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Research Article

Barriers and Facilitators to Adherence to Precancerous Cervical Lesion Treatment Follow-ups Among Women in Harar, Ethiopia: A Qualitative Study

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Abstract

Background: For precancerous cervical lesion (PCL) treatment to be effective and minimizing its consequences, adherence to treatment follow-ups is essential. However, in Ethiopia, women frequently do not follow suggested schedules, and barriers and facilitators are understudied, particularly in Harar city. *Purpose:* This study aimed at exploring barriers and facilitators to adherence to precancerous cervical lesion treatment follow-up. This information can help inform prevention interventions. *Methods:* This qualitative study was conducted at a large regional oncology center in Harar, Ethiopia between March and April 2023. The study included a purposive sample of 14 women with precancerous cervical lesions for individual in-depth interviews, as well as 10 nurses working with patients at the oncology center for focus group discussions. Participants interviewed individually using semi-structured interviews guide with the assistance of a voice recorder and field notes. The data were transcribed verbatim and analyzed using a thematic approach. *Results:* The study identified three major themes for barriers and five major themes for facilitators of adherence to precancerous cervical lesion treatment follow-ups. *Conclusion:* Personal, clinical, and social barriers impact adherence to precancerous cervical lesion treatment follow-ups. Strategies such as reminders, template preparation, counseling, nearby access, and media awareness can help improve adherence. It is essential to develop programs that are patient, family, society, and clinical-oriented, culturally sensitive, and inclusive to effectively address these barriers.

Keywords

Precancerous, Cervical Lesion, Barriers, Facilitators

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1. Introduction

The precancerous cervical lesion (PCL) is an abnormality in the cells of the cervix, the lower neck of the uterus [1, 2]. It is also called an intraepithelial lesion, a pre-invasive stage of cervical cancer, and is preceded by abnormal changes in the cells of the cervix [1, 3]. PCL lesions are characterized by a distinct change in the epithelial cells of the transformation zone of the cervix; the cells begin developing in an abnormal fashion in the presence of persistent or long-term human papillomavirus (HPV) infection [4, 5]. High-risk HPV are 16 and 18 for developing PCL and is mainly transmitted through sexual contact [1, 3]. The other important high-risk HPV vary regionally [1, 3, 6, 7].

PCL is prevalent in sub-Saharan African women, indicating 25.6%, and it is more prevalent among HIV-positive women [7]. PCL is also prevalent in Ethiopia [1, 2]. The trend also showed that there is still an increasing prevalence of PCL in Ethiopia [8-10]. Moreover, a study reveals a high prevalence of PCL in Harar city (24.5%), but it did not address barriers to missed follow-ups or facilitators [11].

One of the terrible effects of PCL is that it may eventually lead to cervical cancer (CC), a serious public health issue that affects thousands of Ethiopian women [12, 13]. The other terrible effect of PCL is that it affects reproductive-aged women, who are sexually active individuals who can transmit the virus through multiple sexual partners [1, 3]. It also affects more women using oral contraceptive pills, steroid use, and higher parity and living in rural area [2, 10]. Additionally, PCL affects more women with chronic diseases like HIV/AIDS, and those with a history of pelvic infection [7-9, 13].

So far, studies show women's education and awareness are barriers to PCL treatment follow-up [11, 14, 15]. Likewise, a study in Cameroon reveals that women living in rural regions and women with alternative treatment options, such as herbal or traditional treatments, often neglect their PCL treatment follow-ups [15]. Other barriers to PCL treatment follow-up include fear of the negative effects of modern PCL treatment, especially the fear of infertility, accessibility to PCL treatment (both financially and geographically), disrespect from medical staff, and a lack of relevant referrals [15, 16]. Moreover, studies indicate facilitators to PCL treatment follow-ups, including enhancing health literacy, appointment reminders, fee reductions, peer counseling, and patient orientation [15, 17]. Others still add improving healthcare workers' attitudes as a facilitator to PCL treatment follow-ups [15, 18].

For PCL treatment to be effective and minimizing its consequences, adherence to treatment follow-ups is essential. However, in Ethiopia, women frequently do not follow suggested schedules, and barriers and facilitators are understudied, particularly in Harar city. Therefore, the purpose of this study was to explore barriers and facilitators to adherence to PCL treatment follow-up through in-depth interviews of individual patients and groups of nurses who care for them. This information can help inform prevention interventions.

