EXPERIENCES AND FACTORS INFLUENCING THE USE OF DILATORS BY WOMEN WITH CANCER WHO RECEIVED PELVIC RADIOTHERAPY AT CANCER DISEASES HOSPITAL IN LUSAKA, ZAMBIA

BY

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DECLARATION

I, Alex Mwale, declare that this Dissertation represents my own work and that all sources quoted have been cited and acknowledged by means of complete reference. I further declare that this Dissertation has not been previously submitted for a Degree, Diploma or other qualification at UNZA or another University. It has been prepared in accordance with the guidelines for Master of Science in Clinical Nursing Dissertations of the University of Zambia.

Signed……. **Date…….**

Candidate

Signed……. **Date…….**

Supervisor

CERTIFICATE OF APPROVAL

This dissertation of Alex Mwale on **Experiences and Factors influencing the use of vaginal dilators by women with cancer who received Pelvic Radiotherapy at Cancer Diseases Hospital in Lusaka** has been approved as a fulfilment or partial fulfilment of the requirement for the award of Degree of Masters of Science in Clinical Nursing by the University of Zambia.

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Examiner 2

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Signature…… Date……

Examiner 3

Name…….

Signature**……** Date……

Head of Department

Names: ……

Signature: ……. Date: …….

DEDICATION

I dedicate this dissertation to my wife, Inutu Constance Nyambe, for her love, unquestionable confidence in me and support during the training. My uncle Mr Motty Kanyandi (late) and Ms Monica Katowa Kanyandi for the special gift of education. My Parents, Mr Moses Mwale (Late) and Ms Margret Kanyandi Mwale, and Ms. Patricia Mbumwae for their encouragement love and support. My children Miyanda, Alex (Jr) and Emmanuel for their love and understanding. To my siblings, Precious and Merinda for their support and prayers. May God richly bless you all.

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LIST OF ABBREVIATIONS

ACS:	American Cancer Society
ACC:	Australian Cancer Council
CDH:	Cancer Diseases Hospital
CACX:	Cancer of the Cervix
EBRT:	External Beam Radiation Therapy
GLOBOCAN:	Global Cancer
HDR:	High Dose Rate
KS:	Kaposi's Sarcoma
MOH:	Ministry of Health
NFGON:	National Forum of Gynecological Oncology Nurses
OPD:	Out Patient Department
PRT:	Pelvic Radiotherapy
RT:	Radiotherapy
SPSS:	Statistical Package for Social Sciences
TMH:	Tata Memorial Hospital
UK:	United Kingdom
UNZA:	University of Zambia
UTH:	University of Teaching Hospital
WHO:	World Health Organization

ABSTRACT

Cancer of the cervix is one of the commonest cancers among women seen at Cancer Diseases Hospital in Lusaka, Zambia. Pelvic Radiotherapy is the main treatment modality used on Cervical Cancer patients. Pelvic Radiotherapy causes vaginal stenosis in women, but this stenosis can be prevented by regular sexual intercourse or use of vaginal dilator, which is recommended by many cancer organizations such as American Cancer Society. Despite the well-established benefits of using vaginal dilators, there was reluctance by women to adopt this practice as seen by the few numbers of survivors with vaginal stenosis at Cancer Diseases Hospital. The objective of this study was to explore the experiences and determine factors influencing the use of vaginal dilators by women with cervical cancer after receiving Pelvic Radiotherapy.

This study utilized a mixed method design. The quantitative component utilized a cross sectional design and the qualitative component utilized a descriptive phenomenological design which allowed participants describe their "lived experiences" of using vaginal dilators. A total of 338 participants were interviewed for the quantitative component and 22 participants were purposefully selected and interviewed for the qualitative component. Quantitative data was analyzed with Statistical Package for Social Sciences. Descriptive statistics of frequency distribution and percentages were computed. Later a cross tabulation analysis was conducted using Chi-square and binary logistic regression. Thematic analysis was utilized for qualitative data.

Five themes from the qualitative study emerged on how women experienced the use of vaginal dilator, such as uncomfortable dilators, pity for the husband, changed lifestyle, fear and embarrassment. The quantitative data revealed that 53.6% participants were adequately using the dilator. Three factors which were found to be predictors influencing the use of vaginal dilator are marital status (P-value =0.000), occupation (P-value =0.044), health education (P-value =0.015). The inadequate use was due to negative experiences and some factors such as marital status, occupation and IEC. This study recommends appropriate health education concerning the use of vaginal dilators and Ministry of Health to provide proper vaginal dilators not the 50mls syringes currently in use.

Keywords: Cervical cancer, Radiotherapy, Experiences, Use of Vaginal dilators, Vagina stenosis

CHAPTER ONE

1.0 INTRODUCTION

Cervical cancer (CACX) is the fourth most common cancer in women worldwide, (GLOBOCAN, 2018). In Zambia, CACX ranks the first most frequent cancer among women seen at Cancer Diseases Hospital (CDH) (CDH action plan, 2018). Pelvic Radiotherapy (PRT) is the main treatment of CACX given at CDH and vaginal stenosis is anticipated in all women. Vaginal stenosis can be prevented by having regular sexual intercourse or use of vaginal dilators to break down developing adhesions and separating the vaginal walls, (Juraskova, et al, 2015). Vaginal dilation involves inserting a smooth, cylindrically shaped device into the vagina for approximately 20 minutes, three times a week, in order to mechanically separate the walls of the vagina and stretch the vaginal tissue, (Johnson, et al, 2010). Rehabilitative vaginal dilator is a widely endorsed practice by healthcare providers and is regularly prescribed to women who receive PRT as recommended by many cancer organizations such as, the American Cancer Society (ACS), Australian Cancer Council (ACC), and the National Forum of Gynecological Oncology Nurses (NFGON), (ACS, 2014 and NFGON, 2012). The use of vaginal dilators is commenced once the acute inflammatory phase of PRT has settled, (Miles and Johnson, 2014). The current rationale for preventing stenosis is to support women who wish to have penetrative vaginal intercourse and for clinical vaginal examination so that early detection of a potentially treatable CACX recurrence can be detected, (Miles and Johnson, 2014).

At CDH, before commencement of Radiotherapy (RT), all patients are counseled about the side effects of RT and the information is recorded as part of the informed consent process during the assessment and planning phase of RT. At the end of RT sessions, approximately after six weeks women with CACX are taught to regularly use vaginal dilators to prevent vaginal stenosis. Use of Vaginal Dilator by CDH women involves inserting 50 milliliters syringe, three times a week for twenty minutes for two years.

Similar studies on use of vaginal dilators were conducted in Australian at the Sydney Oncology Centre by Milross, et al (2012) to explore the patient experiences of dilator use and identify the barriers affecting compliance with recommendations. The major barriers that emerged were

uncertainty about dilator use, viewing dilator use as a negative experience, lack of time or forgetting to use the dilator and associating it to sex aids. Uncertainty about dilator use included the method, frequency and cleaning, and concern about bleeding and infection at commencement of use. Another study conducted by Cullen, et al (2012) at Elizabeth Garrett Anderson Hospital in London, highlighted that women named barriers such as lack of privacy, time constraints, pain and discomfort while using the dilator. Further, Jolicoeur and Hamilton (2015) in the article "care for women after RT" asserted that many women struggled with different thoughts, feelings and fears about vaginal dilators. Some women who have never touched their vulva felt very uncomfortable or embarrassed at the thought of a dilator as a sex toy and were totally embarrassed. Women felt that dilation was violation of the body. They used to worry about pain and were reminded that sexual penetration may be uncomfortable. This caused women to worry about having sexual intercourse or any other penetration into the vagina because they were afraid it may hurt. Others were worried about damaging their vagina if they did not dilate correctly and felt overwhelmed because it was one more thing to do in an already busy life.

Despite promoting the use of vaginal dilators at CDH since 2007, no study has been conducted on the experiences with and factors influencing the use of vaginal dilators to prevent vaginal stenosis by women with CACX who received PRT. Therefore, this study explored the patient`s experiences and factors influencing the use of vaginal dilators to prevent vaginal stenosis after receiving PRT at CDH. This study was motivated by records from CDH which showed that more than 10 women with CACX complete PRT weekly and they are educated on the use of vaginal dilators. Furthermore, records also show that about 60 women are followed up per week for assessment of vaginal stenosis after PRT, (CDH action plan, 2018). Patients are followed up after 6 weeks post PRT, then every 3 months for one year, every 6 months for one year and yearly for an indefinite period. The table below shows the number of new cases of cancers seen from 2013 to 2016.

Table 1.1 Top 10 Cancer cases seen at CDH from 2014 to 2016

2014			**2015**			**2016**	
TYPE	**TNP**		**TYPE**	**TNP**		**TYPE**	**TNP**
Cervix	588		Cervix	658		Cervix	747
KS	275		KS	177		Breast	186
Breast	133		Breast	167		KS	173
Prostate	102		Prostate	123		Prostate	173
Lymphoma	92		Lymphoma	76		Lymphoma	114
Oesophagus	81		Oesophagus	60		Oesophagus	74
stomach	42		colorectal	42		eye	53
Keloids	34		skin	33		liver	40
Colorectal	32		Gastric	33		vulva	34
Bladder	31		Liver	30		brain	29

Key: **TNP**= Total Number of Patients **KS**= Kaposi's Sarcoma

Table 1.1 shows that cancer of the cervix has been the top most from 2014 to 2016

1.2 STATEMENT OF THE PROBLEM

CDH started its operations of offering PRT and use of vaginal dilators in 2007 but compliance of vaginal dilator use has never been evaluated. Despite implementing the use of vaginal dilators in 2007, some patient files show that there were few cases of vaginal stenosis at CDH. On a weekly basis all post PRT women with CACX were evaluated for vaginal stenosis and it was observed that approximately 3 out of 60 women had some degree of vaginal stenosis. Vaginal stenosis compromises vaginal elasticity and decreases lubrication which results in the development of telangiectasia thus increasing the vagina's susceptibility to trauma and infection. Vaginal stenosis can also result in long-term sexual dysfunction and painful vaginal examinations which affects the quality of life of women with CACX, however, vaginal stenosis can be prevented by regular sexual intercourse or use of vaginal dilators. The health education given at CDH on the use of vaginal

dilators following PRT is inserting the 50-milliliter syringe, 3 times a week for 20 minutes over 2 years, but if the woman is sexually active, the dilator can be used less often. Currently, the dilator prescribed to CDH patients is a 50-milliliter syringe together with lubricants and male condoms. Although these vaginal dilators are prescribed, compliance of use has never been evaluated at CDH and despite the evidence on benefits of using vaginal dilators, there was reluctance by some women to adopt the practice and little was known about their experiences and factors influencing the use of dilators. Therefore, this study explored the experiences and factors influencing the use of vaginal dilators by women who received PRT at CDH in Lusaka.

1.3 CONCEPTUAL FRAMEWORK

This study was guided by the Ecological model of health Behavior. Originating from mid-twentieth century, the ecological model borrowed the works of Lewin, Barker, and Bronfenbrenner to understand the interplay between individual behavior and environmental contexts. The model examined human development by studying how human beings created the specific environments in which they live (Sara, 2012). In his original theory, Bronfenbrenner postulated that in order to understand human development, the entire ecological system in which growth occurs needs to be taken into account. This system is composed of four socially organized subsystems that support and guide human development. The four ecological systems that describes individual inter relation are microsystem (intrapersonal factors), ecosystem (interpersonal factors), hospital system (institutional factors) and macro system (community factors). The model was appropriate for this study because it explored various individual, interpersonal, institutional and community factors which influence the use of vaginal dilators. These factors operate at individual, household, hospital and community level. This study identified how the internal and external factors at various levels influenced the used of vaginal dilators. Interpersonal factors included the woman's relationships or social support systems which influenced her intentions to use the dilators. The social support systems included family members, friends, church members and coworkers. These women are also part of a community which has traditional customs, cultural beliefs, laws and policies. This study used the modified ecological model that presented factors that affect health at four levels,

intrapersonal (microsystems), interpersonal (ecosystem), institution (hospital systems) and community (macro system) as shown below.

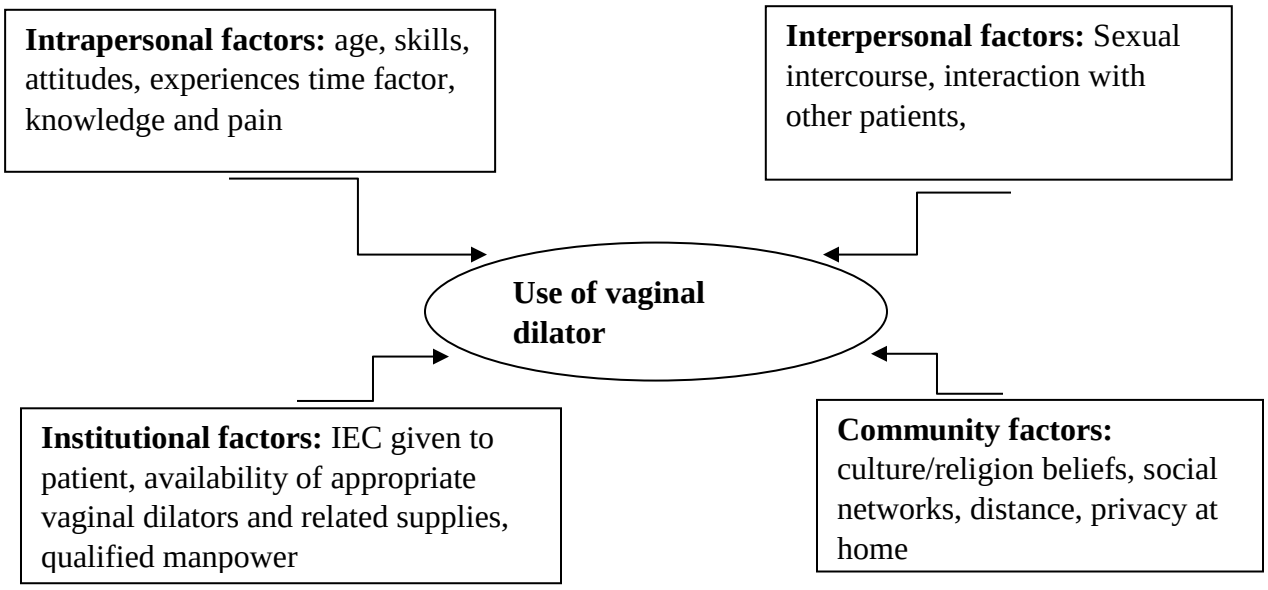

Figure 1.1: Modified Ecology model of health behavior applied to women using the Dilator

According to the ecological model of health behavior, a health-related behavior increases by providing stronger cues to action, emphasizing the benefits, overcoming the barriers and accounting for modifying factors. Providing stronger cues to action included information given before and during RT up to dilator use when further explanation was given. Ongoing follow ups were used to monitor and encourage continuous use of dilators. Explaining the benefits of dilator use was tailored to each woman's reasons for wanting to prevent stenosis, since some women focused more on sexual function whilst others were primarily concerned about optimizing medical examination. The barriers to dilator use were solved in a variety of ways through improved information provision, providing positive examples of other women's use of dilators and planning how to incorporate dilator use into their normal routine.

