni? Tafadhali elezea

7. Idara: □ Magonjwa ya wanawake □ Radiolojia

8. Taaluma: □ Daktari bingwa □ Daktari mkazi □ Daktari □ Nesi □ Mfanya kipimo cha mawimbi ya sauti □ Mtaalamu wa vipimo vya radiolojia

Kingine eleza _____

Ujuzi/ Maarifa/ Elimu juu ya uvimbe kwenye kizazi (fibroid)

9. Je? ushawahi kuwa na uvimbe kwenye kizazi?

□ Ndio □ Hapana □ Haihusiani (Mwanaume)

10. Ushawahi kupata/ kusikia mgonjwa mwenye uvimbe kwenye kizazi? □ Ndio □ Hapana

11. Umesikia nini kuhusu uvimbe kwenye kizazi

1. Historia ya ugonjwa kwenye familia
2. Hakuna historia ya familia kuhusu ugonjwa
3. Mama alikuwa na uvimbe kwenye kizazi
4. Dada alikuwa na uvimbe kwenye kizazi
5. Ndugu alikuwa na uvimbe kwenye kizazi
6. Mgonjwa mwenye uvimbe kwenye kizazi

12. Umepata wapi maelezo juu ya uvimbe kwenye kizazi?

□ Mtandao/Intanet □ Familia/ Marafiki

□ Redio/ Luninga(TV) □ Daktari/ Nesi

□ Vitabu/ Mtaala □ Mkusanyiko wa dini

13. Nini kinaweza kuchangia (hatari) kupata uvimbe kwenye kizazi:

1. Asili ya utaifa □ Ndio □ Hapana
2. Umri mkubwa □ Ndio □ Hapana
3. Umri wa kukaribia kufunga hedhi □ Ndio □ Hapana
4. Kutowahi kuzaa □ Ndio □ Hapana
5. Historia ya familia ya uvimbe kwenye kizazi □ Ndio □ Hapana
6. Presha ya juu □ Ndio □ Hapana
7. Viungo, nyongeza vya chakula □ Ndio □ Hapana
8. Utumiaji wa vidonge vya kupanga uzazi □ Ndio □ Hapana
9. Uzito uliopitiliza(unene) □ Ndio □ Hapana
10. Ukosefu wa Vitamini D □ Ndio □ Hapana
11. Ongezeko la vitamini E mwilini □ Ndio □ Hapana
12. Uvutaji wa tumbaku □ Ndio □ Hapana
13. Matumizi mabaya ya pombe □ Ndio □ Hapana
14. Kuwa na mahusiano ya kingono na watu wengi □ Ndio □ Hapana
15. Kuwahi umri wa kuanza hedhi(kuvunja ungo) □ Ndio □ Hapana
16. Kichocheo cha microbiota (vidudu melea kama bacteria, fungasi na wengine) katika njia ya uzazi □ Ndio □ Hapana

14. Ni zipi dalili za uvimbe kwenye kizazi (fibroid)?

1. Hakuna dalili □ Ndio □ Hapana
2. Kutokwa na damu ya hedhi isiyo na mpangilio □ Ndio □ Hapana
3. Tumbo/ nyonga kuuma □ Ndio □ Hapana
4. Uvimbe kwenye tumbo □ Ndio □ Hapana
5. Kubadilika umbo la tumbo □ Ndio □ Hapana
6. Kukojoa mara kwa mara □ Ndio □ Hapana
7. Kupata choo kikubwa kwa tabu □ Ndio □ Hapana
8. Kupungukiwa kiwango cha damu □ Ndio □ Hapana
9. Kupata tabu kupata mimba/Kutopata mimba □ Ndio □ Hapana
10. Mimba kutoka □ Ndio □ Hapana
11. Kupata maumivu wakati wa kujamiiana □ Ndio □ Hapana
12. kupata ugonjwa wa UTI mara kwa mara □ Ndio □ Hapana
13. Mengineyo_____

