Barriers to Cryotherapy Treatment Services for Precancerous Cervical Lesions among Women in Western Kenya

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Summary

BACKGROUND

Cervical cancer is the fourth most fatal and common disease globally among women of reproductive age in Kenya; it ranks the second most frequent type of cancer after breast cancer. Due to the high burden, cryotherapy treatment services, which are effective for the treatment of precancerous lesions are available in selected health facilities in Kenya, however, barriers to the treatment services are poorly understood. Nonetheless, understanding these barriers is critical for enhanced service delivery.

MATERIALS AND METHODS

A descriptive facility-based cross-sectional study design was carried out to determine the barriers to cryotherapy treatment services among 60 women of reproductive age on a one-year therapy at Migosi Sub County Hospital in Western Kenya. The participants were selected purposively and interviewed via telephone calls using pre-coded semi-structured questionnaires. However, data from 5 nurses working in the cryotherapy section were collected through face-to-face interviews at the health facility. Data were entered in an excel sheet and then exported to SPSS version 23.0 for analysis. Both descriptive and inferential statistics (Chi-square) were used and data were presented in form of tables.

RESULTS

Overall, 52 (85.4%) respondents adhered to post-care treatment instructions and reported no adverse reactions. However, 28 (46.7%) experienced unavailability of cryotherapy services at the time of the appointment and got the services later, 24 (40%) got the services at the time of the appointment but waited for a long time before being served, 37 (61.7%) did not know why they were being treated and 46 (76.7%) had misconceptions and myths about the therapy. In addition, there was a statistically significant association between knowing both the benefits of screening and cryotherapy [$X^2(1, N = 60) = 5.90$, $p = .02$]. Also, the knowledge of the benefits of cryotherapy did not influence one's decision to wait for cryotherapy treatment services, [$X^2(1, N = 60) = 3.98$, $p = .46$].

CONCLUSION

The study shows very good adherence to post-treatment instruction but inadequate availability of cryotherapy treatment services. Also, the misconceptions and myths about cryotherapy are public health concerns. Therefore, the study recommends improved awareness campaigns and service delivery for the enhanced uptake of cryotherapy treatment services.

Keywords*: Cryotherapy, Routine Cervical Cancer Screening, Barriers to Cryotherapy*

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Introduction

Globally, cervical cancer has an estimated incidence of 569,847 and 311,365 deaths annually most of them reported in developing countries where programs to detect and treat precancerous lesions are not affordable or available (1). The cases from the developing countries account for 13.1% of all new female cancers globally (1). Cervical cancer is a non-communicable disease, a consequence of long-term infection with human papillomavirus (HPV) types 16 and 18 (2). Its risk factors include; early initiation to sexual intercourse, certain sexual behaviours like having multiple sexual partners, coinfection with sexually transmitted infections, immunosuppression due to HIV/AIDS infection and tobacco use (3).

In Eastern Africa, cervical cancer remains the most common cancer with estimated age-standardized incidence and mortality rates of 40.1 and 30 per 100,000 respectively (4). Although cervical cancer is often detected early and treated with cryotherapy successfully in the United States, the health care system in East Africa, Kenya included faces substantial challenges in providing regular cryotherapy treatment services (5, 6).

Cervical cancer is treatable with early identification of precancerous lesions (7). However, in many developing countries, treatment of precancers is neglected because therapeutic services are unavailable, inaccessible, inappropriate, or inadequately linked to screening services (4). In developed countries, treatment involves sophisticated methods such as the loop electrosurgical excision procedure (LEEP), laser conization, or cold knife conization (7). However, with early screening, it is important to improve the uptake of the screening as well as the availability of the services. Women must understand the pre-symptomatic stages of cancer and seek medical care (8)

Cryotherapy is relatively inexpensive and has been promoted along with screening using visual inspection with acetic acid (VIA) as part of the same-day 'see & treat' strategy (6) Unfortunately, according to the Kenya STEPwise survey for NCD Risk factors 2015 report, only 16.4% of women aged 15-49 years had been screened for cervical precancer (9). The screening coverage in Kenya is ranging between 3.5% and 14%, which is generally low (Chen, Kung (9). With low screening, the availability of cryotherapy is expected to make no health impact. Thus it is important to determine the barriers to cryotherapy treatment services among women of reproductive age to intervene accordingly.