1.4 JUSTIFICATION

CDH started its operations in 2007 and vaginal dilators have been prescribed to women who received PRT, but up to date no study has been conducted to explore the experiences with and factors influencing the use of vaginal dilators at CDH. This study established the experiences and factors influencing the use of vaginal dilators. Data obtained was useful in establishing the

experiences of women who use vaginal dilators following PRT. This research was intended to generate solutions that will assist in improving use of vaginal dilators by women who received PRT at CDH. The study also provided a stepping stone for future studies to be conducted at CDH and other parts of the world in the area of using vaginal dilators. The findings from this study added to the body of knowledge on experiences and factors influencing use of vaginal dilators. Further the findings from this study will help identify best ways of promoting use of vaginal dilators and avoiding vaginal stenosis. Finally, the findings and recommendations of this study will be communicated to CDH and MOH to work on the gaps identified.

1.5 RESEARCH QUESTIONS

1.5.1 What are the experiences of women regarding use of vaginal dilators after receiving PRT at CDH in Zambia?

1.5.2 What factors influence use of vagina dilators by women who received PRT at CDH in Zambia?

1.6 OBJECTIVES

1.6.1 General Objective

To explore the experiences and determine factors influencing the use of vaginal dilators by women with CACX after receiving pelvic radiotherapy.

1.6.2 Specific objectives

1.6.2.1 To assess the experiences of using vaginal dilator by women with CACX who received PRT at CDH.

1.6.2.2 To identify factors influencing use of vaginal dilators among women with CACX who received PRT at CDH.

1.7 RESEARCH HYPOTHESIS

Null Hypothesis:

There was no association between the use of vaginal dilator and the following factors:

Age

Marital status

Occupation

Health Education given to Patients

Knowledge of use of dilators

Attitude towards use of dilators

Availability of Privacy at home

Availability of Time

Accessibility of condoms and lubricants

Regularity of Sexual intercourse

Pain associated with use of dilators

Distance from CDH

1.8 STUDY VARIABLES

1.8.1 Dependent variable:

Use of a vaginal dilator

1.8.2 Independent variables:

Age of the patient

Marital status

occupation

Health Education on dilators use

Knowledge of use of dilators and the benefits

Attitude

Availability of Privacy

Pain associated with dilator use

Time Factor

Regularity of sexual intercourse

Accessibility of condoms and lubricants

Distance to CDH

Variables	Indicators	Cut off Points	Question
Dependent variable			
Vaginal dilator use	Adequate use	Uses the dilator more than 3 times a week	8
	Inadequate use	Uses the dilator less than 3 times a week	
Independent variables			
Age	Early Adulthood	18 to 39 years	1
	Middle Adulthood	40 to 65 years	
	Late Adulthood	Above 65 years	
Health Education	Sufficient	Covers all aspects of vaginal dilatation	9 to 13
	Insufficient	Does not cover all aspects of vaginal dilation	
Sexual contact	Regular	Having sex more than three times a week	37
	Irregular	Having sex less than three times a week	
Resources availability	Readily accessible	Easy access to Dilator, condom and lubricant	33
	Not read accessible	Not able to access condoms or lubricants	
Knowledge on the use of vagina dilator	Good	Scores of 7-10 on knowledge questions	14 to 23
	Average	Scores of 4-6 on knowledge questions	
	Poor	Scores of 0-3 on knowledge questions	
Attitudes	Positive	Views the dilator as part of treatment	24 to 25
	Negative	Views dilator as embarrassing and sin	
Privacy	Yes	Lives alone or with husband in the bedroom	26
	No	Shares bedroom with other family members	
Time Factor	Enough	Uses the dilator for more than 20 minutes	31
	Limited	Uses the dilator less than 20 minutes	
Distance	Very Far	Away from the Line of Rail	41
	Far	Along the Line of Rail	
	Near	Within Lusaka District	

Pain	Severe	Pain of 7 to 10 on a pain scale	39
	Moderate	Pain of 4 to 6 on a pain rating scale	
	Mild	Pain of 1 to 3 on a pain rating scale	

1.8.3 Table 1.2: Variable, Indicator and Cut off points

1.9 KEY DEFINITIONS

1.9.1 Conceptual Definitions

Vaginal dilator: is a smooth plastic tube, with a handle, (Guy's and St Thomas, 2014).

Experiences: an event or activity which leaves a lasting impression (Advanced Oxford English dictionary, 2013)

1.9.2 Operational Definition

Vaginal Dilator: In this study vaginal dilator denotes a 50cc syringe used for dilatation of the vaginal

Experiences: In this study experiences denotes the lived experiences of what women who received PRT feels like to use a vaginal dilator.

Distance: In this study distance denotes living within Lusaka Province, along the line of rail or not alone the line of rail.

Use: In this study 'use' denotes the number of times a vaginal dilator is inserted in the vagina per week.

Attitude: In this study attitude are beliefs or feelings of how the dilator is viewed by participants. Positive attitude will be demonstrated by client believing that a vaginal dilator is part of treatment. Whereas, negative attitude will be demonstrated by participants viewing the use of a vaginal dilator as a sin, embarrassing or unpleasant.

Privacy: In this study privacy is when a participant shares the bedroom with the husband or stays alone. No privacy means sharing the bedroom with other family members and children

CHAPTER TWO

2.0 LITERATURE REVIEW

This chapter presents literature that was reviewed related to experiences with and factors influencing use of vaginal dilators. The data bases that were searched for this review included HINARI, Google Scholar, PubMed and Research gate. Other sources were documents from regulatory bodies such as the American Cancer Society (ACS), Australian Cancer Council (ACC), Asian pacific Oncology society and the United Kingdom, National Forum of Gynecological Oncology Nurses (NFGON). The literature was from both published articles and books and unpublished research reports, dissertations and Theses. Literature review was conducted to establish what others have learnt and reported on the experiences with and factors influencing the use of vaginal dilators. Literature reviewed was arranged according to variables, starting with experiences of women who had used the vaginal dilator following PRT and was then followed by literature on all the independent variables which included; age, level of education, knowledge of vaginal dilator use, attitudes/beliefs, privacy, pain, time factors, distance, sexual intercourse and accessibility of vaginal dilator condoms and lubricants.

2.1 EXPERIENCES WITH THE USE OF VAGINAL DILATORS

Literature below was reviewed in relation to experiences with use of vaginal dilators.

Cullen, et al, (2012) in Canada, conducted a qualitative study to examine women's experiences with use of vaginal dilator following treatment for Gynecological cancer. Majority of women were faced with some degree of embarrassment surrounding dilator use related to the perceived sexual nature of the device and saw the dilator as a sex toy, whereby the dilator was associated with taboos or sexual deviancy as other objects used for erotic pleasure. Due to the perceived social stigma associated with sex toys, there was also a fear of being judged for using a vaginal dilator.

Participants, using the dilator brought a variety of difficult emotions associated with the cancer and treatment. For some participants, using the dilator was like reliving the trauma they had experienced during treatment, which was both physical and psychological in nature. Women mentioned how they "hated" using the dilator because it was violation of their body. Although

there was variation regarding the strong dislike of the dilator, none of the women referred to use of dilator as an enjoyable or positive experience.

Fear of the dilator was a reaction toward the device and part of women's fear stemmed from the expectation that using the dilator would be painful or harmful. This expectation was related to the women's experiences of pain or discomfort during treatment. Some participants were worried that the dilator might cause more damage and did not want to compromise the vagina any more than it already had been. Participants described the dilator that it caused pain and discomfort. Minority reported feeling unskilled at putting an object inside their own vagina or having insufficient information about dilator use when discussing their difficulties.

Bakker, et al, (2014) in the study conducted in Netherlands on 30 women to identify determinants of patients' adherence with dilator use after EBRT. The study shows that intended use of dilator was determined by the expectation that it would prevent the development of vaginal adhesions and stenosis. Planning dilator use and making it part of a routine helped women. Others reported a lack of time or privacy, forgetting, or feeling tired. Influencing factors were negative emotions regarding dilator use or its hard-plastic design, pain, blood loss, and an association with EBRT. Some women mentioned a lack of instrumental support, such as lubricants.

Jolicoeur and Hamilton (2015) in the booklet "care for women after radiotherapy" asserted that many women struggled with different thoughts, feelings and fears about vaginal dilation. Some women who have never touched their vulva or vagina felt very uncomfortable or embarrassed at the thought of it. Even though they understood dilating was for medical reasons, they were uncomfortable talking about it or thinking about what they had to do. They thought of a dilator as a sex toy and were totally embarrassed. They were reminded of their cancer and cancer treatment and it brought back distressing thoughts and feelings. It reminded them of how defenseless and exposed during examinations, they felt that dilation was violation of their body. Worries about pain of dilation reminded them that sexual penetration may also be uncomfortable. This caused worries about having sexual intercourse or any other penetration into the vagina because they were afraid it may hurt and worry that having to dilate will change their intimate or sexual relationship. The women were overwhelmed with the thought of having to learn to dilate. Others were worried about damaging their vagina if they didn't dilate correctly. Some women felt overwhelmed

because it was one more thing to do in an already busy life, this study shows that participants did not value the use of a dilator. Those who were not sexually active prior to treatment felt uncomfortable about what to do after treatment showing that participants had little knowledge on dilator use.

2.2 FACTORS INFLUENCING THE USE OF VAGINAL DILATORS

There are several factors which can influence the use of vaginal dilators as discussed in this section from the literature reviewed. Despite the widespread provision of dilators after PRT, compliance with recommended use was generally poor and there was limited knowledge on the factors that influenced the use of vaginal dilators (Cullen, et al, 2012).

Bakker, et al, (2014) in a study conducted in Netherlands on 30 women identified factors influencing the use vaginal dilator as negative emotions, pain, blood loss during dilator use, and associating the dilator with brachytherapy. Some mentioned lack of instrumental resources while others were influenced by information given or social support. The factors below were reviewed:

2.2.1 Age

An Australian study was conducted by Milross, et al, (2012) to investigate factors affecting dilator use after PRT for gynecological cancer on the 14 women. The participants had an average age of 53 years ranging between 31 and 68 years. The usage of dilators in relation to age was reported as follows, women between the ages of 31 to 54 years was 43%, 55 to 64 years was 50% and above 65 years was 7%. The above study shows that most (50%) women using the dilator were between 55 to 64 years.

Morris, et al, (2017) also conducted a study in Sydney on radiation-induced vaginal stenosis and mentioned that there were multiple risk factors for the development of Radiation induced vaginal stenosis identified in literature. Reported risk factors included patient age but did not indicate the age group which was more affected with vaginal stenosis. Meanwhile a prospective study conducted by Law, et al, (2015) on use of vaginal dilator adherence on 116 patients from the radiation oncology clinics at the Memorial Sloan Kettering Cancer Center Manhattan campus, its four regional sites in New York and New Jersey shows that age was less of a factor but found higher adherence in older women

Brand, et al, (2015) investigated whether an educational intervention would facilitate compliance with vaginal dilators and potentially reduce stenosis in women receiving radiotherapy as treatment for a gynecological malignancy. This study reported that frequency of dilator use was greater in those patients older than 50 years. Most of the reports shows that adequate use of dilator was more common in women above 50 years.

2.2.2 Information Education and Communication

Morris, et al, (2017) in a study, Radiation-induced vaginal stenosis, reported that there was poor compliance with vaginal dilatation due to lack of consistent or adequate information regarding dilator use. It was thought that Educational interventions can improve patient compliance with vaginal dilatation and reduce emotional distress.

Cullen, et al, (2012) conducted a qualitative study in Canada to examine women's experiences with vaginal dilator and it was noted that healthcare providers were sensitive to the embarrassment women might experience with the dilators and took steps to minimize any potential discomfort. The majority of participants indicated that they received straightforward introduction to rehabilitative dilator use. The dilators were typically introduced using a combination of humor and an approach, which, according to participant's account was helpful. "During the counseling, nurses or physician explained the side effects of PRT, the reasons for using a dilator, how to use the device, and where women could purchase it". Although women were provided with written information about the dilator and how to use it, the actual process of inserting the dilator into the vagina was not physically demonstrated.

Similarly, Hanlon, et al, (2017) in the study conducted at the University of Pennsylvania to assess feasibility of recruiting to a study of dilator use and test a theoretically driven enhanced educational program (EEP) to increase adherence. The recommendation from the study was that nursing education should include how dilators maintain vaginal health and improve use because it was a motivator for adherence in this study.

Another study conducted by Punt, (2011) on vaginal dilation associated with PRT in UK. The study highlighted persistent inconsistencies in patient education regarding vaginal dilation within UK. The survey findings suggested a need to integrate teaching of vaginal dilation with a

standardized assessment of sexual health for women and to give greater priority to the evaluation of patient compliance in order to promote sexual readjustment.

2.2.3 Knowledge on use of vaginal dilator

A Canadian study by Cullen, et al, (2012) to investigate women's experiences with the use of vaginal dilator and to understand the psychosocial factors that influenced women's adoption of rehabilitative dilator use. The researchers reported that several women who used the dilators regularly mentioned the importance of understanding the rationale for dilator use. Reminders of developing stenosis, whether from clinicians or from personal experiences, prompted women to use dilators more often. Medical examination was an important influence on this, some women used the dilator more often immediately before an examination, and evidence of stenosis during the examination provided motivation to increase the frequency of dilator use.

2.2.4 Attitudes

A study in Brazil by Pessi, et al, (2015) was conducted on women undergoing HDR with the use of penile prosthesis to prevent vaginal stenosis in the Radiotherapy clinic of the oncology research center at Santa Catarina. Results from the study showed that many women accepted the established care, others accepted care with restrictions or embarrassment, but all understood the importance of vaginal dilation exercises to prevent vaginal stenosis. The study concluded that the shape of the prosthesis caused embarrassment or personal and family conflicts to some women.

Bakker, et al, (2014) in a study conducted in Netherlands on 30 women to identify determinants of patients' adherence with dilator use after EBRT/BT. The results from the study shows that more than half of the women expressed negative emotions about dilator use. A few women acknowledged that it was not the action itself that was hard to achieve, but that other barriers such as negative emotions made it hard to perform regular dilator use. Others mentioned doubting that dilator insertion was physically possible while some women expressed not being able to build dilator use into their routine

Bakker, et al, (2014) conducted a study in Australia at the Sydney Oncology Centre to explore the patient experiences of dilator use and identify the barriers affecting compliance with clinician recommendations. The experiences of dilator use demonstrated a wide variety of attitudes and

behaviors that influenced dilator use. The major barriers that emerged were uncertainty about dilator use, viewing dilator use as a negative experience and associating the dilator with sex aids. More than half of the women had negative feelings about the design of the plastic dilator set.

2.2.5 Availability of Privacy at home

An Australian study by Milross (2012) on 14 women which investigated barriers and facilitators affecting dilator use after PRT reported that several women suggested a separate consultation to discuss dilator use would to be helpful. The privacy in the consultation helped to ensure that the rationale for dilator use was clear and provided an opportunity for discussion rather than relying mainly on written information. It was also difficult for some women to find privacy to use the dilator in their households.