15. Mwanamke atajuaje ana uvimbe kwenye kizazi?

1. Historia ya familia □ Ndio □ Hapana
2. Dalili za Uvimbe kwenye kizazi □ Ndio □ Hapana
3. Kwa kuangaliwa na daktari □ Ndio □ Hapana
4. Kwa kufanya vipimo vya taswira ya kimatibabu □ Ndio □ Hapana

16. Mtaalamu wa afya atafanya kipimo gani kujua mgonjwa ana uvimbe kwenye kizazi (fibroid)?

1. Kupitia maelezo kwa daktari na uchunguzi wa macho na mikono □ Ndio □ Hapana

2. Kupitia kipimo cha mawimbi ya sauti(ultrasound) □ Ndio □ Hapana

3. Kupitia kipimo cha mionzi cha kuwekwa dawa kwenye kizazi(Hysterosalpingography – HSG) □ Ndio □ Hapana

4. Kupitia kipimo cha kuangalia kwa darubini inaypopitishwa sehemu ya uke (Hysteroscopy) □ Ndio □ Hapana

5. Kipimo cha mionzi (xray) □ Ndio □ Hapana

6. Kipimo cha mionzi kinachotoa picha za kina za sehemu ya ndani ya mwili. (CT) □ Ndio □ Hapana

7. Kipimo cha sumaku kinachotoa picha za kina za sehemu ya ndani ya mwili. (MRI) □ Ndio □ Hapana

17. Je mgonjwa mwenye uvimbe (fibroid) kwenye kizazi anaweza kuwa amepitia matibabu gani?

1. Dawa za kuongeza damu □ Ndio □ Hapana
2. Kuongezwa damu □ Ndio □ Hapana
3. Dawa za homoni □ Ndio □ Hapana
4. Upasuaji wa kutolewa uvimbe □ Ndio □ Hapana
5. Upasuaji wa kutolewa sehemu ya mji wa uzazi/ mji wa uzazi □ Ndio □ Hapana
6. Upasuaji kwa njia ya darubini kupitia njia ya uzazi □ Ndio □ Hapana
7. Uondoaji wa safu ya endometria(katika kizazi) □ Ndio □ Hapana
8. Matibabu ya uvimbe kwenye kizazi kwa njia ya kuziba mishipa ya damu inayopeleka damu kwenye uvimbe (UAE) □ Ndio □ Hapana
9. Utoaji wa mishipa ya endometria □ Ndio □ Hapana

18. Ni madhara gani mtu atapata endapo ana uvimbe kwenye kizazi(fibroid)

1. Kushindwa kupata mimba □ Ndio □ Hapana
2. Kutokwa mimba katika wiki za mwanzo □ Ndio □ Hapana
3. Kuharibu mimba kabla ya wiki 20 □ Ndio □ Hapana
4. Kushindwa kuzaa kwa njia ya kawaida □ Ndio □ Hapana
5. Hatari ya kuzaa kwa upasuaji □ Ndio □ Hapana
6. Kutokwa na damu nyingi wakati wa kujifungua □ Ndio □ Hapana
7. Kutokwa na damu nyingi baada ya kujifungua □ Ndio □ Hapana
8. Hatari ya kujifungua mapema kabla ya mimba kufika wiki 37 □ Ndio □ Hapana
9. Maumivu makali wakati wa kujifungua □ Ndio □ Hapana

19. Ni magonjwa gani mengine yanayoweza kufanana na uvimbe kwenye kizazi(fibroid)

1. Kansa ya shingo ya uzazi □ Ndio □ Hapana
2. Ugonjwa wa seli zinazofaa kuwa ndani ya mji wa uzazi kuwa nje ya mji huo (Endometriosis) □ Ndio □ Hapana
3. Ugonjwa wa seli za uzazi kukua katika misuli ya uzazi (Adenomyosis) □ Ndio □ Hapana
4. Maambukizi kwenye nyonga (PID) □ Ndio □ Hapana
5. Kuwa na Kitanzi (njia ya mpango wa uzazi) □ Ndio □ Hapana