Materials and Methods

Study setting

The study was carried out at Migosi Sub-County Hospital a tier 3 health facility in Kisumu Central Sub-County, western Kenya. The hospital serves a population of 20,870 on yearly basis and over 5000 women of reproductive age. It covers a total area of approximately 32.7 sq. km with a population of 168,892 and lies within longitudes 330 20'E and 350 20'E and latitudes 00 20'S and 00 50'S close to Lake Victoria. The majority of clients seeking services from this health facility are slum dwellers with low socio-economic status. A few of the inhabitants of the area were employees of the government and others were either engaged in the informal sector or small-scale businesses.

Study design

This study adopted a descriptive facility-based cross-sectional study design using both the quantitative and qualitative approaches. The data was collected by conducting both face-to-face key informant interviews with the healthcare providers and telephone interviews with the study participants using pre-coded Semi-structured questionnaires.

Study population

The study targeted 80 women aged 15-49 years who got cryotherapy treatment between 2018 and 2019. However, 15 women could not be traced by phone and five did not consent to participate. Therefore, a total of 60 women participated in the study and 5 nurses in the department of cryotherapy were involved in study.

Study sampling and procedure

Migosi sub-county hospital was purposively sampled since they offer cryotherapy treatment services. The sample size of 60 women aged 15-49 years and 5 nurses who participated in the study were purposively selected from information from both their health and personal medical records.

Reliability

The reliability of data collection instruments was done by pre-testing questionnaires before administering the tools to the study participants. A semi-structured questionnaire was pre-tested on 10% of the sample size. This included eight respondents who met the inclusion and exclusion criteria at Migosi Sub-County Hospital. The clinical records and the patient's booklet for the cases were examined to assess their eligibility. Comments and suggestions made during pretesting were used to improve the instrument. The researcher employed Cronbach's alpha test method to establish reliability. A coefficient value of 0.8 was obtained in the test. Thus, the tool used for the study was acceptable and reliable.

Validity

The questionnaires were reviewed by experts in the areas of treatment services. The professional comments were used to amend the instrument to establish the content validity. A more improved questionnaire for the study was then used in the study.

Data collection procedure

The semi-structured questionnaires and the key interview guides were used to collect data via telephone calls which took an average of 35 minutes. During the call before the interview began, the study participants were informed about the study and participation in it was voluntary. They were informed that the data collected would only be used for the study and were asked for consent for their participation. All telephone conversations were recorded and participants were assured of the confidentially of the data collected from them. However, data from the five nurses working in the cryotherapy section were collected through face-to-face interviews at the health facility. The approval to carry out this study was obtained from National Commission for Science Technology and Innovation (NACOSTI) and the Ethical Review Committee (ERC) of JOOUST.

Data analysis and presentation

Grouping and coding of data collected were done to ease sorting. The completeness and consistency of information obtained were checked. Data were entered in an excel sheet and then exported to SPSS version 23.0 for analysis of both descriptive and inferential statistics. Descriptive analysis was computed to describe the socio-demographic characteristics of the participants and measure the level of knowledge and the barriers to cryotherapy. The Chi-square test of association was also used to examine the relationship between knowledge of the benefits of both screening and cryotherapy and knowledge of the benefits of cryotherapy and the waiting time. Only a P value less than 0.05 was considered statistically significant. Findings were presented in form of tables for easy interpretation. On the other hand, the qualitative data were analyzed thematically and quoted verbatim within the result section of this work.

Results

Demographic characteristics of the Respondents

All 60 women of reproductive age who received cervical cancer screening and cryotherapy services completed the interview making a response rate of 100%. The mean age of the women was 33 years with a range between 15 to 49 years. The majority of the women were married 35 (58.3%).

Barriers before cryotherapy treatment

Overall, 49 (81.7%) had good knowledge on the benefits of cryotherapy and were aware that it makes it possible to heal precancerous lesions. Thirty-seven (61.7%) were aware of these benefits and they noted that it clears the precancerous lesions and facilitates healing.

Most 46 (76.7%) noted that they had heard of various advantages and disadvantages (myths and misconceptions) of cryotherapy. Of the women who had heard of the advantages or disadvantages of cryotherapy, 40 (86.7%) of them noted that the disadvantages they had heard of did not influence their decision to go for cryotherapy.