A study in Brazil by Pessi, et al, (2016) was conducted on women undergoing HDR with the use of penile prosthesis to prevent vaginal stenosis in the Oncology Research Center at Santa Catarina. Given the need to purchase the penile prosthesis, many women demonstrated shame to go to an establishment that sold such product. To facilitate the purchase and respecting the privacy of every woman, the institution specialized in oncology care in Santa Catarinal, performed a partnership with a commercial establishment, to buy the penile prosthesis, which was agreed by the recognition of the social need. To preserve the privacy, this establishment directed a specific private room without identification for storage and sale of the prosthesis, accessible only to women interested in the acquisition and guided by nurses. After this initiative, women began to feel more comfortable to buy the prosthesis because no one knew what they were buying when guided to that place. This is a recommended undertaking by this study because patients may not be comfortable to get a dilator from any place.

2.2.6 Time factor

Cullen, et al, (2012) in the study conducted to examine women's experiences with vaginal dilator in Canada reported that participants admitted they forgot to make time for the dilator because they saw, it was low on the priority list. Women explained that other responsibilities and concerns often took priority over making time for the dilator.

Milross, et al, (2012) conducted a study in Australia to identify barriers and facilitators affecting compliance of vaginal dilator use. From the study many women found it hard to find time to fit dilator use into their daily activities, resulting in women forgetting to use the dilators, putting it off to another day or not using them at all while women who accepted dilator use as part of their normal routine or a simple extension of medical treatment found it easier to continue regular use by comparing dilator use to other daily chores such as brushing their teeth. It was therefore recommended that all those women who find it hard to have time in the daily activities for dilator use, easier methods of reminders to the clients should be introduced such as use of alarm clocks or any other effective methods. Planning the use of dilators and making it part of a routine can help women accommodate the use of a dilator.

2.2.7 Availability of lubricants and condoms

Bakker and Vermeer (2015) conducted a research in Netherlands to 1dentify determinants of patients' adherence with dilator use after EBRT/BT. In this study some women mentioned lack of instrumental support such as, lubricants. Also, from the same study a couple of women were frustrated about their health insurance company not paying for the dilator set or having to buy lubricants themselves. One older woman stated being embarrassed by having to explain at her local drugstore why she needed lubricants. Informational support from health care providers reassured some women that it was normal experiencing certain setbacks during dilator use.

2.2.8 Sexual intercourse

Cullen, et al, (2012) in the study conducted to examine women's experiences with vaginal dilator in Canada, reports that although women were told that using the dilator would allow them to receive proper vaginal exams, the main selling point offered by healthcare providers was that it was important for regaining sexual function. Several women commented that given everything they had gone through; sex was the last thing on their minds after treatment.

Bakker, et al, (2014) in a study conducted in Netherlands on 30 women to identify determinants of patients' adherence with dilator use after EBRT/BT. All participants reported sexual problems and half of the women reported sexual distress since treatment. Almost all women reported pain during sexual contact. The majority reported symptoms of a shortened and/or tightened vagina, vaginal adhesions and loss of sexual desire, lubrication problems, a burning sensation and sensitive

vaginal skin, loss of blood after penetration, reduced sexual enjoyment, and fear for sex because of possible pain or infections. A few women indicated that dilator use had beneficial effects regarding sexual intercourse. The women also indicated that having a satisfactory sexual intercourse was an important incentive for long-term regular dilator use. In the above study, compliant participants did not mention about being sexually active or satisfied.

Milross, et al, (2012) conducted a study in Australia under the topic to investigate Barriers and facilitators affecting dilator use after PRT for cervical cancer on 14 women, the results showed that 8 women had regular sexual partners and 6 did not have regular sexual partners. The study does not indicate if the sexual contact influenced the use of dilators.

Another study by Pessi, et al, (2016) in Brazil, stated that the practice of post-RT sex was reported by only 26.4% of patients and the reasons for this low percentage was associated with the abandonment of women by partners, separation or divorce after diagnosis or cancer treatment and lack of medical care. This condition also reflects conservative cultural behavior concerning the erroneous transfer and recurrence of cancer through sexual intercourse. Women expressed gratitude for having survived, trying to replace the sexual practice by other nonsexual activities, such as religious practice. The issue of sexual relationships also arose as a major motivation for preventing stenosis through dilator use.

Vagal, et al, (2017) conducted a retrospective study in India at Tata Memorial Hospital (TMH) with the aim of investigating the usefulness of vaginal dilation following PRT in cervical cancer patients. This study found that dilation therapy with vaginal dilators post PRT is effective in preventing vaginal stenosis and improving vaginal patency and cannot be substituted with vaginal intercourse. The study also shows that both sexually active and inactive patients had significant improvement in vaginal patency at the third year or more after radiation therapy, suggesting that vaginal intercourse had no superior effect on vaginal patency compared to patients using vaginal dilators. The possibility of better results with regular and frequent vaginal intercourse on maintaining vaginal patency cannot be ignored.

Jensen and Froeding (2015) also reported poorer vaginal patency in women who were prescribed only sexual activity against those who were treated with a vaginal stent for preventing stenosis.

This study concluded that sexual activities led to poorer outcome compared to vaginal dilator because the frequency and duration of sexual activities might not have been measured.

2.2.9 Pain associated with use of dilators

El Shafie, et al, (2012) conducted a study in the UK on vaginal dilation associated with PRT. In this study continuation of intercourse during RT and resumption post treatment were supported, and women were told they should remain sexually active as comfort permitted. Comfort was the main determinant of depth of dilator insertion. However, if discomfort was experienced and the woman failed to insert the dilator to the full length, it can result in inadequate dilation.

Cullen, et al, (2012) conducted a study in Canada to investigate women's experiences with the vaginal dilator and to understand the psychosocial factors that influence women's adoption of rehabilitative dilator use. A convenience sample, comprised of 10 women from a large urban Canadian city was used. The results from the study showed that 6 of 10 women said the act of using the dilator caused pain and discomfort. Participants reported that the dilator was most painful during their initial attempts to use it, or when they tried to insert it too deeply. Pain ranged from sore but tolerable to extreme and difficult to bear. While some participants did not experience any pain using the dilator, they described it as an uncomfortable and unpleasant.

Hanlon, et al, (2017) carried out a study on Dilator use after vaginal Brachytherapy for Endometrial Cancer in Philadelphia on 42 women. The main concern voiced by women in this study was pain or discomfort, which was reported by 12% of women

The Clatter Bridge Cancer Centre in the patient education booklet say that it was normal to experience some pain when first using the vaginal dilator, but the pain should reduce as the anxiety level lessens. Therefore, women using vaginal dilators should be encouraged to use plenty of lubricating gel when using the vaginal dilator or when having sexual contact. The pain and discomfort in the above studies could have been influenced by a variety of personal reactions that may have acted as psychological deterrents or barriers to using the dilator. Having never used an object like a dilator, some participants found it foreign and unfamiliar. Thus, the patients should be told about vaginal dilators during the counseling's session before starting radiotherapy.

2.2.10 Distance from Health facility

Ambroggi, et al, (2015) in a study conducted to review literature on distance as a barrier to cancer diagnosis and Treatment, mentioned that the worse prognosis for patients living further from treating hospitals was because compliance with treatment was suboptimal. In addition, transportation to the health care provider influenced treatment compliance. A retrospective Indian study which evaluated 144 patients affected by cancer of the cervix in a rural medical college hospital was conducted. Of the 144 patients, 88 could not complete the treatment, and 63.9% were not able to travel more than 100 km from home to hospital for their treatment. It is therefore the aim of this study to identify the impact of distance on the use of vaginal dilator so that distance problems can be reduced by taking services to people.

2.3 SUMMARY

Globally, literature reviewed shows that studies assessed the experiences with and factors influencing the use of vaginal dilators in women who received PRT. Some Studies that were conducted reported the experiences with and factors influencing the use of dilator varied in each study. Although various studies were conducted on the use of vaginal dilator worldwide, no data was retrieved on studies conducted in Africa concerning use of vaginal dilator. Furthermore, from the literature reviewed there was no study that was conducted in Zambia to determine the experiences and factors influencing the use of vaginal dilators. The reviewed literature therefore provided a convincing argument why a research study on the experiences with and factors influencing the use of vaginal dilators was needed.

CHAPTER THREE

3.0 METHODOLOGY

This chapter presents the research method which was employed in this study. It constituted the research design, target population, sample size, sampling procedures, the research instruments, data collection tools and data analysis plans.

3.1 STUDY DESIGN

In this study, a mixed method design which employed both qualitative and quantitative approaches was used. The quantitative component utilized a cross sectional design, as this approach enabled a systematic collection and presentation of data to give a clear picture of factors influencing use of vaginal dilator and measured the relationship between the variables. For the qualitative component, a descriptive phenomenological design which allowed participants describe their "lived experiences" of using the dilator after PRT was utilized. Participants for qualitative study were purposefully selected from the same participants who participated in quantitative study.

3.2 STUDY SITE

The study was conducted at CDH a government hospital situated within the University Teaching Hospital (UTH) serving cancer patients from across the 10 Provinces of Zambia and neighboring countries. The hospital offers specialist inpatient and outpatient services and serves as a referral hospital for all confirmed cancer cases. The hospital offers various specialized services which included chemotherapy and radiotherapy as treatment modalities for CACX. The radiation section offers EBRT and high dose rate (HDR) treatment, while the Chemotherapy section offers cytotoxic treatment using different drugs.

3.3 STUDY POPULATION

The study population included all women with CACX who were prescribed vaginal dilators after receiving PRT and have been attending the CDH Gynecology follow up clinic from April 2007 to three months before commencement of data collection.

3.4 SELECTION OF PARTICIPANTS AND SAMPLING METHODS

Participants were selected using simple random sampling method for the quantitative component from approximately 60 post PRT women who were seen every week in the follow up clinic. Sixty pieces of paper were allotted numbers from 1 to 60 on every Thursday for 12 weeks and put in a box and all even numbers picked were included in the study. Thirty (30) participants were interviewed by the researcher and two research assistants on Thursdays.

3.5 SAMPLE SIZE

The sample size for quantitative data was calculated using the proportion precision formula;

$n = Z^2 \times P (1-P) / d^2$. Where;

n =Sample Required

Z = 1.96 is the standard normal variate at 95% confidence level

P = the expected prevalence (0.33)

d = acceptable accuracy range (+/-0.05)

The sample size was calculated at 95% confidence level (Z = 1.96) with 33% (p = 0.33) prevalence of CACX cases at CDH (CDH Annual report, 2016) and Precision of ±5% (d = ±5%).

Sample size calculation

$n = Z^2 \times P (1-P) / d2$

$n = 1.96^2 \times 0.33(1- 0.33) / 0.05^2$

$n = 3.84 \times 0.33(0.67)/0.0025$

$n = 3.84 \times 0.22/0.0025$

$n = 0.8452/0.0025$

n = **338**

The sample size was three hundred and thirty-eight (338) participants.

For the qualitative component, participants were purposefully sampled from those who participated in a quantitative study, a recommended sampling method in naturalistic inquiries. Participants were identified during the quantitative data collection and followed for interviews to their homes in Lusaka District the following week. This method of sampling ensured that all

participants experiencing the phenomenon being studied were included. Data saturation was attained after interviewing twenty-two (22) participants.

3.6 ELIGIBILITY CRITERIA

3.6.1 Inclusion criteria

The inclusion criteria were as follows:

- The participant who consented to be interviewed without the presence of a third person to ensure liberty for the participant to express feelings
- Those who were physically and cognitively able to participate in the interview process.

3.6.2 Exclusion Criteria

The exclusion criteria were as follows:

- Those who received palliative PRT (single shots).
- All those who received PRT with a diagnosis of anal, rectal, vulva, ovary and endometrial cancer because these cancers do not need the patency of the vaginal to detect recurrence of cancer. They can be monitored using tumor makers and inspection.

3.7 DATA COLLECTION TOOLS

Quantitative data was obtained using a structured questionnaire comprising of closed ended questions designed to elicit information concerning factors influencing use of vaginal dilators. The tool took approximately fifteen minutes to be completed and was composed of two subscales: demographic data and factors influencing use of vaginal dilators.

Qualitative data on the lived experiences with use of vaginal dilators was collected using in-depth unstructured interview schedule with open ended questions which is a recommendation in phenomenological studies, (Creswell, 2013). Face to-face interviews were conducted to allow the researcher to collect verbal and nonverbal cues such as gestures and facial expressions, in addition to asking clarifying questions such as “tell us more about the experiences of using the vaginal dilator.

3.8 DATA COLLECTION TECHNIQUE

In this study, the researcher and the two assistants introduced themselves to the participants, this helped participants feel at easy. The purpose, benefits and risks of the study were explained to the participants and obtained a written consent before conducting the interviews. To enable participants, participate without fear, confidentiality was assured and they were informed that the interview was a face to face interview in a private room after they agreed to participate.

3.8.1 Pre-test

The sample size for quantitative component of the pretest study was 10% (34) of the study sample size. The respondents were selected using simple random sampling at CDH inpatient wards. The structured questionnaire was administered and necessary adjustments to the tool were made.

The pretest size for qualitative sample was two. Participants were selected at CDH using purposive sampling and followed to their homes within a naturalistic setting in Lusaka District.

3.8.2 Validity and reliability of a quantitative tool

The quantitative validity for this research instrument was measured by ensuring that all the variables of the study were included in the interview schedule by making questions simple, brief and concise and by conducting a pilot study. The researcher and experts in the field of research went through the research tool to ensure no important item was missed out. The collected data was analyzed, interpreted and presented as aggregate results of the study. The researcher conducted an exhaustive literature search in order to have adequate content coverage. The researcher is an experienced oncology nurse and the supervisors are experienced researchers. The sequencing of the questions was same for all the respondents.

Reliability was obtained by ensuring that the tool was tested before the study was conducted. The test study was used as a baseline data and the same questionnaires was administered and used throughout the study. The research supervisors reviewed the instruments before it was administered. The questions were arranged in sequence and in a simple, concise, brief and the same questions were asked to all respondents for reliability to be ensured. Reliability was also ensured by conducting a pretest study before the main study. The research assistants were trained in data collection methods and the use of different data collection methods. This eliminated biases.

3.8.3 Validity and reliability of a qualitative tool

The criteria recommended by Lincoln and Guba (2000) was taken into consideration to achieve qualitative validity and reliability of the study. They recommend terms like, neutrality, credibility instead of internal validity, transferability instead of external validity, consistency instead of internal reliability, and confirmability instead of external reliability.

- **Neutrality:** Interviews took place from the homes of patients where the researcher could not manipulate the phenomenon of interest.
- **Credibility:** At the end of the interview participants were asked to clarify, correct errors and provide additional information.
- **Consistency:** All interviews were conducted by the same interviewer using the same interview form.
- **Confirmability:** All stages of the study were evaluated by the research supervisors, who confirmed that comments, conclusions, and recommendations truly reflected data. Data collection tools, data coding and all other research related material, were preserved for confirmability.