20. Je kuna haja ya kufanya kipimo cha kansa ya kizazi kwa kila mwanamke mwenye kutokwa na damu kwa wingi ukeni? □ Ndio □ Hapana

MTAZAMO, UJUZI/ MAARIFA/ ELIMU JUU YA MATIBABU YA UVIMBE KWENYE KIZAZI KWA NJIA YA KUZIBA MISHIPA YA DAMU INAYOPELEKA DAMU KWENYE UVIMBE (EMBOLIZATION YA ATERI YA UTERI/ (UAE))

Nini kinakupa wasiwasi kuhusu uvimbe kwenye kizazi?	**Nakubali sana**	**Nakubal**	**Sipo upande wowote**	**Sikubal**	**Sikubal kabisa**
1.Kutokuwa na udhibiti wa uvimbe (fibroids).					
2.Kuwa na mkazo/ mawazo wa/ya kisaikolojia na fibroid					
3. Kupoteza kiasi kikubwa cha damu kutokana na fibroids.					
4. Uvimbe kwenye kizazi(Fibroid) inaweza kuwa/ kupelekea kansa.					
5. Ubora wa maisha unaweza kuzorota.					
6. Fibroids inaweza kukua zaidi.					
7. Kuharibika kwa mimba au kuzaliwa mtoto kabla ya wakati					
8. Kutokuwa na uwezo wa kupata mimba tena					
9. Uvimbe kwenye kizazi (Fibroid) unaweza kuongezeka kwa idadi.					
10. Ninaweza kurithisha fibroids kwa watoto wangu					
11. Athari hasi kwenye ujinsia					
12. Kuwa na kitu kigeni ndani ya mwili wangu.					
13. Kuhusu haja ya matibabu.					
14. Athari mbaya kwa afya ya wanawake.					
	Nakubal sana	**Nakubal**	**Sipo upande wowote**	**Sikubal**	**Sikubal kabisa**
15. Madhara ya matibabu.					
16.Kuongezeka uzito kwa sababu ya fibroid.					
17. Kuwa na (kuendelea kuwa na) maumivu kutokana na fibroids.					
18. Kuwa na msongo hasi kutoka kwa fibroid.					
19. Kupoteza tumbo la uzazi (kizazi/ mfuko wa uzazi).					
20. Kukosa jambo zito/ muhimu (kwa kutopata matibabu).					
21. Kuongezeka hatari ya matatizo ya ujauzito					
22. Kuongezeka hatari ya uwasilishaji (ukaaji) mbaya wa mtoto kipindi cha kujifungua					
23. Kuongeza hatari ya kujishikiza kwa plasenta kusiko kwa kawaida					
24. Kuongeza hatari ya kujifungua kabla ya muda					
25. Kuongezeka hatari ya kutokwa kwa mimba					
26. Kuongezeka hatari ya zuio la ukuaji wa mtoto ndani ya uterus					
27. Kuongeza hatari ya kutokwa damu nyingi baada ya kujifungua					
28. Kuongezeka hatari ya kuzaa kwa upasuaji					