Regarding myths and misconceptions, the study found that 16 (34.8%) of the women believed that the use of the speculum during treatment enlarges the vagina and 11 (23.9%) feared that their uterus would be removed during treatment. Also, 10 (21.7%) feared being attended to by a male health care provider. Only 9 (19.6%) women believed treatment (Cryotherapy) makes women unable to reproduce. (Table 1).

Nurses were asked if they were aware of these disadvantages (myths and misconceptions) of cryotherapy that deter women from going for cryotherapy and strategies they had put in place to refute them. The response was

'We are aware of the myths and misconceptions and there is a need for more outreaches to spread the correct information about cryotherapy treatment services (KII-1)'

Another response was:

'We need to build the capacity of the community health volunteers (CHVs) so that they share the information about cryotherapy treatment services at the household levels (KII-3)'

Table 1:
Barriers before Cryotherapy

Variables	Group	Frequency	Per cent (%)
Patient Awareness Benefits of cervical cancer screening			
Benefits of cervical cancer screening	Yes	49	81.7
	No	11	18.3
Benefits of cryotherapy	Yes	37	61.7
	No	23	38.3
Advantages and disadvantages of cryotherapy			
Have you heard of any?	Yes	46	76.7
	No	14	23.3
Have they influenced your decision to seek medical care	Yes	6	13.3
	No	40	86.7
Disadvantages of cryotherapy			
Treatment makes women unable to reproduce	Yes	9	19.6
Use of the speculum enlarges the vagina	Yes	16	34.8
Fear that the uterus would be removed during treatment	Yes	11	23.9
Fear of being attended to by a male provider	Yes	10	21.7

Barriers at the time of cryotherapy

As shown in Table 2, overall, 32 (53.3%) of the respondents noted that cryotherapy was readily available at MSCH. Twelve (42.9%) of respondents said there was no healthcare provider to operate the cryotherapy machine. In addition, 11 (39.3%) said the cryotherapy machine was not functioning and four (14.2%) said there was gas stock out in the facility. The rest noted other reasons such as the unavailability of cryotherapy services due to a nurses' strike.

The Nurses' responses were: -

'The nurses trained to offer cryotherapy are few in number leading to burnout due to competing tasks and in any case, the nurses are not present, then there is no one to operate the machine and offer cryotherapy (KII-1)'

'Essential commodities e.g., gas, vinegar, speculum for examination is often not readily available hindering effective service delivery (KII-5)'

In addition, 40 (24%) respondents waited for more than 1 hour before they were attended to. Twenty-three (38.3%) and 13 (21.7%) respondents waited for 30 min and up to 1 hour respectively before they were attended to.

When Nurses were asked to give the major reasons hindering women from the hospital for cryotherapy, the response was: -

'Long waiting time before service delivery, lack of essential supplies e.g., gas stock out, fear of pain during the treatment process and programming of services at the facility. Cryotherapy is not offered daily hence women are discouraged from coming for cryotherapy (KII-2)

Barriers to the effective healing process after cryotherapy

As shown in Table 3, a higher number 58 (96.7%) ensured they avoided vaginal douche/ tampons, 56 (93.3%) abstained from sexual intercourse for one-month post-treatment, and those who didn't abstain 4 (6.7%) ensured they used condoms during sexual intercourse 2 weeks post-treatment. Few, 36 (60%) honoured their appointment dates. Experiences after cryotherapy varied among different women, a higher percentage 51 (85%) did not experience any pain after cryotherapy, 5 (8.3%) had smelly discharge whereas four (6.7%) experienced abdominal pains. No woman (0%) reported severe vaginal bleeding after cryotherapy.

Table 2:
Barriers at the Time of Cryotherapy

Variables	Group	Frequency	Per cent (%)
Is cryotherapy readily available	Yes	32	53.3
	No	28	46.7
Reasons for unavailability			
Cryotherapy machine not functioning	Yes	11	39.3
No healthcare provider to operate the machine	Yes	12	42.9
Gas stock out	Yes	4	14.2
Nurse's strike	Yes	1	3.6
Waiting time			
	15-30 min	13	21.7
	30-60 min	23	38.3
	More than 60 min	24	40

Nurses were asked to give reasons as to why some women didn't adhere to post-cryotherapy treatment care instructions and the responses were: -

'There are inadequate Information Education Communication (IEC) materials in the facility on cryotherapy post-treatment care instruction (KII-4)'

'Due to the burn-out we experience after seeing many patients and other competing tasks, this makes us talk less and only offer the screening and cryotherapy. Therefore, we spend less time explaining to clients these post-treatment care instructions (KII-5)'

Table 4 shows the chi-square test of association between those who knew the benefits of screening and the benefits of cryotherapy. A woman of reproductive age who knows the benefits of screening is more likely aware of the benefits of cryotherapy [$X^2(1, N = 60) = 5.9097, p = .02$)].