3.9 ETHICAL CONSIDERATION

Ethical clearance was obtained from the University of Zambia Biomedical Research Ethics Committee (UNZABREC approval number (REF.018.09.18). Permission to conduct the study was also obtained from the CDH Management and the National Health Research Authority. Consent was obtained from the participants in the study following a brief explanation on the purpose, procedure, benefits, and risks, of the study. Participants were reassured of the right to withdraw from the study and that no privileges were to be taken away if they decided not to take part while those who were willing to participate were made to sign the consent form. Participants were assured of anonymity and confidentiality of personal information that was shared with the researcher, as no name was written on the structured interview schedule and questionnaire and the information given was not attached to any name. Participants were not subjected to any physical harm as the research was not involving any invasive procedures. All participants were counselled before the interviews to deal with emotions which may have arisen due to recalling of cancer treatment and experiences of dilators.

Employing a phenomenological approach inquiry also required attention to ethical considerations (Creswell, 2013). Given the interview process, utilization of human interactions could potentially result in the sharing of personal information, steps were taken to ensure confidentiality. At the onset of each interview, participants were assured that the information they shared would not be connected to their identity. Transcriptions of the interviews contained no references to individual's identities. Each participant was given a pseudonym to be used in the final written document and all the records with identifiers were kept in a safe and will be deleted after 5 years.

CHAPTER 4

4.0 DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 DATA ANALYSIS

In this chapter, data processing and analysis are described. The results of the experiences and factors influencing use of vaginal dilator by women with CACX after receiving PRT are presented.

4.1.1 Qualitative Data

Thematic analysis was utilized for qualitative data. Thematic analysis is a flexible approach which enabled the researcher identify, analyze and report patterns within the data. The findings were presented in a table form and narrations from participant's responses.

4.1.2 Quantitative Data

Data was collected using a structured interview schedule. After data collection, interview schedules were sorted and edited for internal consistence, legibility and accuracy. Data was checked for completeness, coded and entered on a spread sheet created on SPSS version 21 for analysis. Descriptive statistics such as frequency distribution and percentages were computed. Pearson's chi-square cross tabulation test was conducted to test for statistical significance between dependent and Independent variables. Variables which were statistically significant in chi-square test were further analysed using binary logistic regression. A P-value less than 0.05 was considered statistically significant.

4.2 PRESENTATION OF FINDINGS

After each qualitative interview, initial ideas were written in the margins and interesting features coded across the entire dataset, thereafter the codes were organized into potential themes. The emerging themes were checked against the dataset and named.

4.2.1 Qualitative Findings

Interviews were conducted from the homes of the participants residing in Lusaka District. Data saturation was attained after interviewing 22 participants. Participants were aged between 30 to 69 years, with most of them in their 40s. Ten participants were married, twelve were single. Most

participants (seven) had primary and secondary education respectively, five had tertiary education and only three had no education. All the 22 participants were living within Lusaka District of which thirteen were from high density area (low-income settings) and nine were from middle to low density setting. All participants had been using the vaginal dilator for a duration between six months to more than three years. Only two had stopped using the vaginal dilator because they were having regular sexual contact with their partners. Out of the 22 participants, eleven were using the dilator twice weekly, six were using it three times weekly, followed by one participant who was using it three times daily and two participants were using the dilator once a week and one was using the dilator four and five times a week respectively. Participants discussed their experiences of using the dilator and five themes were presented from the study as shown in Table 4.1 below.

Table 4.1 Themes and sub themes

Themes	**Sub themes**	**Identity number**	**Total**
Uncomfortable dilators	Vaginal injuries	5,8	**5**
	Big Painful hard syringe	13, 15, 16	
Fear	Carrying, storing, disposal of condoms	4, 7, 17, 21	**6**
	Burdensome Procedure	2, 3	
Changed lifestyle	Lifelong Treatment	3, 6, 7, 15, 18, 21, 22	**11**
	Lack of privacy and time	2, 3, 6, 10, 11	
Pity for the Husband	Jealousy husband	9, 12, 17	**5**
	Supportive husband	1, 19	
Embarrassing	Unpleasant	10, 12, 14, 17	**5**
	Sinful act	16	

Table 4.1 above shows that five major themes emerged regarding how participants experienced the use of vaginal dilators. The experiences regarding the use of vaginal dilators were uncomfortable dilators, fear, changed lifestyle, pity for the husband and embarrassing. Most participants experienced at least three of the prominent themes.

Theme 1: Uncomfortable Dilator

The first theme on uncomfortable dilator, five out of twenty-two women experienced the use of vaginal dilators as uncomfortable because of the dilator design (syringe) which was hard, painful and caused injury to the vagina. Most women desired a more pleasurable dilator made out of softer material. Few participants never used the dilator adequately, because it was too painful and caused injury to the vagina. One participant complained about "just up seeing a big syringe puts her off and gripped with fear. Two participants who experienced uncomfortable dilators said "*The syringe is hard and it caused injuries to the vagina, the hospital should give items made of softer material"* participant 5 and 8. Another participant indicated that *"Although it is treatment, the syringe design is hard and painful. Kindly redesign the syringes so that it looks like a penis prosthesis which is soft, don't give us hard syringes",* Participant 1. "*The syringe is too hard and big. I sometimes bleed after using the dilator*. *It is bad I don't like the syringe at all. If it was not medical advice, I was going to stop using it'* Participants 15. "*The process is not pleasant; I do not see any reason why I should dilate. Whenever I see a big syringe it reminds me of cancer and its treatment especially the painful brachytherapy. Why are you troubling me with this hard-painful syringe*?" Participant 22.

Two participants indicated that it was not normal to use the dilator, *"I had to pray to God to give me strength and clear my conscious. That man (syringe) is ever hard' kindly employ young men to be dilating us or redesign the syringes to look like a penis which is soft,* Participant 13 and 16*".*

Theme 2: Fear

The theme on fear shows that six out of twenty-two women complained about the fear of carrying and keeping a lot of condoms at home. The actual procedure of dilator utilization was burdening to the participants. Almost all participants had fear of being found in possession of condoms and fear of actual use of dilator because the community may accuse them of liking too much sex despite having CACX. The carrying of condoms from CDH and storage at home caused fear to participants because condoms in Zambian communities are associated with sex workers and it was very abnormal for a woman to be found in possession of condoms as indicated by some participants:

"Imagine as old as am carrying condoms, I make sure that I hide the condoms when am travelling from CDH and when am at home" participant 7.

"The process is part of treatment but the burden of keeping condoms is troubling me, in case anyone discovers the condoms, they may accuse me of promiscuity, I told all my children about the condoms, that it's part of treatment. I even warned my sons not to steal the condoms" participant 3.

"The process is not easy especially carrying the condoms from the hospital and keeping a lot of them at home. I told my two sisters to destroy the boxes of condoms in case I die or when I am very ill. What will people say when they discover the condoms in my room Participant 17*"*

Two out of twenty-two women experienced the actual use of dilator as a burden because it needed privacy and good timing to use it. Participants had limited time and privacy for dilator use as indicated.

"The process of vaginal dilator use is affecting me socially like going to visit my relatives and friends. 'Am even failing to visit friends and family because of the same dilator, I may not have time and privacy to use the dilator when I go visiting" Participant 2.

"The first two weeks I used to feel bad when using the dilator but I had to force myself to continue using the dilator because it was treatment. When condoms are finished, I have fear of going to buy but my husband goes to buy because it looks very awkward for a woman to go and buy condoms from the chemist" Participant 21.

Theme 3: Kind of treatment that changed life style of participants

The theme on kind of treatment that changed Life Style, participants had similar challenges regarding their life styles while using the vaginal dilator. At the time of interview, seven out of 22 participants experienced the use of vaginal dilator as part of treatment. Although it was part of treatment all participants had limited social interactions such that they could not visit friends, relatives or go to camp meetings and funerals for more than three days mainly due to the dilator. The changes in life style due to use of vaginal dilator is evident in participants' statements below:

"*If it was not a medical advice, I was going to stop using the dilator and cancer treatment is long term which is not ending, just imagine chemoradiotherapy for 6 weeks and use of vaginal dilator for 2 years",* Participants 2, 3, 7, 15, 18, 21 and 22.

Three participants complained about difficulties to find time and privacy to use dilators.

"The use of vaginal dilator is affecting me socially, like failing to visit my relatives and friends because I may not have time and privacy to use the dilator when I go visiting" Participant 2. "*The process is tough in the sense that I have to use the dilator 3 times daily. I have to leave my work place (market) at lunch time when my children are at school to go and dilate at home, it's like taking medication. I know all those who come to CDH use the syringes and it motivates me a lot"* participant 3. *"Sometimes I ask myself the reasons why am using the dilator as old as am. It has been a very difficult process because of lack of privacy, I share the bedroom with my 2 granddaughters. I have to use the dilators when they are at school,* participant 11

One of the participants who was using the dilator for more than 3 years, was told that she can stop using the dilator but the participant said *"I will continue using the dilator because if I don't use it for 3 continuous days, the vagina closes up and there is abdominal fullness. I swear to continue using the dilator for life".*

Another participant mentioned that she did know why the vagina should be kept patent since the husband was dead *"I don't know the reasons why am using the dilator since my husband is dead"* Participant 10.

Theme 4: Pity for the Husband

Another theme was pity for the husband, five participants expressed concerns about their husbands who were jealousy and others were supportive. Jealousy husbands did not welcome the use of vaginal dilators initially because it denied them sexual intercourse but later appreciated the dilator. Supportive husbands were of great encouragement to participants by welcoming the use of dilator and not allowing the women to go and buy condoms from the pharmacy when they were finished at home. "*It is very embarrassing especially if your husband is watching, the process initially caused a misunderstanding with my husband but after explaining to him, he is the one who has been dilating using the syringe. It seems he has also lost sexual feelings for me. I explained to him that we can be having intercourse but he has never shown any interest. I am requesting the hospital to be involving our husbands during the counselling sessions"* Participant 12.

"During the use of a dilator my husband was ever upset. I only used the dilators for 5 months; my husband threw them away because he enjoys the vaginal tightness and does not want to use condoms because he does not know the reasons why condoms should be used" Participant 9. "*The Dilator brought problems at home although it protected me from having sex with my husband because I used to insert the dilator the whole night and sleep with it until morning so that he does not demand for sex*" Participant 17.

Some husbands were very supportive and not comfortable to let their wives go and buy condoms when they were finished. *"When condoms are finished my husband does not allow me to go and buy because it looks very awkward for a woman to go and buy condoms from the chemist"* Participant 19'. *'The process of using the dilator makes me miss my late husband he would have been supporting and helping me through sexual intercourse'* Participant 1.

Theme 5: Embarrassing

Embarrassment was another prominent theme where participants indicated that the actual use of vaginal dilator and the issue of condoms was embarrassing. Participants were even shy to talk about the use of dilators to friends and family members, while one participant viewed the use of dilator as a sinful act.

"It is a very bad and embarrassing process for old people like me but I am doing it because it is the advice from the hospital" it is also embarrassing to go and ask for condoms from the local health center, when looking for condoms, what will other people think about me' Participant 10. *"It is very embarrassing and awful process especially if your husband is watching, the process initially caused a misunderstanding with my husband"* Participant 12. *"The process was embarrassing and terrible when inserting the dilator, it always reminded me of the cancer and bleeding I used to have. Cancer treatment is long, just imagine 6 weeks of radiotherapy and 2 years of dilator utilization"* Participant 14. *"It is not normal to use a dilator, it's a sin, I had to pray for forgive and strength to clear up my conscious but I would rather die with a vaginal stenosis than going to hell".* Participant 16.

4.2.2 Quantitative Findings

Quantitative Data findings is presented into the following sections consisting Demographic characteristics, health related factors, frequency of vaginal dilator use per week, independent variables, chi square cross tabulations and logistics regression.

4.2.2.1 Section A: Demographic Characteristics

The demographic data relevant to this study included age, marital status, education level and occupation as presented in table 4.2

Table 4.2: Demographic characteristics of the Participants (n=338)

Variable	Frequency	Percentage
Age in Years		
18 to 39 (Early adulthood)	53	15.7
40 to 65 (Middle adulthood)	214	63.3
Above 65 (Late adulthood)	71	21.0
Total	**338**	**100**
Marital status		
Never married	11	3.3
Married	165	48.8
Divorced	64	18.9
Widowed	98	29.0
Total	**338**	**100**
Level of education		
None	45	13.3
Primary	186	55.0
Secondary	77	21.9
Tertiary	33	9.8
Total	**338**	**100**
Occupation		
Never worked	135	39.9
Self employed	150	44.4
Formal employment	53	15.7
Total	**338**	**100**

Table 4.2 shows that most (63.3%) participants were in the middle adulthood followed by those who were in the late adulthood and 15.7% were in early adulthood. The table also shows that most

(48.8%) participants were married. The table further shows that majority (44.4%) participants were self-employed followed by those who were not working at 39.9%. In terms of education, most (55%) participants had primary education and 13.3% had never been to school.

4.2.2.2 Section B: Health Related Factors

Table 4.3 Treatment related characteristics of Participants (n=338)

Variable	Frequency	Percentage
Type of cancer treatment		
Surgery plus chemo radiation	36	10.7
Surgery plus radiotherapy	1	0.3
Radiotherapy only	25	7.4
Chemo radiation	276	81.7
Total	**338**	**100**

Table 4.3 shows that most (81.7%) participants received chemo radiation (CRT), followed by 10.7% who received surgery plus CRT, while 7.4% received RT only. 0.3% received surgery plus RT.

4.2.2.3 Section C: Use of Vaginal Dilator Per Week

Table 4.4 Months of using a vaginal dilator

Variables	Frequency	Percentage
Duration		
3 to 11 months	203	60.1
12 to 24 months	101	29.9
Above 24 months	34	10.1
Total	338	100.0

Table 4.4 shows that most (60.1%) participants had used the dilator between 3 to 11 months, followed by those who used the dilator between 12 to 24 months at 29.9% and few (10.1%) used the dilator for more than 24 months.

Table 4.5 Use of vaginal dilator per week (n=338)

Variable	Frequency	Percentage
Use of Vaginal dilator per week		
Less than three times a week (Inadequate use)	156	46.4
Three and more times a week (Adequate use)	182	53.6
Total	**338**	**100**

Table 4.5 shows that most (53.6%) participants were using the vaginal dilator adequately. This result gave a justification on why this study should be conducted on experiences and factors influencing the use of dilators

4.2.2.4 Section D: Health Education

Table 4.6 IEC given to participants (no 338)

Variable	Frequency	Percentage
Information Education and Communication		
Sufficient	187	55.3
Insufficient	151	44.7
Total	**338**	**100.0**

Table 4.6 shows that 55.3% of the participants reported having received sufficient health education while 44.7% participants indicated that they IEC on the use of vaginal dilators was insufficient.

Table 4.7 Level of Knowledge on the Use of Vaginal Dilator (no 338)

Variable	Frequency	Percentage
Knowledge		
Poor	72	21.3
Average	224	66.3
Good	42	12.4
Total	**338**	**100**

Table 4.7 shows that most (66.3%) participants had average knowledge on the use of vaginal dilator.