. Je, umewahi kusikia kuhusu matibabu ya uvimbe kwenye kizazi kwa njia ya kuziba mishipa ya damu inayopeleka damu kwenye uvimbe (UAE)?		**Ndio**		**Hapana**		
2. Ulipata au kupokea wapi maarifa/ elimu kuhusu matibabu ya uvimbe kwenye kizazi kwa njia ya kuziba mishipa ya damu inayopeleka damu kwenye uvimbe (UAE)?		**Nakubal sana**	**Nakubal**	**Sipo upande wowote**	**Sikubal**	**Sikubali kabisa**
1	Mtoa huduma za matibabu					
2	Wana Familia na marafiki					
3	Mtandao/YouTube					
4	Vyombo vya habari (kwa kiasi kikubwa kutoka)					
4a	Luninga (TV)					
4b	Redio					
4c	Gazeti					
5	Vikao vya Hospitali					
6	Ushauri wa kliniki					
7	Kongamano la matibabu					
8	Mkutano wa matibabu / afya					
9	Matangazo ya hospitali					
10	Mafunzo ya matibabu/ afya					
11	Mafunzo mengine, tafadhali elezea					
3. Ni nini embolization ya uteri?						
1	Utaratibu wa upasuaji unaofanywa na daktari wa wanawake					
2	Utaratibu wenye madhara madogo (uvamizi mdogo)					
3	Utaratibu unaofanywa na mtaalamu wa radiolojia ya intervation.					
4	Kufikia mishipa ya ateri kwa kutumia vifaa vinavyofikia mishipa ya arteri inayopeleka damu kwenye kizazi (uterus)					
5	Punje ndogo zinaingizwa kwenye mshipa kwa njia ya sindano kufikia mishipa inayopeleka damu kwenye kizazi.					
6	Punje ndogo zinazopelekea ukataji wa upelekaji damu kwenye kizazi hivyo kupelekea kukauka/ kusinyaa kwa uvimbe (fibroid).					
7	Inatumia ganzi yenye kupuzisha kwa wastani					
4. Ni zipi dalili/ ishara za kufanyiwa embolization ya uteri?		**Nakubal sana**	**Nakubal**	**Sipo upande wowote**	**Sikubal**	**Sikubali kanisa**
1	Dalili za uvimbe kwenye kizazi (fibroid ya uteri)					
2	Kutokwa kwa damu baada ya kuzaa					
3	Adenomyosis					
4	Mwanamke anahitaji kubaki na kizazi (uterus)					
5	Anahitaji kulinda uwezo wa kuzaa.					
6	Wanawake wenye umri mdogo sana (vijana)					
7	Wanawake wenye umri mkubwa (wazee)					
8	Hedhi (kutokwa damu) nyingi					
9	Hedhi nyingi (kutokwa damu) ya muda mrefu					

10	Maumivu wakati wa kutokwa damu ya hedhi					
11	Maumivu wakati wa tendo la kujamiiana					
12	Kukojoa mara kwa mara					
13	Mkojo kushindwa kutoka					
14	Kufunga choo					
5. Nini zuio la (inapingana na) kufanyiwa embolization ya uteri (UAE)		**Nakubal sana**	**Nakubal**	**Sipo upande wowote**	**Sikubal**	**Sikubali kabisa**
1	Sijui					
2	Maambukizi katika njia ya uzazi					
3	Ujauzito					
4	Kansa ya Uteri au shingo ya uzazi					
5	Kutokua na uhakika wa ugonjwa					
6	Mzio (aleji) kwa sababu ya contrast					
7	Kuganda kwa damu (coagulopathy) ambayo haijatibiwa					
6. Embolization ya uteri (UAE) inafanyikaje?		**Nakubal sana**	**Nakubal**	**Sipo upande wowote**	**Sikubal**	**Sikubal kabisa**
1	Sijui					
2	Kwenye chumba maalum chenye mashine maalum (Angio Suite au mwongozo wa fluoroscopi)					
3	Sindano ndogo sana inaingizwa kwenye mshipa wa damu (ateri).					
4	Waya unatumika kubadili sindano kudumisha ufikaji					
5	Waya unatumika kupita kwenye katheta kwenda kwenye mshipa wa damu wa kizazi (ateri ya kizazi).					
6	Katheta inatumika kuweka punje ndogo kwenye mshipa wa wa damu wa kizazi (ateri ya uteri)	**Nakubal sana**	**Nakubal**	**Sipo upande wowote**	**Sikubal**	**Sikubal kabisa**
7	Chembe chembe ndogo kuziba mirija inayopeleka damu kwenye uvimbe (fibroid)					
8	Inatumia dawa ya ganzi ya sehemu husika					
9	Inatumia dawa ya ganzi ya kumpumzisha mtu kwa wastani					
10	Mara chache hutumia dawa ya ganzi ya kumpumzisha mtu mwili mzima (usingizi)					
7. Ni yapi madhara ya kawaida humpata mtu aliyefanya embolization ya uteri (UAE)?		**Nakubal sana**	**Nakubal**	**Sipo upande wowote**	**Sikubal**	**Sikubal kabisa**
1	Mzio (aleji)					
2	Kuvimba sehemu ambazo pametobolewa kwa ajili ya kupitisha mirija ya kufanya embolization					
3	Maumivu ya tumbo					
4	Maumivu ya nyonga					
5	Kuwa na homa					
6	Kichefuchefu					