The results further show that the knowledge of the benefits of cryotherapy did not influence one's decision to wait for cryotherapy treatment [$X^2(1, N = 60) = 3.9863, p = .46366$)].

Discussion

The success of cryotherapy treatment depends on good adherence to post-treatment care instructions, availability of services during the follow-up treatments and the understanding of the patients about the treatment services.

Table 3:
Barriers to Effective Healing Process

Variables	Group	Frequency	Per cent (%)
Experience after cryotherapy			
Severe vaginal bleeding	Yes	0	0
Abdominal pains	Yes	4	6.7
Smelly vaginal discharge	Yes	5	8.3
No pains	Yes	51	85
Adherence to the post-treatment care instruction			
Avoid vaginal douche/tampons	Yes	58	96.7
Abstinence from sexual intercourse one-month post-treatment	Yes	56	93.3
Use of condoms if a must 2 weeks post-treatment	Yes	4	6.7
Honouring appointment dates	Yes	36	60

Table 4:
The Relationship between the Benefits of Screening and Benefits of Cryotherapy

Benefits of screening	**Benefits of cryotherapy**		**P-value**
	Yes	**No**	
Yes	49 (43.00) (0.84)	37 (43.00) (0.84)	0.02
No	11 (17.00) (2.12)	23 (17.00) (2.12)	

In this study, however, the majority of the women reported good adherence to post-treatment care instructions resulting in a prompt healing process but pointed out a concern with the unavailability of cryotherapy services and various myths and misconceptions hindering the uptake of the treatment services. The study found out that despite the wide spread of cryotherapy services in Kenya, unavailability of cryotherapy treatment services, non-adherence to post-treatment care instructions and myths and misconceptions remain barriers to uptake of the treatment services.

The adherence to post-treatment care instructions included; avoiding vaginal douche/ tampons, abstaining from sexual intercourse one month post-treatment, ensuring the use of condoms during sexual intercourse two weeks post-treatment etc. We have also observed from the revealed findings that experiences after cryotherapy varied among different women, a higher percentage did not experience any pain after cryotherapy which is a good sign of healing. Few, however, had smelly discharge and experienced abdominal pains and no woman reported severe vaginal bleeding after cryotherapy. These findings are consistent with other studies that identified and indicated healing becomes very effective when women adhere to these post-treatment care instructions leading to no pain and thus positive treatment outcomes (8, 10, 11). At Kgatleng District in Botswana, they recommended that Healthcare providers should be more patient-centred, and make it intentional to explain the post-care treatment instructions and their specific significance in the treatment process. In addition, a good rapport is required to improve adherence and completion of cryotherapy treatment (12).

Although there were no adverse reactions, a number of our study participants reported challenges with the inconsistency in cryotherapy service delivery, in particular, either faulty machines or the absence of the healthcare provider who offers the services. Our findings are inconsistent with that of a study in Uganda that reported an inadequate number of health care personnel who had been trained to offer cryotherapy services and faulty cryotherapy machines and inconsistency in cryotherapy service delivery (13). We further report the barrier of treatment due to the waiting time as study participants raised a concern with the long waiting before receiving cryotherapy. These findings are consistent with those of another study conducted in western Kenya where long waiting periods did upset the women but they felt unable to question this because of their lower status (14). The study also revealed that the knowledge of the benefits of cryotherapy didn't influence one's decision on whether to wait or not despite the duration of cryotherapy treatment as a higher percentage had to wait for more than 30 minutes, however, this still discouraged some of them from honouring their appointment dates the next time or they become lost to follow up which could lead to progression of the precancerous lesions to cancerous lesions thus affecting their treatment outcomes. It's also in tandem with another study done across developing countries where they identified supply of cryotherapy equipment is problematic and staffing levels inadequate for optimal access to services (15). The result of this is long queues and waiting times which are frustrating to women and ultimately discourage them to undergo treatment (16). In terms of the shortage of healthcare providers, another study conducted in western Kenya recommended hiring and training additional staff to offer effective cryotherapy treatment (17)