4.2.2.5 Section F: Attitudes and Believes

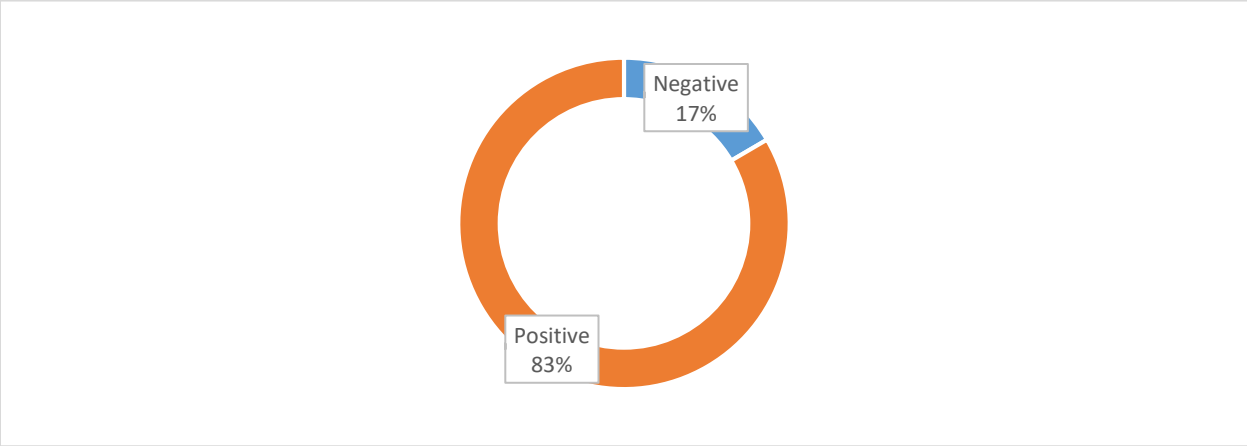

Figure 4.1 showing attitudes towards the use of vaginal dilators (n=338)

Figure 4.1 shows that 83% of participants had positive attitude towards the use of vaginal dilator.

4.2.2.6 Section G: Availability of Privacy at Home

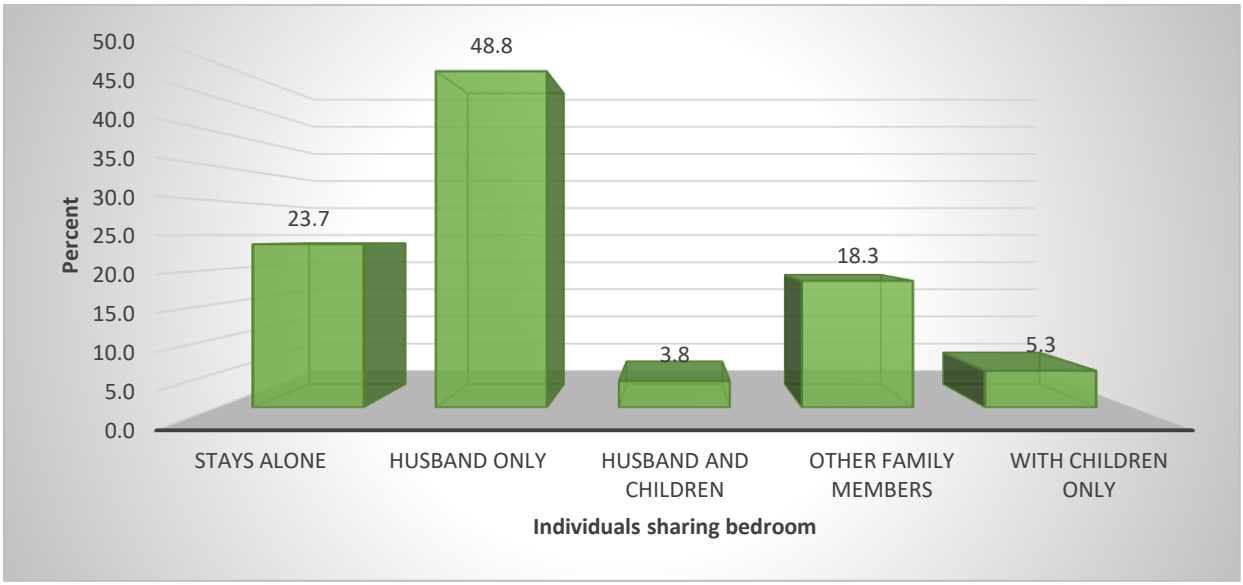

Figure 4.2 Persons sharing the bedroom with participant (n=338)

Figure 4.2 shows that most (48.8%) participants were sharing the bedroom with their husbands only and 23.7% were staying alone in the bedroom. Participants who were sharing the bedroom with other family members were 18.3%.

4.2.2.7 Section H: Availability of Time For use of Vaginal Dilator

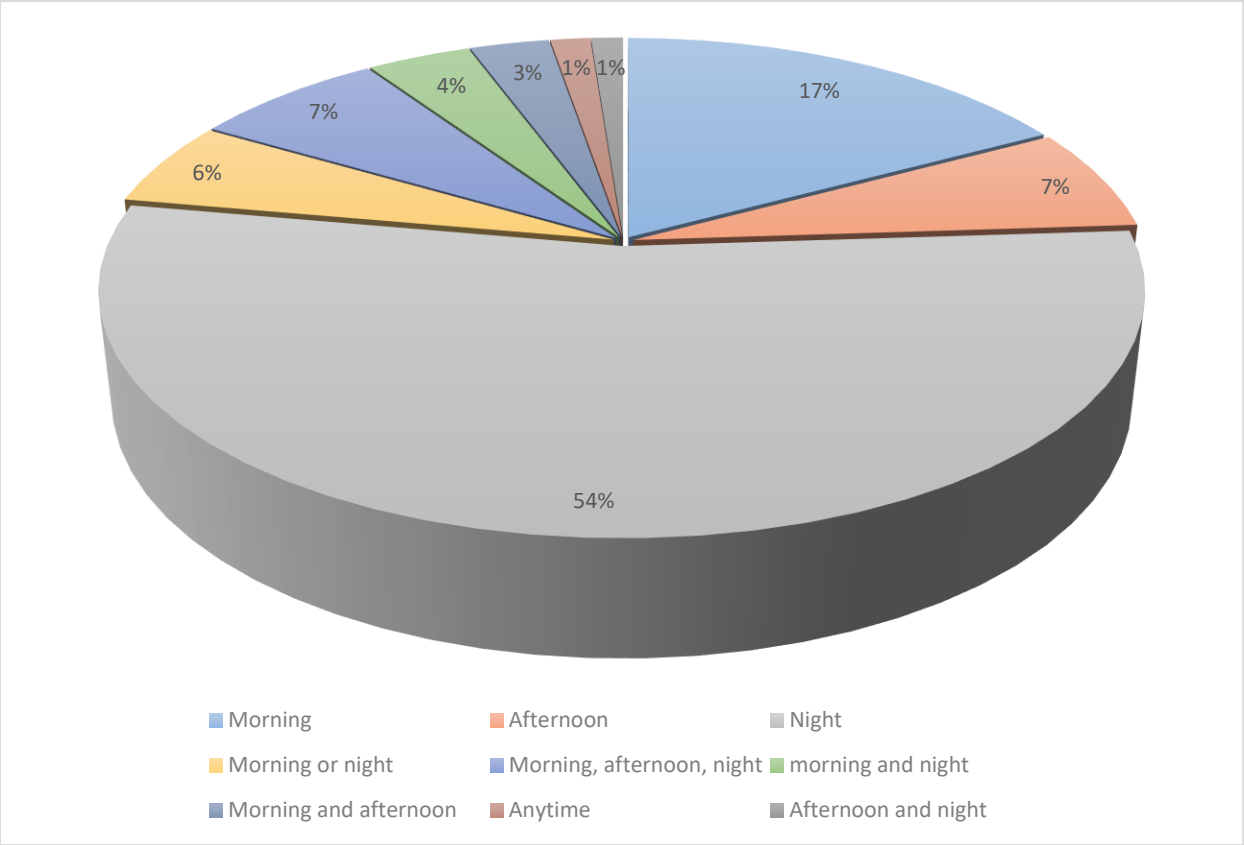

Figure 4.3 time of the day when vaginal dilators are used (n=338)

Figure 4.3 shows that majority participants (54%) were using the vaginal dilator at night, followed by those who were using it in the morning representing 17%. Other participants were using the dilator as follows: three times daily (morning, afternoon, night) and in the afternoon only represented 7% respectively. Those who were using the dilator either in the morning or night represented 6%. Others were using the dilator twice daily (morning and night) representing 4%, morning and afternoon represented 3%, afternoon and night, and at any time represented 1% respectively.

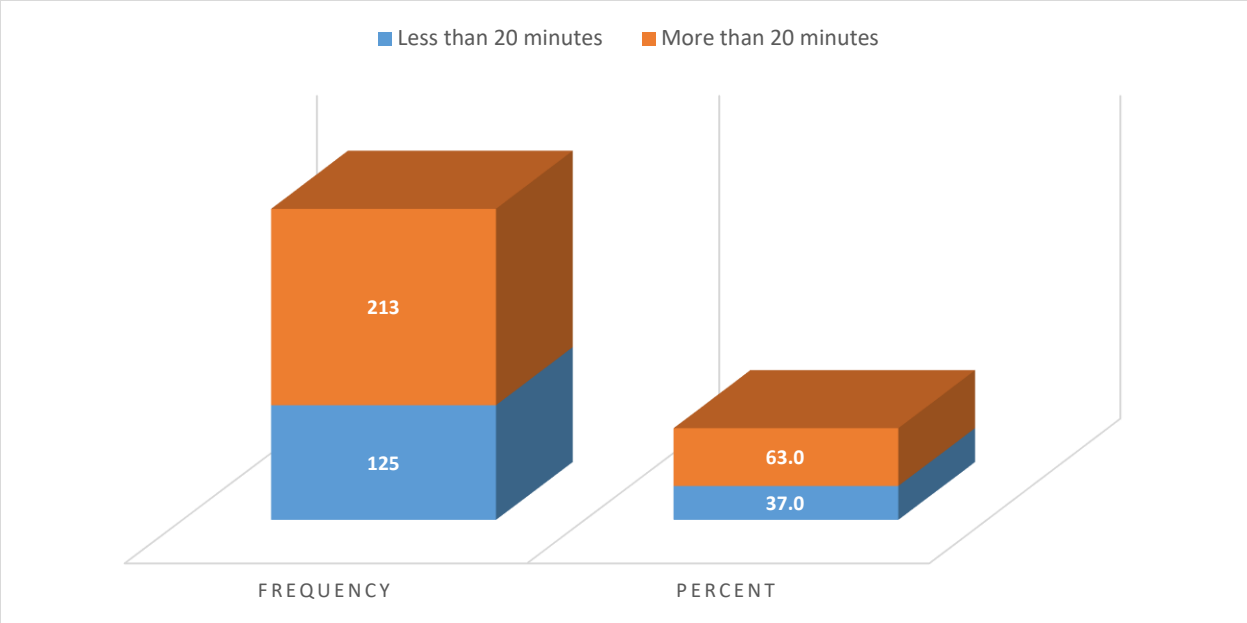

Figure 4.4 Minutes spent on the use of Vaginal dilator (n=338)

Figure 4.4 shows that 63% of participants were using the dilator for 20 minutes and above and 37% were using the dilator less than 20 minutes.

4.2.2.8 Section I: Availability of Vaginal Dilator Accessories

Table 4.8 showing the accessibility of condoms and lubricants

Variable	Frequency	Percentage
Accessibility of condoms and lubricants		
Easily accessible	174	51.5
Not easily accessible	164	48.5
Total	**338**	**100**

Table 4.8 Many (51.5%) participants easily accessed condoms and lubricants and 48.5 had difficulties in accessing condoms and lubricants.

4.2.2.9 Section J: Sexual Intercourse by Participants

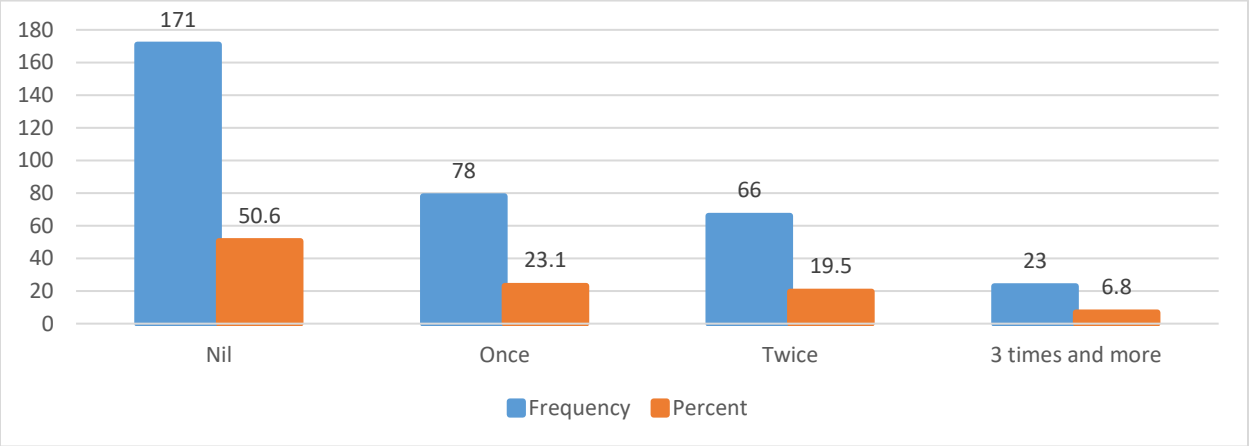

Figure 4.5 Showing the Number of Sexual Intercourse per week (n=338)

Figure 4.5 shows that 50.6% did not engage in any sexual activity after finishing treatment and very few (6.8%) were having sex 3 or more times a week.

4.2.2.10 Section K: Pain and Discomfort by Participants

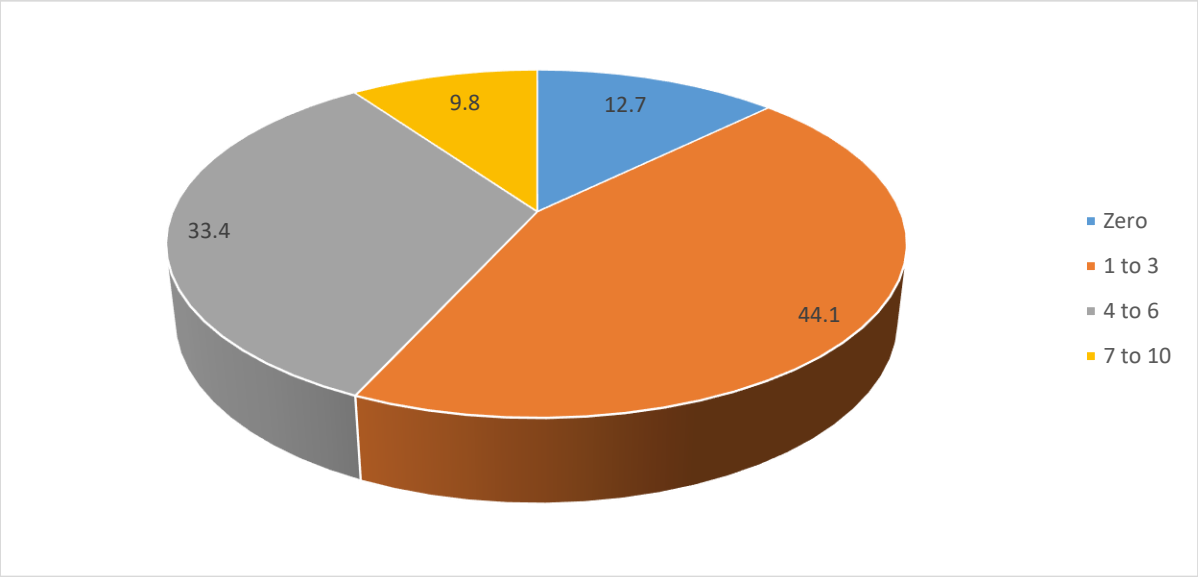

Figure 4.6 showing the severity of pain (n=338)

Figure 4.6 shows that majority (44.1%) participants had mild pain while using the dilator, followed by 33.4% who had moderate pain while 12.7% participants did not experience any pain and few (9.8) participants had experienced severe pain.