7	Kutapika					
8	Kupanda kwa presha (presha ya juu)					
9	Maambukizi (kwenye nyonga / sehemu ya kidonda / mwilini)					
10	Mvilio kwenye mshipa wa damu (Thrombosis)					
11	Mabadiliko ya rangi au joto la miguu ya mgonjwa					
12	Sijui					
8. Nini uelewa na mtazamo wako juu ya embolization ya uteri (UAE)		**Nakubal sana**	**Nakubal**	**Sipo upande wowote**	**Sikubal**	**Sikubal kabisa**
1	Sina mtazamo wowote.					
2	UAE ni njia salama					
3	UAE ni matibabu mapya na chaguo mbadala wa upasuaji (myomectomy) kwa fibroids.					
4	UAE hutolewa kwa wagonjwa wanaotafuta mimba za baadae.					
5	Wengi wa wagonjwa hupata nafuu ya kupunguza maumivu, shinikizo na dalili za kutokwa na damu baada ya UAE					
6	UAE kupunguza maumivu ya fibroid mapema					
7	UAE hupunguza kutokwa damu iliyosababishwa na fibroid mapema					
8	UAE hupunguza taratibu shinikizo/ mgandamizo unaosababishwa na fibroids					
9	UAE inaweza kutibu fibroid nyingi kwa wakati mmoja					
10	UAE haina maumivu ukilinganisha na upasuaji (hysterectomy).					
11	UAE inatumia muda mfupi wa kukaa hospitali.					
12	UAE inawapa wanawake nafasi kurudi kwenye kazi zao na shughuli nyingine mapema.					
13	UAE ina kiwango cha chini cha kuongeza damu.					
		Nakubal sana	**Nakubal**	**Sipo upande wowote**	**Sikubal**	**Sikubal kabisa**
14	Wagonjwa wachache wanaweza kuhitaji upasuaji mwingine baada ya UAE					
15	UAE hatari ya kutokwa na damu sehemu ya kuingiza katheta					
16	UAE hatari ya kupata maambukizi.					
17	UAE ina hatari ya kuumia kwa mshipa wa damu ya ateri ya kizazi (uterus).					
18	UAE ina hatari ya kucheleweshe kugunduliwa kwa saratani adimu iliyokosewa na kujulikana kama uvimbe kwenye kizazi (fibroid).					
19	UAE ina hatari ya kupitisha tishu za fibroid kupitia uke.					
20	UAE ina hatari ya kusababisha jipu la kwenye kizazi (uterusi)					
21	UAE ina hatari ya matatizo kwa mimba za baadae.					

