



having vaginal stenosis were over 2 times higher for women who had been on brachytherapy between 6 and 12 months compared to those on brachytherapy for less than 6 months (OR = 2.45, CI = 1.05-5.82,  $p = 0.042$ ).  
**Conclusions:** Failure to practice recommended measures and poor attitudes toward the

experience a recollection of bad memories ranging from painful cancer treatments to sexual violence [5]. This affects their attitude towards therapy, the workers and use of vaginal dilation and frequent sexual penetration to prevent vaginal stenosis. The exploration on the experiences of gynaecological cancer patients undergoing brachytherapy was found to be of a difficult nature. [6] Poor attitudes towards therapy cancer patients such as fear, sexual inactivity, guilty from breaking religious and traditional, experience anxiety when going to the radiotherapy department because of a lack of knowledge of, and/or misconceptions about the treatment [6] contributed to vaginal stenosis.

The International Atomic Energy Agency [7] publication revealed that there were myths around cervical cancer treatment and outcomes to the extent that many resort to visiting traditional healers and the use of herbs. Radiation-induced vaginal stenosis is a commonly observed side effect following treatment with pelvic radiotherapy pelvic cancers. There should be care to prioritize and recognize the potential negative impact of vaginal stenosis on the physical and psychological wellbeing of patients. This study therefore aimed at determining attitudes and practices that contribute to poor adherence to preventive measures against vaginal stenosis in women with cervical cancer following brachytherapy at the Cancer Diseases Hospital (CDH) in Lusaka, Zambia.

## 2. Material and Methods

This cross sectional study was conducted between September and December 2021 among 163 participants at CDH in Lusaka Province of Zambia. The CDH was chosen as it is the only Hospital offering cancer treatment in the country. Total enumeration of patients on brachytherapy was done from which sampling was generated. Systematic sampling was employed in selection of the study participants who were all patients that received services at CDH. Data were collected from willing participants to determine the attitudes and practices that contributed to poor adherence to preventive measures against vaginal stenosis in women with cervical cancer following brachytherapy. Data for 163 participants were analyzed using SPSS version 26 to establish the attitude and practices contributing to poor adherence to preventive measures against vaginal stenosis in women with cervical cancer following brachytherapy.

Study Design: Analytical cross sectional study

Study Location: Cancer Diseases Hospital (CDH) in Lusaka Province of Zambia.

Study Duration: September to December 2021.

Sample size: 163 patients.

Sample size calculation: Sample size of 163 was calculated using the Gosh formula (Gosh, 2013) from a population of patients treated with brachytherapy in 2019 = 1602 (CDH 2019 statistics).

Subjects & selection method: Systematic sampling was used for participants receiving brachytherapy at CDH. From the patient size of 1602 and calculated sample size of 163, the sampling interval was 10 ( $1602/163 = 10$ ). Therefore,

every 10<sup>th</sup> patient was selected from the patient list until the desired sample size of 163 was reached.

Inclusion criteria: for someone to be a suitable respondent to participate in this research, she must have been a patient suffering from cervical cancer and was currently receiving brachytherapy as a result of cervical cancer or had received brachytherapy in the past 12 months prior to the interview. The inclusion criteria did not consider the presence or absence of vaginal stenosis in the respondent.

Exclusion criteria: any sign of recurrent or metastatic cancer, medical or psychological problems and all those with vaginal stenosis not linked to cervical cancer radiation therapy were excluded from the study.

### 2.1. Procedure Methodology

Two trained Field Research Assistants were involved in reaching out to participants at CDH. Questionnaires were used to collect data from individual participants using face to face approach.

### 2.2. Statistical Analysis

Data were entered in Microsoft excel and exported to SPSS V.25 for analysis.

After cleaning, descriptive statistics were calculated and presented in the following manner: Mean (SD), Range, Frequency, Percentage, etc.

Results are presented in the following manner: Mean (SD), Range, Frequency, Percentage, etc.

bestfit model had a

specificity of 8%. The ROC area was at 69 percent.

## 3. Ethical Consideration

The study was approved by the research ethics committee of the University of Zimbabwe. All participants gave their informed consent before participating in the study. Information that was obtained during the study was treated with utmost confidentiality as it was not to be shared with anyone outside the study site. The study site was also approved by the relevant authorities.