4.2.2.11Section L: Permanent Residence by Participants

Table 4.9 Distance from CDH

Variable	Frequency	Percentage
Distance		
Not along the line of railway (Very far)	141	41.7
Along the line of railway (Far)	95	28.1
Within Lusaka District (Near)	102	30.2
Total	**338**	**100**

Table 4.9 shows that Most (41.7%) participants were staying very far from CDH, followed by 30.2% who were staying within Lusaka District.

4.3 CROSS TAB BETWEEN DEPENDENT AND INDEPENDENT VARIABLES

Table 4.10 Use of Vaginal dilator in relation to age (n=338)

Age	Use of Vaginal Dilator		Total	P value
	Less than 3 times (Inadequate use)	3 and more times (Adequate use)		
Early Adulthood	29 (54.7%)	24 (45.3%)	53 (100%)	**0.002**
Middle Adulthood	84 (39.3%)	130 (60.7%)	214 (100%)	
Late Adulthood	44 (62%)	27 (38%)	71 (100%)	
Total	**157 (46.4%)**	**181 (53.6%)**	**338 (100%)**	

Table 4.10 shows that the use of vaginal dilator was statistically significant (P value = 0.002) with age. Most (60.7%) participants who were in the middle adulthood were using the dilator adequately.

Table 4.11 Use of Vaginal dilator in relation to Marital Status (n=338)

Marital Status	Use of Vaginal Dilator		Total	P value
	Less than 3 times (Inadequate use)	3 and more times (Adequate use)		
Never Married	7 (63.6%)	4 (36.4%)	11 (100%)	
Married	53 (32.1%)	112 (67.9%)	165 (100%)	**0.000**
Divorced	36 (56.2%)	28 (43.8%)	64 (100%)	
Widowed	61 (62.2%)	37 (37.8%)	98 (100%)	
Total	157 (46.4%)	181 (53.6%)	338 (100%)	

Table 4.11 shows that the use of vaginal dilator was statistically significant (P value= 0.000) with marital status. Most (67.9%) married participants were more likely to use the dilator adequately.

Table 4.12 Use of Vaginal dilator in relation to level of education (n=338)

Level of education	Use of Vaginal Dilator		Total	P value
	Less than 3 times (Inadequate use)	3 and more times (Adequate use)		
None	32 (71.1%)	13 (28.9%)	45 (100%)	
Primary	83 (44.6%)	103 (55.4%)	186 (100%)	
Secondary	26 (35.1%)	48 (64.9%)	74 (100%)	**0.002**
Tertiary	16 (48.5%)	17 (51.5%)	71 (100%)	
Total	157 (46.4%)	181 (53.6%)	338 (100%)	

Table 4.12 shows that the use of vaginal dilator was statistically significantly (P value=0.002) with the level of education. Majority (71.1%) Participants with no education were more likely not to use the dilator adequately.

Table 4.13 Use of Vaginal dilator in relation to occupation (n=338)

Occupation	Use of Vaginal Dilator		Total	P value
	Less than 3 times (Inadequate use)	3 and more times (Adequate use)		
Formal Employment	20 (37.7%)	33 (62.3%)	53 (100%)	**0.012**
Self employed	61 (40.7%)	89 (59.3%)	150 (100%)	
Not working	76 (56.3%)	59 (43.7%)	71 (100%)	
Total	157 (46.4%)	181 (53.6%)	338 (100%)	

Table 4.13 shows that the use of vaginal dilator was statistically significant (P value=0.012) with occupation. Most (62.3%) participants in formal employment were using the dilator adequately

Table 4.14 Use of vaginal dilator in relation to IEC given (n=338)

Health education	Use of vaginal dilator per week		Total	P value
	Less than 3 times (Inadequate use)	3 and more times (Adequate use)		
Sufficient	99 (52.7%)	89 (47.3%)	188 (100%)	
Insufficient	58 (38.7%)	92 (61.3%)	150 (100%)	**0.010**
Total	**157 (46.4%)**	**181 (53.6%)**	**338 (100%)**	

Table 4.14 shows that the use of vaginal dilator was statistically significant (P value=0.010) with IEC given. Most (61.3%) participants who said that they had insufficient IEC were over using the dilator.

Table 4.15 Use of Vaginal dilator in relation to level of Knowledge (n=338)

Knowledge	Use of vaginal dilator per week		Total	P value
	Less than 3 times (Inadequate use)	3 and more times (Adequate use)		
Good	17 (40.5%)	25 (59.5%)	42 (100%)	
Average	112 (50.0%)	112 (50.0%)	224 (100%)	**0.183**
Poor	28 (38.9%)	44 (61.1%)	72 (100%)	
Total	**157 (46.4%)**	**181 (53.6%)**	**338 (100%)**	

Table 4.15 shows that the use of vaginal dilator was not statistically significant with the level of knowledge. Most (61.1%) with average knowledge were using the dilator adequately.

Table 4.16 Use of Vaginal dilators in relation to Attitude (n=338)

Attitude	**Use of Vaginal dilator per week**		**Total**	**P value**
	Less than 3 times (Inadequate use)	3 and more times (Adequate use)		
Positive	129 (46.2%)	150 (53.8%)	279 (100%)	
Negative	28 (47.5%)	31 (52.5%)	59 (100%)	
Total	**157 (46.4%)**	**181 (53.6%)**	**338 (100%)**	**0.864**

Table 4.16 shows that most (53.8) participants with positive attitude were using the dilator adequately and this study shows that there was no statistical significance (P-value 0.864) between the use of vaginal dilator and attitude.

Table 4.17 Use of Vaginal dilator in relation to privacy at home (n=338)

Privacy at home	**Use of Vaginal dilator per week**		**Total**	**P value**
	Less than 3 times (Inadequate use)	3 and more times (Adequate use)		
Yes	121 (48.8%)	127 (51.2%)	248 (100%)	
No	36 (40%)	54 (60%)	90 (100%)	**0.152**
Total	**157 (46.4%)**	**181 (53.6%)**	**338 (100%)**	

Table 4.17 shows that most (51.2%) participants who had privacy were using the dilator adequately and there was no statistical significance between the use of vaginal dilator and privacy.

Table 4.18 Use of vaginal dilator in relation to time spent (n=338)

Time	**Use of Vaginal dilator per week**		**Total**	**P value**
	Less than 3 times (Inadequate use)	3 and more times (Adequate)		
Enough	58 (46.4%)	67 (53.6%)	125 (100%)	
Limited	99 (46.5%)	114 (53.5%)	213 (100%)	
Total	**157 (46.4%)**	**181 (53.6%)**	**338 (100%)**	**0.989**

Table 4.18 shows that most (53.5%) participants had limited time while using the dilator. The use of vaginal dilator was independent from the time factor, (P-Value=0.989).

Table 4.19 Use of Vaginal dilator in relation to accessibility of condoms /lubricants (n=338)

Condoms and Lubricants	**Use of Vaginal dilator per week**		**Total**	**P value**
	Less than 3 times (Inadequate use)	3 and more times (Adequate)		
Easily accessible	85 (48.9%)	89 (51.1%)	174 (100%)	
Not easily accessible	72 (43.9)	92 (56.1)	164 (100%)	
Total	**157 (46.4%)**	**181 (53.6%)**	**338 (100%)**	**0.362**

Table 4.19 shows that the use of vaginal dilators was not statistically significant with the accessibility of condoms and lubricants. Most (51.1%) participants who easily accessed condoms and lubricants were using the dilator adequately.

Table 4.20 Use of Vaginal dilator in relation to Sexual intercourse (n=338)

Sex Intercourse	**Use of vaginal dilator per week**		**Total**	**P value**
	Less than 3 times (Inadequate use)	3 and more times (Adequate use)		
Regular	9 (40.9%)	13 (59.1%)	22 (100%)	**0.590**
Irregular	148 (46.8%)	168 (53.2%)	316 (100%)	
Total	**157 (46.4%)**	**181 (53.6%)**	**338 (100%)**	

Table 4.20 shows that there was no statistical significance between sexual contact and the use of vaginal dilator. Most (53.2%) participants who had irregular sex intercourse were adequately using the vaginal dilator.

Table 4.21 Use of vaginal dilator in relation to level of Pain (n=338)

Level of Pain	Use of vaginal dilator per week		Total	P value
	Less than 3 times (Inadequate use)	3 and more times (Adequate use)		
Zero	22 (51.2%)	21 (48.8%)	43 (100%)	
Mild	75 (50.3%)	74 (49.7%)	149 (100%)	**0.100**
Moderate	51 (45.1%)	62 (54.9%)	112 (100%)	
Severe	9 (27.3%)	24 (72.7%)	33 (100%)	
Total	157 (46.4%)	181 (53.6%)	338 (100%)	

Table 4.21 shows that there was no association between pain and the use of vaginal dilator. Majority (50.3%) participants with mild pain were inadequately using the dilator.

Table 4.22 Use of Vaginal dilator in relation to distance (n=338)

Distance	Use of vaginal dilator per week		Total	P value
	Less than 3 times (Inadequate use)	3 and more times (Adequate use)		
Near	50 (49%)	52 (51%)	102 (100%)	
Far	38 (44.1%)	57 (50.9%)	95 (100%)	
Very far	69 (48.9%)	72 (51.1%)	141 (100%)	
Total	157 (46.4%)	181 (53.6%)	338 (100%)	**0.331**

Table 4.22 shows that the use of vaginal dilator was not statistically significant (P-value=0.331) with distance. Majority (51.1%) participants who were staying very far from CDH were using the dilator adequately.

4.4 BINARY LOGISTIC REGRESSION

Five variables of age, marital status, level of education, occupation and health education which were found to be statistically significant with Pearson's' chi square test were further analyzed using the binary logistic regression

Table 4.23: Classification Table

Observed	Predicted		
	Inadequate use	Adequate use	Percentage correct
Inadequate use	88	69	56.1
Adequate use	50	131	72.4
Overall percentage			64.8

Table 4.23 shows that the regression model was statistically significant as a whole ($X^2 = 32.510$, $p = 0.001$) and could account for 3%, variation in the outcome variable, making it a weak model. In terms of prediction power, the model could predict inadequate use of dilator with 56.1% accuracy and adequate use with an accuracy of 72.4%. As a whole, the model had an overall prediction accuracy of 64.8%.

Table 4.24: Binary Logistic Regression Model of Factors Associated with use of dilators

	Use of vaginal dilator in a week			**P-Value***
	Inadequate	**Adequate**		
Predictor Variable	**N (%)**	**N (%)**	**OR (95% CI)**	
Age				
Early adulthood	29 (54.7%)	24 (45.3%)		
Middle adulthood	84 (39.3%)	130 (60.7%)	1.127	**0.356**
Late adulthood	44 (62%)	27 (38%)		
Marital status				
Never Married	7 (63.6%)	4 (36.4%)		
Married	53 (32.1%)	112 (67.9%)	0.593	**0.000***
Divorced	36 (56.2%)	28 (43.8%)		
Widowed	61 (62.2%)	37 (37.8%)		
Level of education				
No education	32 (71.1%)	13 (28.9%)		
Primary	83 (44.6%)	103 (55.4%)	1.212	**0.216**
Secondary	26 (35.1%)	48 (64.9%)		
tertiary	16 (48.5%)	17 (51.5%)		
Occupation				
Formal employment	20 (37.7%)	33 (62.3%)		
Self employed	61 (40.7%)	89 (59.3%)		
Not employed	76 (56.3%)	59 (43.7%)	0.695	**0.044***
Health Education				
Sufficient	99 (52.7%)	89 (47.3%)		
Insufficient	58 (38.7%)	92 (61.3%)	1.761	**0.015***

*Indicates significant *p*-value at $p < 0.05$.

Table 4.24 of binary logistic regression model above shows that participants who were adequately using the vaginal dilator are those who were married, those in formal employment and those who received sufficient health education. Single participants were 0.059 times less likely to adequately use the dilator than those who were married. Those participants who were not working were 0.70 times more likely to adequately use the dilator than those who were in self/formal employment. Those participants who had sufficient health education were 1.761 times more likely to adequately use the dilator than those who had insufficient health education.

Table 4.25 Binary Logistic Regression Model of Factors Associated with use of vaginal dilators

Predictor Variable	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Age	0.196	0.213	0.852	1	0.356	1.217	0.802	1.847
Marital status	-0.522	0.135	14.930	1	0.000*	0.593	0.455	0.773
Occupation	-0.364	0.181	4.047	1	0.044*	0.695	0.487	0.991
Education Level	0.192	0.155	1.533	1	0.216	1.212	0.894	1.644
Health education	0.566	.232	5.942	1	0.015*	1.761	1.117	2.775
constant	1.304	.785	2.761	1	0.097	3.685		

*Indicates significant *p*-value at $p < 0.05$.

Based on the table 4.25, marital status, occupation and IEC significantly predict the likelihood of participants adequately use the dilator (Wald=14.930; p<.05; Wald=4.047; p<.05; Wald=5.949; p<.05) respectively.

Those participants who were single are 0.059 times less likely to adequately use the dilator than those who were married. Those participants who were not working were 0.70 times more likely to adequately use the dilator than those who were in self/formal employment. Participants with sufficient IEC were 1.761 times more likely to adequately use the dilator than those who had insufficient IEC.

CHAPTER FIVE

5.0 DISCUSSION OF FINDINGS

The discussion focus was on participants' socio demographic characteristics, experiences with the use of vaginal dilators and factors that influenced the use of vaginal dilators by women who received PRT at CDH in Zambia. The main objective of this study was to determine the experiences with and factors influencing the use of vaginal dilators by women with CACX who received PRT at CDH in Zambia. The study was prompted by the few observed cases of vaginal stenosis per week from patients who were followed up after receiving PRT at CDH. Presented in this chapter are experiences and factors influencing the use of vaginal dilator as established through the qualitative and quantitative component of this study respectively.

5.1 DEMOGRAPHIC CHARACTERISTICS

5.1.1 Qualitative data

A total of 22 participants with CACX who had used or were still using the vaginal dilator after receiving PRT were interviewed. Participants were selected from the quantitative study using purposive sampling method and were interviewed from their homes in Lusaka District. Participants were aged between 30 and 69 years, with most of them in their 40s. Ten participants were married and twelve were single (ten were widowed, one was never married and one was divorced). Most (7) participants had primary and secondary education respectively, five had tertiary education and the minority (3) did not have any form of education.