22	UAE ina hatari ya matatizo/ shida ya mayai ya uzazi (ovari) kwa wenye umri zaidi ya miaka 45 au wagonjwa wenye umri mkubwa.					
23	UAE inaweza kuathiri vibaya utendaji wa mayai ya uzazi (ovari)					
24	UAE inaweza kusababisha kukoma kwa hedhi kabla ya wakati					
25	Viwango vya mimba baada ya UAE vinalinganishwa na idadi ya watu kwa ujumla					
26	Kiwango cha chini cha matokeo ya uzazi au uwezo wa kuzaa baada ya UAE kulinganisha na upasuaji (myomectomy).					
27	Hatari ya kurudia uvimbe kwenye kizazi (fibroid) baada ya UAE.					
28	Hatari ya kurudiwa kwa matibabu baada ya UAE.					
29	Uhitaji wa matibabu ya upasuaji baada ya UAE.					
30	Kuongezeka kwa hatari ya matatizo ya ujauzito (uzazi) baada ya UAE.					
31	Kuongezeka kwa kiwango cha kuharibika kwa mimba baada ya UAE					
32	Kuongezeka kwa kiwango cha kuzaa watoto kabla ya muda wa mimba kutimia umri wa wiki za ukomavu baada ya UAE					
33	Kuna ongezeko la zuio la ukuaji wa mtoto ndani ya tumbo la uzazi baada ya UAE.					
34	Hatari ya ongezeko la uwasilishaji (ukaaji) mbaya wa mtoto kipindi cha kujifungua baada ya UAE					
35	Ongezeko la hatari la kujishikiza kusiko kwa kawaida kwa kondo(plasenta) baada ya UAE					
36	Ongezeko la hatari la kutokwa kwa damu nyingi baada ya kujifungua baada ya UAE.					
37	Ongezeko la hatari la kuzaa kwa upasuaji baada ya UAE					
38	UAE inaondoa uvimbe tumboni (fibroid) kabisa.					
39	UAE haiwezi kupunguza matatizo ya ujauzito yanayoambatana na uvimbe kwenye kizazi (fibroid)					
40	Matokeo ya juu ya ujauzito baada ya UAE					
41	UAE haizuii mipangilio ya uzazi ukilinganisha na upasuaji.					
42	Kufunga hedhi baada ya UAE hutokea kwa wanawake walio juu ya umri wa miaka 45.					
43	Madhara/ matokeo ya UAE kwenye uzazi (uwezo wa kupata ujauzito) yana utata.					
44	Madhara/ matokeo ya UAE kwenye kubeba mimba (ujauzito) yana utata					
9. Ninaweza kupendekeza UAE kwa		**Nakubal sana**	**Nakubal**	**Sipo upande wowote**	**Sikubal**	**Sikubali kabisa**
1	Mgonjwa					
2	Rafiki					
3	Ndugu					

4	Mwenyewe/ mke wako					
5	Mtu yoyote					
10. Ninapendelez zaidi UAE kuliko njia nyingine za matibabu ya uvimbe kwenye kizazi (fibroid)						
11. Tunahitaji elimu zaidi juu ya UAE						

Sahihi ya mshiriki_____

Appendix V: Ethical Clearance Approval

UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

OFFICE OF THE DIRECTOR – RESEARCH, PUBLICATIONS AND INNOVATION

Ref. No.DA.282/298/01.C/1969

Date: 07/11/2023

MUHAS-REC-11-2023-1969
FAUZIA MIRAJI KAPITENI
COLLEGE OF MEDICINE
MUHAS

RE: APPROVAL FOR ETHICAL CLEARANCE FOR A STUDY TITLED: KNOWLEDGE, ATTITUDE, AND PERCEPTION TOWARDS UTERINE ARTERY EMBOLIZATION FOR TREATMENT OF UTERINE FIBROIDS AMONG HEALTHCARE WORKERS AND PATIENTS ATTENDING MUHIMBILI NATIONAL HOSPITAL

Reference is made to the above heading,

I am pleased to inform you that the Chairman has on behalf of the University Senate, approved ethical clearance of the above-mentioned study, on recommendations of the Senate Research and Publications Committee meeting accordance with MUHAS research policy and Tanzania regulations governing human and animal subjects research.

APPROVAL DATE: 07/11/2023
EXPIRATION DATE OF APPROVAL: 07/11/2024

STUDY DESCRIPTION:
Purpose:

The purpose of this cross-sectional study is to evaluate knowledge, attitudes, and perceptions towards uterine artery embolization as a treatment option for uterine fibroid among women diagnosed with uterine fibroid and healthcare workers.

- The approved protocol and procedures for this study is attached and stamped with this letter, and can be found in the link provided: https://irb.muhas.ac.tz/storage/Certificates/Certificate%20-%2014801.pdf and in the MUHAS archives.