Just as observed in regional primary care services, inadequate health education and promotion are also observed in the uptake of cryotherapy treatment services. In this particular,

the study majority of the women reported to have heard of the disadvantages (myths and misconceptions) of cryotherapy such as being very painful, and fear that their uterus would be removed during treatment among others but it did not influence their decision to go for cryotherapy as most went for cryotherapy including those referred from other health facilities because of their knowledge on the benefits of both screening and cryotherapy. This finding agrees with those of a study conducted in western Kenya which determined that better knowledge of benefits led to good uptake of cryotherapy as opposed to the influence of myths and misconceptions of cryotherapy (18).

The study also revealed that a better knowledge of the benefits of cervical cancer screening and cryotherapy was positively associated with proper uptake of cryotherapy among women of reproductive age. These findings didn't agree with those of a study conducted in Brazil and Burkina Faso where it was identified that there was poor knowledge of these benefits as information rarely reaches hard-to-reach communities thus a larger population lack the correct information (7, 19). The possible explanation for this variation might be the difference in the location of the study areas as the studies in comparison were conducted in rural areas where access to the information on these benefits of cervical cancer screening and cryotherapy is a challenge.

From a study conducted in Nigeria, higher reproductive health education was positively associated with good uptake of cryotherapy services among the women. Accordingly, women whose educational status was secondary school and above were about two times or more likely to have good uptake and utilization of cryotherapy as compared to those who had no formal education. The study further showed that health education on cervical cancer screening and cryotherapy uptake and post-treatment care was a significant factor in determining the level of knowledge among women of reproductive age (20). This can be explained by the fact that educated women might have a better awareness of the benefits of cryotherapy and thus good utilization of the same.

The study highlighted the need for health education and promotion to be intensified for cryotherapy as it is for other healthcare services. From the health belief model, if a woman could perceive the importance of cryotherapy then this might have a positive impact on the uptake of the service (21). It also suggests that people's beliefs about health problems and the perceived benefits of action and barriers to action explain engagement in health-promoting behaviour. Cue to action such as health education might trigger a health-promoting behaviour (21). According to (22) this barrier was lessened with a more extensive educational intervention than what was provided by community health volunteers.

Although cryotherapy was decentralized, our study identified the need for centralizing cryotherapy services for easy access by women when in need. In a study conducted in Botswana, the women received transport reimbursement anytime they'd seek cryotherapy services and the ministry of health also provided mobile treatment that led to proper adherence to cryotherapy and effective treatment (23).

A limitation of this study is that there was a selection bias on women who had mobile phones as data was collected through telephone interviews and this could have led to a loss of contextual and nonverbal data and compromised rapport, probing and interpretation of responses however, it allowed respondents to feel relaxed and able to disclose sensitive information. We also note that this study focused on a population from an ethnic group and therefore the findings

may not be generalizable given that Kenya is a multi-ethnic group county.

Conclusion and Recommendation

The respondent's knowledge of the benefits of screening and cryotherapy, adherence to post-treatment care instructions, unavailability of cryotherapy services and myths and misconceptions surrounding cryotherapy are significantly associated with the effectiveness of cryotherapy in the treatment of cervical precancerous lesions. Therefore, there is a need for centralizing cryotherapy whereby health care providers ensure accessibility and availability of the services at all times for appropriate utilization. In addition, increasing women's knowledge of cryotherapy, and refuting myths and misconceptions should be done by investing in the provision of Information Education Communication (IEC) materials to offer information on cryotherapy and engage more Community Health Volunteers (CHVs) who will educate women in the community and promote proper health-seeking behaviours and uptake of cryotherapy. Enhancing health promotion and education at both community and individual levels could help raise awareness around cervical precancerous lesions and cryotherapy. Policymakers and stakeholders should pay special attention to strengthening the health system, in particular, the appointment system and provision of cryotherapy essential commodities for improved utilization of cryotherapy treatment services. There is a need to mitigate the weaknesses of the health system through alternative technology that allows a one-stop screen and treatment services.

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