5.1.2 Quantitative data

A total of 338 participants were interviewed. Most (63.3%) participants were in the middle adulthood. The high proportion of middle adulthood participants may be due to facts that CACX is common in women above 30 years. Majority (51.2%) participants were single and 48.8% were married. Single participants were made up of widows (29%), divorced (18.9%) and those who have never been married (3.3%). The study revealed that majority (55%) participants had attained primary school followed by 21.9% who attained secondary school while 13.3% did not have any formal education and only 9.8% had tertiary education. The study further shows that majority

(44.4%) participants were self-employed and 39.9% were not employed and 15.7% were in formal employment.

5.2 EXPERIENCES WITH USE OF VAGINAL DILATOR BY PARTICIPANTS

The discussion on the experiences with the use of vaginal dilator is based on 22 respondents who participated in a qualitative study who discussed their lived experiences of using a dilator. Five major themes emerged regarding how participants experienced the use of vaginal dilators such as uncomfortable dilators, fear, changed lifestyle, pity for the husband and embarrassing procedure. Each Participant experienced at least two of the prominent themes.

Use of vaginal dilators may have caused discomfort as they were unnatural devices and therefore participants from this study complained about the uncomfortable dilators which were hard, painful and caused injuries to the vagina. Few participants never used the prescribed syringe adequately because it was too painful, they desired a more pleasurable dilator made out of softer material. Other participants complained about how "just upon seeing a big syringe puts them off and they were gripped with fear" because the sight of a syringe reminded them of the process of using the dilator and the painful experience, they underwent at brachytherapy. The findings on uncomfortable dilators are similar to the findings by Bakker, et al, (2014) who reported that women had emotions regarding dilator use or its hard-plastic design which caused pain, blood loss, and associating it to HDR. Some women mentioned a lack of instrumental support, such as lubricants.

In this study participants also were experiencing the fear of carrying and keeping a lot of condoms at home. The issue of condoms disturbed participants psychologically because they always had thoughts of being accused to like too much sex despite having CACX. Most participants complained that carrying condoms from CDH to their respective homes was burdensome such that, 'the bags carrying condoms were highly guarded so that no one should see what they were carrying. The storage of condoms at home made participants face the fear of keeping and disposing a lot of condoms at home because condoms are associated with sex workers and the actual use of dilator was a burden because it needed privacy and good timing to use it. Most studies consulted shows that there was no literature to support or against the finding on condoms but one study by Bakker and Vermeer (2015), reports that some women complained about lack of instrumental support such as lubricants during the use of vaginal dilators.

This study also revealed that, the use of vaginal dilator charged the lifestyle of several participants as a restriction to some activities and as an extension of long-term cancer treatment which never ends. The restricted social life by some participants were failing to visit relatives, friends and church camp meetings or funerals for more than three days. Those participants who were in employment had to abandon work during working hours to go and use dilators at home. Furthermore, participants complained about lack of privacy at home because they were staying with other family members with whom they were sharing the bedroom. Others had concerns about dilator use because they lacked understanding as to why they were using the dilators as indicated by one participant who did not have convincing reasons why she was using a dilator. In this study, lack of understanding on the use of dilators can be attributed to insufficient health education given to patients after finishing radiotherapy. This study result on lack of time and privacy is supported by Bakker, et al, (2014) whose study shows that women also experienced lack of time, privacy, forgetting, or feeling tired when using the dilator. Similar experiences to this study on extension of cancer treatment and prolonged treatment were also reported by Milross, et al, (2012) who reported that facilitators to use of dilators included acceptance of dilator use as part of their normal routine or an extension of medical treatment and focusing on positive aspects.

Another experience expressed by participants was pity for their husbands ranging from jealousy to supportive husbands. Jealousy husbands did not welcome the use of vaginal dilators because the dilator denied them sexual intercourse but supportive husbands were of great encouragement to participants by welcoming the use of dilator and not allowing their women to go and buy condoms from the pharmacy when they were finished at home. Some single participants missed their partners and wished they had someone to have regular sexual intercourse with instead of using the dilator. Literature reviewed could not support or deny the findings on pity for the husband.

Furthermore, other themes that emerged from participant's experiences were embarrassing and unpleasant procedure. Participants indicated that the use of vaginal dilator and the issue of looking for condoms was embarrassing. They were shy to talk about the use of dilators to friends and family members. Most participants indicated that the procedure was unpleasant in the sense that they felt that dirty from the condoms and lubricants was retained inside the vagina and associating the procedure to masturbation and it was a sin to use the dilator. Participants with very strong

religious belief indicated that they would rather die with a vaginal stenosis than to continue using a dilator and go to hell. This study finding on embarrassment is similar to that study by Cullen, et al, (2012) whose report in Canada shows that majority of women were faced with some degree of embarrassment surrounding dilator use due to the perceived sexual nature of the device.

5.3 FACTORS INFLUENCING THE USE OF VAGINAL DILATOR

The discussion of the quantitative findings is based on the responses from 338 randomly selected subjects who participated in this study.

5.3.1 Use of Vaginal Dilator

The study shows that slightly above half (53.6%) of the participants were using the vaginal dilator adequately, the inadequate use of vaginal dilator may be due to lived experiences with using the dilator and some factors which influenced the use of dilators by participants who received PRT. This inadequate use of the dilator is in agreement with the findings by Cullen, et al, (2012), who reported that, despite the provision of dilators after PRT, compliance with recommended use was generally poor and there was limited knowledge on the factors that influenced the use of vaginal dilators, similarly there are other reports that the provision of dilators was common worldwide but the information about their use was not available.

5.3.2 Age

The findings from this study revealed that most (63.3%) participants were in the middle adulthood, followed by 21% who were in late adulthood and 15.7% were in the early adulthood. The high proportion of CACX in middle adulthood participants may be due to the fact that CACX is common in the 40s. The binary logistic regression test shows that there was no statistical significance between age and the use of vaginal dilator (P value = 0.356). Contrary to this finding, Morris, et al, (2017) reported that the risk factors for developing vaginal stenosis included patient age. This could be due to the fact that older women do not have convincing reasons why they were using the dilators due to insufficient IEC given to patients on the use a dilator. However, this study has similar findings to Law, et al, (2015), who indicated that age was less of a factor in the use of

vaginal dilator and this study shows higher adherence in older women. Findings of three studies are contradicting each other about age influencing the use of vaginal dilator.

5.3.3 Information Education and Communication (IEC)

This study shows that IEC given to patients was insufficient on the use of vaginal dilator to 44.7% of participants. Most participants in this study did not know the frequency, duration and when to start using the dilator. It could be argued that CACX women depend on healthcare providers for information about the use of vaginal dilators and cannot independently seek to acquire more knowledge about their health. Therefore, health care providers must proactively provide health related massages for the patients to acquire more knowledge about vaginal dilators. This study shows that there was a statistical significance between use of vaginal dilator and IEC, (P value= 0.015). According to this study, participants who had sufficient IEC were 1.761 times more likely to adequately use the dilator than those who had insufficient IEC. This result is supported by the study conducted by Morris, et al, (2017) which indicated that there was poor compliance with use of vaginal dilator due to lack of consistent or adequate IEC regarding dilator use. Similarly, White and Faithfull, highlighted persistent inconsistencies in patient education regarding vaginal dilation within UK. The findings above show that, IEC plays a very important role in promoting the use of dilators. The average level of knowledge by participants from this study and other studies might be due to insufficient IEC by the health care team. Therefore, health care providers from CDH must provide sufficient health related education about the use of vaginal dilators.

5.3.4 Knowledge on the Use of Vaginal Dilators

In this study, majority (69.8%) participants were found to have average level of knowledge about use of vaginal dilator. The average level of knowledge could be due to insufficient IEC and little sources of information about use of vaginal dilator. IEC could easily be shared in patient friendly health corners, which does not exist at CDH. Nonexistence of patient-friendly corners may contribute to low level of knowledge about use of vaginal dilators. Efforts to improve knowledge and maintain use of vaginal dilators and the need for general information for cancers has been noted where cancer survivors should be giving IEC to fellow patients. This is aimed at empowering women and caregivers with cancer care information. This initiative could also mean that most interventions to promote use of vaginal dilators among CACX patients can easily be universally

applied to enhance high levels of knowledge. However, when use of vaginal dilator was associated with knowledge in the current study, the relationship was found to be independent (P-value =0.183). A holistic approach in devising interventions must be adapted as the most accurate measure to promoting use of vaginal dilator. A combination of personal, interpersonal, community and societal interventions as prescribed by the ecological model could be the most effective approach to improving the use of vaginal dilator among CACX women who received PRT. Similar results to this study by Cullen, et al, (2012) shows that, many women who were using their dilators regularly mentioned the importance of knowledge on dilators. Similarly, same findings were reported by Milross, et al, 2012, who indicated that women were reluctant to use dilators because of conflicting IEC from different clinicians which exacerbated their uncertainty about what to do. The findings of this study on knowledge is similar to other studies thus, there is need to improve on the IEC given to patients in order to increase knowledge levels on the use of vaginal dilators.

5.3.5 Attitude

This study shows that 83% of participants had positive attitudes towards the use of vaginal dilators while 17% had negative attitude towards the use of vaginal dilators. The study further shows that there was no statistical significance between attitude and use of vaginal dilator, (P value= 0.864). Patients with positive attitudes were inadequately using the dilator when offered and were not adhering to prescribed use of dilators. This is evident by findings in the current study where 46.2% participants despite having positive attitude were not using the dilator adequately. This could be that there is a mixed belief system between attitude and use of vaginal dilator. Negative attitudes could be attributed to myths and misunderstanding surrounding the use of vaginal dilators. However, the findings of this study are in disagreement to Bakker, et al, (2012) who reported that participants viewed dilator use as a negative experience by associating it to sin and as a sex aid. Similarly, Cullen, et al, (2012) reports that, majority of women were faced with some degree of embarrassment surrounding dilator use related to the perceived sexual nature of the device as a sex toy and as other objects used for erotic pleasure.

5.3.6 Privacy

In this study the frequency test shows that 61.3% participants who had privacy at home were using the dilator adequately but there was no statistical significance between privacy and adequate use

of dilator, (P-Value = 0.152). Non availability of privacy was mainly due to sharing the bedroom with children and other family members. Most participant could not use the dilator in the presence of other family members for fear of being accused of sexual deviation. This study is supported by an Australian study conducted by Milross (2012) who reported that it was difficult for some women to find privacy to use the dilator in their households. Similarly, a study in Brazil by Pessi, et al, (2016) reported that to preserve the privacy, the institution directed a specific private room without identification for storage and sale of the prosthesis, accessible only to women interested in the acquisition. The finding by Doyle (2012) agrees with the findings of this study because it was mentioned that, lack of privacy was a barrier to vaginal dilator use. All the studies show that, availability of privacy promotes adequate use of vaginal dilator.

5.3.7 Time

The study shows that most (53.5%) participants had limited time for using the dilator. Time limitation could be due to busy schedules by women or the use of vaginal dilators was not priority, they had other important things to do. This study further shows that there was not statistical significance between availability of time and use of vaginal dilator, (P value=0.989). The findings are similar to those of Doyle, et al (2012) who highlighted that women named time constraints as a barrier in performing dilation. Similarity, Milross 2012 also reports that most women were not using the vaginal dilator due to lack of time.

5.3.8 Accessibility of Condoms and Lubricants

The study shows that more than half (51.2%) of the participants had easy access to condoms and lubricants. The study further shows that there was no statistical significance between access to condoms/lubricants and the use of vaginal dilator (P Value=0.362). The non-accessibility of condoms and lubricants could be due to self-stigma by women failing to go to their nearest clinics to ask for condoms for fear of being labelled promiscuous. These findings are similar to the study of Bakker and Vermer (2015), who reported that some women mentioned a lack of lubricants which affected the use of vaginal dilators. The lack of lubricants was also reported by Bakker et, al (2014). The non-accessibility of condoms and lubricant can also be attributed to most Zambian healthcare facilities not welcoming the cancer patients when they seek other health services. The lack of instrumental support was also reported by Bakker et, al 2014. All the three studies support

that lack of condoms and lubricants affects the use of dilators. The non-accessibility of condoms and lubricant can also be attributed to other healthcare facilities not welcoming the cancer patients when they are facing other health related problems. The condoms and lubricants can be easily accessible if all health Centre are educated about the use of vaginal dilators by CACX women who received PRT.

5.3.9 Sexual Intercourse

The study shows that 93.2% of participants were having irregular sexual intercourse after PRT. There was no statistical significance between sexual intercourse and the use of vaginal dilator, (P value=0.590). The irregular sexual intercourse might be due to fear by women of CACX reinfection from men. The other limitation to sexual intercourse was that most women had fear of vaginal injury from their partners. Furthermore, due to the disease process and brachytherapy, participants had lost interest in sexual activities. Age was a contributing factor to irregular sex especially in participants above 65 years who saw it very abnormal for them to be having sex and other women must have anticipated painful coitus. The findings are different from the study by Milross, et al, (2012) which shows that 8 out of 14 women had regular sexual partners. Similarly, Vagal, et al, (2017) in the study at Tata Memorial Hospital (TMH), shows that both sexually active and inactive patients had significant improvement in vaginal patency after using the dilator.

5.3.10 Pain

This study shows that majority (44.1%) participants had mild pain during use of vaginal dilator. Most participants complained of pain during the first week of using the dilator. Few participants complained of pain when they used a dilator without condoms and lubricant due to vaginal dryness. Other participants, psychologically anticipated pain while using the dilator thus inadequate use of the dilator. This is supported by the findings of Bai, et al, (2017) who reported that the main concern voiced by women was pain. Similarly, Doyle, et al, (2012) too reports that barriers to use vaginal dilators highlighted by women was pain and discomfort. From the study findings, pain is an influencing factor in the use of vaginal dilators but the statistical test from this study shows that there was no significance between the level of pain and the use of vaginal dilator (P value=0.100)

5.3.11 Distance

This study shows that most (41.7%) participants were staying very far from CDH. Distance from CDH could have contributed to inadequate use of the dilator due to perceived non-accessibility of condoms and lubricants from local health facilities. Participants had to travel from very far places just to come and get condoms from CDH but condoms are readily available throughout Zambia. Participant feared to go to the local health facility to get condoms for fear of stigma and accusations. According to this study there was no statistical significance between distance and use of vaginal dilators, (P value=0.338). The findings of this study are similar to the study by Ambroggi, et al, (2015) who reported that distance was a barrier to cancer diagnosis and Treatment.

5.4 CONVERGENCE OF QUALITATIVE AND QUANTITATIVE FINDINGS

In this study both qualitative and quantitative findings show that half of the participants were using the dilator adequately. The qualitative component shows that out of 22 participants, seven were using the dilator twice weekly, six were using the dilator three times weekly, followed by four participants who were using it three times daily and three participants were using the dilator once a week and only one was using the dilator four times a week, while in quantitative findings slightly above half (53.6%) of the participants were using the dilator adequately. The study findings on both components shows participants had a positive attitude towards the use of vaginal dilator by considering it as part of treatment. This positive attitude motivated participates to use the dilator. Findings also show that participants did not have privacy at home to use the dilator because they shared the bedrooms with other family members. Another similar finding was none accessibility of condoms from the local health care facility. Participants were disturbed psychologically and had fear of going to the local clinic to ask for condoms when they were finished because they always had thoughts of being accused of promiscuity. Participants used to travel from very far places just to come and get condoms at CDH, but these condoms can be easily accessed at local health facility. Another major similarity in the findings was insufficiencies on IEC given to participants who gave a variety of responses on the use of the dilator and many of them did not know how and why they were using the dilator. IEC given to participants most have contributed to low/average knowledge on use of vaginal dilator leading to underutilization of the dilator by

many participants and abnormal utilization by very few participants. Use of vaginal dilators caused discomfort and pain as they were unnatural devices and participants complained about the uncomfortable, hard and painful syringe.