The PI is required to:

1. Submit bi-annual progress reports and final report upon completion of the study.
2. Report to the IRB any unanticipated problem involving risks to subjects or others including adverse events where applicable.
3. Apply for renewal of approval of ethical clearance one (1) month prior its expiration if the study is not completed at the end of this ethical approval. You may not continue with any research activity beyond the expiration date without the approval of the IRB. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.
4. Obtain IRB amendment (s) approval for any changes to any aspect of this study before they can be implemented.
5. Data security is ultimately the responsibility of the investigator.
6. Apply for and obtain data transfer agreement (DTA) from NIMR if data will be transferred to a foreign country.
7. Apply for and obtain material transfer agreement (MTA) from NIMR, if research materials (samples) will be shipped to a foreign country,
8. Any researcher, who contravenes or fail to comply with these conditions, shall be guilty of an offence and shall be liable on conviction to a fine as per NIMR Act No. 23 of 1979, PART III section 10 (2)
9. The PI is required to ensure that the findings of the study are disseminated to relevant stake holders.
10. PI is required to be versed with necessary laws and regulatory policies that govern research in Tanzania. Some guidance is available on our website https://drp.muhas.ac.tz/.



Dr. Nahya Salim Masoud,

Chairperson, MUHAS Research and Ethics Committee

Appendix VI: Introduction Letter

UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
OFFICE OF THE DIRECTOR – POSTGRADUATE STUDIES

In reply quote;
Ref. No. HD/MUH/T.249/2021

28th November, 2023

The Executive Director,
Muhimbili National Hospital,
P.O. Box 65000,
DAR ES SALAAM

Re: INTRODUCTION LETTER

We would like to inform you that the bearer of this letter is Fauzia Miraji Kapiteni with Reg. No. HD/MUH/T.249/2021 is a student at Muhimbili University of Health and Allied Sciences (MUHAS) "pursuing MMed. Radiology and Imaging.

As part of her studies, she will be doing an elective research titled: **"Knowledge, Attitude, and Perception Towards Uterine Artery Embolization For Treatment of Uterine Fibroids Among Healthcare Workers and Patient Attending Muhimbili National Hospital."** She is being supervised by Balowa Mussa from MUHAS and Dr. Irene Mhalu from MNH.

The research has been approved by the Chairman of University Senate.

Kindly provide him the necessary assistance to facilitate the conduct of his research.

We thank you for your cooperation.

Ms. Victoria Mwanjilwa
For: DIRECTOR – POSTGRADUATE STUDIES

c.c Fauzia Miraji Kapiteni

Muhimbili University of Health and Allied Sciences Postgraduate Studies P.O. Box 65001

9 United Nations Road, Upanga West, P.O. Box 65001, Dar Es Salaam: Tel. G/Line: +255-22-2150302/6; Ext. 1015; Direct Line:+255-22-2151378;Telefax:+255-22-2150465;E-mail:dpgs@muhas.ac.tz;Web:https://www.muhas.ac.tz

Appendix VII: Permission Letter

UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
OFFICE OF THE DIRECTOR – POSTGRADUATE STUDIES

In reply quote;
Ref. No. HD/MUH/T.249/2021

28th November, 2023

MUHIMBILI NATIONAL HOSPITAL
RECEIVED
28 NOV 2023
REGISTRY
File No:.....

The Executive Director,
Muhimbili National Hospital,
P.O. Box 65000,
DAR ES SALAAM

Re: INTRODUCTION LETTER

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Kindly provide him the necessary assistance to facilitate the conduct of his research.

We thank you for your cooperation.

Ms. Victoria Mwanilwa
For: DIRECTOR – POSTGRADUATE STUDIES

c.c Fauzia Miraji Kapiteni

9 United Nations Road, Upanga West, P.O. Box 65001, Dar Es Salaam: Tel. G/Line: +255-22-2150302/6; Ext. 1015; Direct Line:+255-22-2151378;Telefax:+255-22-2150465;E-mail:dpgs@muhas.ac.tz;Web:https://www.muhas.ac.tz