A total of 163 participants were recruited for the study.



As shown in **Table 2**, common reported signs/symptoms of vaginal stenosis included vaginal pain 129 (79.1%), unexplained vaginal bleeding 77 (47.2%), pain during sex 74 (45.4%) and experiences of a tight vagina 91 (55.8%). Other common signs/symptoms reported were bloody discharge 20 (27.4%) and watery vaginal discharge 52 (71.2%). Under half, 69 (42.3%) of the respondents reported having signs/symptoms indicative of vaginal stenosis whereas 94 (57.7%) had no signs/symptoms indicating vaginal stenosis.

Under two thirds 98 (60.1%) of the respondents were sexually active during these, just over half 50 (51%) engaged in sexual activity weekly whereas over one third 34 (34.7%) engaged in sexual activity twice a week. Almost all 162 (99.4%) respondents reported using vaginal dilators always and being in control of their use. Over half 94 (57.7%) of the respondents often skipped dilator use, while over two thirds 110 (67.5%) reported often forgetting to use the dilator. Many 114 (69.9%) of the respondents used dilators as a method of preventing vaginal stenosis, whereas a quarter 41 (25.2%) reported using penetrative sex as a preventive measure. Under a quarter, 39 (24%) of the respondents had poor practices while the majority, 124 (76%) reported good practices **Table 3**.

**Table 4** shows that all respondents 163 (100%) would skip the use of a dilator when they felt better and because of discomfort from the dilator. Similarly, most respondents reported that they would skip use of dilators because of feeling sick 155 (95.1%), pain from the dilator 157 (96.3%), interference with sexual life 160 (98.2%), considering the practice as sinful/embarrassing and because their religion/tradition forbids use of vaginal dilators 159 (97.5%). The majority 150 (93.9%) of the respondents expressed poor attitude towards vaginal stenosis preventive measures, whereas 10 (6.1%) had good attitude.

**Table 5** shows odds ratio estimates at univariable and multivariable logistic regression analysis. Women with poor practices compared to those with good practices (OR = 1.07, CI = 0.52-2.21, p = 0.855) poor attitudes compared to good attitudes (aOR = 1.28, CI = 0.29-5.71, p = 0.746) and those employed compared to unemployed (aOR = 1.76, CI = 0.73-4.27, p = 0.210) had increased

**Table 2** Prevalence of vaginal stenosis (n=163)

Signs of vaginal stenosis experienced	Always n (%)	Often n (%)	Sometimes n (%)	Rarely n (%)	Never n (%)
Vaginal pain	22 (13.5)	4 (2.5)	129 (79.1)	5 (3.1)	3 (1.8)

**Table 3** Practices contributing to vaginal stenosis (n = 163)

Characteristics	Category	Frequency (n)	Percent (%)
Sexually active	Yes	98	60.1
	No	65	39.9
Frequency of sex	Weekly	50	51.0
	Twice a week	34	34.7
	3 times	14	14.3
Frequency of dilator use	Always	162	99.4







[14].

Vaginal dilation therapy is frequently recommended to prevent and reduce the abovementioned side effects. Its functions include minimizing vaginal stenosis and scarring, preventing adhesions, promoting improved vaginal healing, relaxing pelvic floor muscles, and preventing pain [15]. This study found that there was good usage of VD among women. This is supported by WHO strongly recommended either the use of a vaginal dilator or frequent sexual intercourse after completion of radiotherapy for cervical cancer survivors to maintain a healthy vaginal canal. However, a systematic review by Miles and Johnson concluded that there is no concrete evidence that routine regular vaginal dilation during RT treatment prevents stenosis or improves quality of life [16]. Several authors have cited vaginal dilation as the major therapeutic strategy to prevent and treat radiotherapy-induced VS [17] [18].

### 6. Conclusion

Radiation-induced VS is a commonly observed side effect following treatment with pelvic RT. It is characterized by vaginal stenosis, dyspareunia, and vaginal dryness. The pathogenesis is multifactorial, involving direct radiation damage to the vaginal epithelium and indirect effects such as fibrosis of the pelvic floor muscles. Early identification and management are crucial to prevent long-term complications. Treatment options range from conservative measures like vaginal dilators and lubricants to surgical interventions like vaginoplasty. Further research is needed to optimize treatment strategies and improve the quality of life for survivors.

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