5.5 IMPLICATIONS OF THE STUDY FINDINGS

Providing IEC about use of vaginal dilator to women after PRT is important in increasing knowledge on the use of vaginal dilators. The study findings suggest that health care providers play a pivotal role in teaching women on all aspects of vaginal dilator.

5.5.1 Nursing Education

This study has revealed insufficient IEC on use of vaginal dilators among participants .This implies that health care providers do not give adequate information on the use of vaginal dilators due to most likely that health care providers may lack knowledge on the use of vaginal dilator as well, hence they are not able to give adequate information to clients regarding the same. The General nursing Council of Zambia in conjunction with the Nursing Schools need to strengthen the component of oncology nursing in the curriculum.

5.5.2 Nursing Practice

The current study has revealed that most participants had low to average knowledge about use of vagina dilators because the health care team did not give adequate information on all aspects of vagina dilators. This discourages clients from utilizing the dilators correctly. There is a need to have appropriate clinical protocols and IEC, materials in the area of vaginal dilator use and to ensure that qualified oncology Nurses mentor others on the use of vaginal dilators by providing necessary health education to clients.

5.5.3 Nursing Research

Studies have been conducted on the use of vaginal dilator globally, but according to data searched no other study was conducted locally, therefore, a more rigorous study on other aspects of vaginal stenosis and use of vaginal dilators and other female cancers should be carried out to generalization the findings to other settings.

5.5.4 Contribution to the body of knowledge

The findings from the study provides new insights into the experiences of using of vaginal dilator within the Zambian context. The study has provided information about how women who have received PRT are affected by several factors as they try to comply to the use of vaginal dilators. These factors range from personal factors such as lack of knowledge to healthcare related factors such as unavailability of appropriate dilators that compels the hospital to prescribe 50 mls syringes which are hard and cause pain to users. The findings will make MOH and other stakeholders to be aware of the need to provide appropriate dilators, condoms and lubricants to all health facilities in Zambia so that the women can easily have access to them even when they stay very far away from CDH.

5.6 CONCLUSION

The purpose of the current study was to explore the experiences and factors influencing the use of vaginal dilators by CACX women who received PRT at CDH in Lusaka, Zambia. It was found that there was significantly high level of inadequate use of vaginal dilators by participants. The use of vaginal dilator was a negative experience to those using it. From our study, most participants indicated that use of vaginal dilator was long term treatment although almost half of them reacted negatively to the use of vaginal dilators. Participants had fear of carrying and keeping condoms at home and also, they were disturbed psychologically for they always had thoughts that the use of dilators was a sinful act while others had pity for their husbands. More themes that emerged from the study were painful dilators and it was an embarrassing procedure. Participants experienced the use of vaginal dilator as a lifestyle changer since they could not attend to social functions such as funerals, visiting family and friends because they may not have privacy and time to use the dilator. The study further shows that there was insufficient IEC given to participants and most participants had average level of knowledge regarding use of vaginal dilators. However, when predictor variables (age, knowledge, privacy, accessibility of condoms and lubricants, sexual intercourse, attitude, time, level of pain and distance) were tested for association with the outcome variable, they were found to be independent. Therefore, the current study failed to reject the null hypothesis that there was no relationship between dependent variable (use of vaginal dilator) and independent variables (age, knowledge, privacy, accessibility of condoms and lubricants, sexual intercourse, attitude, time, level of pain and distance). Other factors such as marital status, occupation and IEC were found to significantly influence the use of vaginal dilator. The study findings suggest that

once the patient understands the need to use the dilator, they would play a pivotal role to sustain adequate use of vaginal dilator. The negative experience is an indication that the use of vaginal dilators caused physical, social, spiritual and psychological pain to the women.

5.7 RECOMMENDATION

Health care providers must proactively provide health related massages for the patients to acquire more knowledge on the use of vaginal dilator. All Healthcare facilities in Zambia should be educated about the use of vaginal dilators by CACX women who receive PRT so that necessary vaginal dilator accessories can be easily accessed by women who stay far from CDH. MOH/CDH to provide appropriate vaginal dilators instead of 50mls syringes.

5.8 PLANS FOR DISSEMINATION OF FINDINGS

The findings of this study will be disseminated as dissertations to the University of Zambia, School of Medicine Library, School of Nursing Sciences, Cancer Diseases Hospital and Ministry of health. The findings of this study will also be presented at the University of Zambia post graduate studies and it will also be published in a peer reviewed journal.

5.9 LIMITATION OF THIS STUDY

One limitation was that the study was based on the participants self-reporting and it was therefore difficult to objectively verify the answers given, this was however mitigated by asking probing questions and clearing the misunderstandings. Another limitation was that, there was recall bias, since some participants had used the Dilators several months before the study was conducted.

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Appendices

Appendix I

a. PARTICIPANTS INFORMATION SHEET

Title of study: Experiences with and factors influencing use of vaginal dilators by women who have undergone pelvic radiotherapy at Cancer Diseases Hospital, Lusaka-Zambia.

My name is Mwale Alex; a Master's of Science student in Clinical Nursing at the University of Zambia who is kindly requesting for your participation in the research study mentioned, because it is important to identify the experiences with and factors that influence the use of vaginal dilator in women who have undergone pelvic radiotherapy. The participation in this study is voluntary. If you are not interested in participating in this study you are free to do so. Even after you have joined the study you are free to withdraw as you wish, and that will not affect your health services at CDH.

If you are willing to participate, you will be asked to sign a consent and agreement. Participation will not result in any immediate benefits. Please ask where you do not understand.

Purpose of the Study

The study will establish experiences with and identify factors influencing the use of vaginal dilators by women who have undergone pelvic radiotherapy at Cancer Diseases Hospital. The information obtained will help the policy makers and implementers of the programme in the MOH to re- direct programme implementation in order to improve the vaginal dilator acceptability and utilization in Zambia.

Procedure

The study involves a face-to-face interview with the researcher and research assistants who will ask you a set of questions using a structured questionnaire. After signing the consent form, the research assistant will proceed to ask you the relevant questions and your responses will be recorded on the questionnaire. The interview will take about 30 minutes.

Risks and Discomforts:

There is no risk involved in this research though part of your time will be utilized to answer some questions. Some questions may seem to be sensitive and personal. If you will need further discussion, it will be offered to help you understand the topic more.

Benefits:

There is no direct benefit to you by participating in this study, but the information which will be obtained will help the policy makers to take measures that will ensure that factors influencing the use of vaginal dilators are maintained, minimized or improved. No monetary favors will be given in exchange for information obtained, but education will be given on benefits of using the vaginal dilator.

Confidentiality:

Your research records and any information you will give will be confidential to the extent permitted by law. You will be identified by a number, and personal information will not be released without your written permission except when required by law. The Ministry of Health, the University of Zambia Research Ethics Committee or the School of Nursing may review your records again but this will be done with confidentiality

Appendix II

Consent form

The purpose of this study has been explained to me and I understand the purpose, the benefits, risks and discomforts and confidentiality of the study. I further understand that: If I agree to take part in this study, I can withdraw at any time without having to give an explanation and that taking part in this study is purely voluntary. I _____

(Names)

Agree to take part in this study.

Signed: _____ Date: _____

(Participant) Participant's signature or thumb print

Name_____ Signed:_____ Date: _____

(Witness)

Name_____Signed: _____ Date:_____

(Interviewer)

PERSONS TO CONTACT FOR PROBLEMS OR QUESTIONS

1. Mwale Alex, University of Zambia, School of Nursing, P.O. Box 50110, Lusaka. Cell: 0976935929. Email: mwalex2007@yahoo.co.uk
2. The Dean, University of Zambia, School of Nursing, P.O. Box 50110, Lusaka. Telephone Number 252453.
3. The chairperson, University of Zambia, Biomedical Research Ethics Committee, University of Zambia. P.O. Box 50110, Lusaka.

Appendix III

Data collection tool, structured interview schedule

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Structured interview schedule for quantitative data collection

TOPIC: Factors influencing use of vaginal dilators by women with cancer of the cervix who have undergone pelvic radiotherapy at Cancer Diseases Hospital, Lusaka-Zambia

DATE OF INTERVIEW……...

PLACE.OF INTERVIEW…….

NAME OF INTERVIEWER……

SERIAL NUMBER OF THE INTERVIEWEE……...

INTRODUCTION TO THE INTERVIEWER

1. Introduce yourself to the interviewee(s)
2. Explain the purpose of the interview
3. Get verbal consent from the interviewee before conducting the interview.
4. Assure the interviewee of confidentiality and anonymity.
5. Do not write the name of the respondent on the interview schedule to ensure anonymity.

SECTION A:

Demographic characteristics

1. Age in years
   a. 18-39 b. 40-65 c. above 65

2. What is your marital status?
   a. Single b. Married c. Divorced d. Widowed

3. What is your occupation
   a. Formal employment b. self-employed c. not working
4. What is your Level of education?
   a. None b. Primary c. Secondary d. Tertiary

SECTION B:

Medical related data

5. How long have you been using a vaginal dilator?
   a. 3 to 11 months b. 12 to 24 months c. above 24 months

6. What type of CACX treatment did you receive?
   a. Surgery plus chemo radiation c. Radiotherapy
   b. Surgery plus radiotherapy d. chemo radiation

SECTION C:

Use of vaginal dilator

7. How long have you been using a vaginal dilator?
   a. 3 to 11 months b. 12 to 24-month c. above 24 months
8. How many times in a week do use a vaginal dilator?
   a. 1 b. 2 c. 3 d. 4 e. 5 f. 6 g. 7

SECTION D:

Health Education (Tick one box against each phrase)

No	Measuring characteristics	Yes	No
9	Health education was given at the end of treatment.		
10	Information given included the starting date of dilatation		
11	Information included duration on dilator use		
12	Information was given on the frequency of dilator use		
13	A demonstration was conducted on how to use a dilator		

SECTION E:

Knowledge of vaginal dilator use

14. Do you know the purpose of using a vaginal dilator?

a. Yes b. No

15. If yes to question 13, why are dilators used after PRT

a. for pleasure b. to prevent cancer c. to prevent vagina stenosis

16. What do you know about the use of vaginal dilators in relation to the level of sexual activity?

a. Don't know b. not to use at all c. use according to number of sexual contacts

17. What is the recommended period to initiate use of dilators after completing EBRT/HDR?

a. Immediately c. After 2 weeks

b. Within 3 months d. after 6 months

18. What is the recommended frequency of vaginal dilator use per week?

a. 3 times a week c. 3 times every day

b. Whenever one feels like d. don't know

19. What is the recommended length of time for insertion of dilators in a day?

a. Between 0-10 minutes c. between 21-30

b. Between 11-20 minutes d. don't know

20. How many years are recommended to use dilators?

a. 1-year b. 2 years c. forever d. don't know

21. Why should vaginal stenosis be prevented following successful radiotherapy?

a. For sexual purpose b. for medical exams c. for vaginal drainage d. don't know

22. Is sexual intercourse allowed after radiotherapy?

a. Yes b. No c. doesn't know

23. Why are condoms and lubricants prescribed?

a. to moisturize and prevent injuries b. to prevent cancer transmission c. don't know

SECTION F:

Attitudes and Beliefs in vaginal dilator use

24. How do you view the process of vaginal dilator use?

a. Part of treatment b. Sin c. Embarrassing d. unpleasant

25. Does the use of a vaginal dilator affect your religious beliefs?

a. Yes b. No

SECTION G:

Availability of privacy at home

26. Who do you share your bedroom with when?

a. Stays alone b. Husband only c. Husband and Children d. other family members

27. How much does Non availability of privacy at home affect use of a dilator

a. Very much b. Little c. not at all

28. Did the health care team make sure that you had privacy when collecting dilators?

a. Never b. sometimes d. always

29. Are you satisfied with the way dilators are dispersed from CDH pharmacy

a. Yes b. No

SECTION H:

Availability of time

30. What time do you use your dilator?

    a. Morning b. Afternoon c. Night

31. In a day how much time do you spare for vaginal dilator use?

    a. less than 20 minutes b. more than 20 minutes

32. Do you have any reminders to notify you of when to use a dilator?

    a. Yes b. No

SECTION I:

Availability of resources (lubricate and condoms)

33. From the time you started using a vaginal dilator, which of the following items have you ever run out?

    a. Vaginal dilator b. Lubricants c. Condoms d. Non

34. If any of the item in question 33 was not available, did you continue using the dilator?

    a. Yes b. No

35. Due to non-availability of lubricates and condoms, did it affect the use of vagina dilator?

    a. Yes b. No

SECTION J:

Sexual Contact

36. Are you currently sexually active?

    a. Yes b. No

37. How often do you have sex in a week?

    a. Nil b. once c. twice d. more 3 times

SECTION K:

Pain and Discomfort associated with vaginal dilator use

38. Have you ever experienced any discomfort or pain while using the dilator?

    a. Yes b. No

39. If you experienced any pain during vagina dilator use, rate the pain on a scale of 1-10

    a. 7-10 c. 1-3

    b. 4-6 d. 0

40. When was the worst pain while you using the dilator?

    a. 0-3 months c. 7-12 months

    b. 4-6 months d. all the time

SECTION L:

Distance from CDH

41. Where is your permanent place of residence?

    a. Within Lusaka b. along the line of railway c. not along the line of railway

42. Are dilators, lubricants and condoms available at your nearest health institution

    a. Yes b. No c. doesn't know

43. From your place of residence how easy was it to access cancer services such as dilators

    a. Very difficult b. easy with some difficulties c. very easy

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TOPIC: Experiences with the use of vaginal dilators by women with cancer of the cervix who received pelvic radiotherapy at Cancer Diseases Hospital

DATE OF INTERVIEW……...

PLACE.OF INTERVIEW…….

NAME OF INTERVIEWER……

SERIAL NUMBER OF THE INTERVIEWEE……...

INTRODUCTION TO THE INTERVIEWER

1. Introduce yourself to the interviewee(s)
2. Explain the purpose of the interview
3. Get verbal consent from the interviewee before conducting the interview.
4. Assure the interviewee of confidentiality and anonymity.
5. Do not write the name of the respondent on the interview schedule to ensure anonymity.

SECTION A: DEMOGRAPHIC CHARACTERISTICS

1. What is your age range in year?.....

2. What is your marital status?.....
3. What is your occupation?.....
4. What is your Level of education?.....

SECTION B: EXPRIENCES WITH THE USE OF VAGINAL DILATOR

5. How long have you been using a vaginal dilator? ……
6. How many times do you use the dilator in a week…….
7. What has been your experience with the use of a vaginal dilator?

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8. Tell us more about the experiences with the use of a vaginal dilator
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