2. Methods

2.1. Study Setting and Design

The study was conducted at the Hiwot Fana specialized university hospital (HFSUH) oncology center in Harar city, which is located about 526 kilometers away from Addis Ababa, the capital city of Ethiopia. HFSUH is a teaching hospital of Haramaya University and delivers wider health care services to approximately 5.2 million people in the catchment area. It has different service areas, including the chronic disease outpatient department (OPD), emergency OPD, medical, surgical, pediatrics, psychiatry, gynecology, obstetrics wards, one oncology center, and an intensive care unit (ICU). The study design for this study was a qualitative, semi-structured interview with individual patients and focus groups with nurses. This methodology was chosen because it does not assume a specific mindset and helps to address the complexities of the lives of individuals and professionals within a relational context. The interviews were conducted between March and April 2023.

2.2. Study Participants

The study participants were women who screened positive for precancerous cervical lesions and missed at least two follow-ups (for in-depth interviews) and nurses for focus group discussion (FGD).

2.3. Inclusion and Exclusion Criteria

Participants were eligible to participate in the study if they were legally adult (>18 years old), HIV-infected, or uninfected women who screened positive for precancerous cervical lesions and missed one or more treatment follow-ups either consecutively or intermittently. Participants preferred those who screened positive beyond a year in order to capture their experiences with follow-up. Nurses who were legally adults (>18 years old), and with more than two years of working experience were included for focus group discussion. However, those recently diagnosed, less than a year ago, would not have been qualified for routine follow-up, and one woman, due to impaired hearing (a sign language interpreter was lacking), was excluded due to being unable to give full responses.

2.4. Sampling

A purposive sampling technique was used to recruit participants (both patients and nurses for FGDs). Eligible patients were recruited by the health management information system (HMIS) coordinators of the oncology center from health records. Then patients were contacted via telephone.

2.5. Data Collection and Procedures

An interview guide was developed from a review of the literature. Interviews, observations (field notes), and audio recording were used for data gathering.

The interview guide for the individual interview with the women contained four discussion sections: experiences with screening positive for precancer and receiving treatment, challenges with follow-up care, barriers to effective follow-up, and strategies to improve the follow-up at the individual, interpersonal, community, and societal level.

The interview guide for the focus groups for nurses also contained four sections: experiences with caring for women with lesions, challenges with follow-up care, barriers to effective follow-up, and strategies to improve the follow-up at the individual, interpersonal, community, and societal level. Both the interview and FGD guide were not biased or lead-in [Appendix].

The eligible women were first contacted by the health management information system (HMIS) coordinator on the phone and referred to the interviewer. A total of 14 women were invited to participate in the study (six HIV-infected and eight HIV-uninfected women).

At first, participants were informed of the purpose of the interview, field note, and audio recording and that every piece of information they gave would remain confidential (their identities and answers would remain confidential) and would be used for research purposes only. Then, written informed consent was obtained from study participants. The principal investigator (PI) invited 10 nurses to participate in the study through the nurses' supervisor and consented.

Data was collected through in-depth qualitative individual interviews of the 14 eligible women and two focus groups of the 10 nurses (nurses grouped into two FGD, one with five nurses and one with five nurses).

In the first month (March), data was collected through in-depth qualitative individual interviews of the 14 eligible women (three experienced; all three have M. Sc. degrees in nursing and midwifery). One co-author recorded audio, and two other co-authors took field notes. The individual interviews were performed in a quiet and confidential room and lasted between 25 and 35 minutes. The interview was continued until it was adequate and complete, and little or no new information came from the interviewees (saturation) [19].

In the second month, data was collected through two focus groups of the 10 nurses (nurses grouped into two FGD, one with five nurses and one with five nurses).

The principal investigator (PI) used probes and follow-up questions to implore exhaustive information from participants, building on their responses. Two co-authors recorded audio, and two co-authors took field notes. The FGDs were performed in two quiet rooms and lasted between 50 and 60 minutes. The FGDs were continued until they were adequate and complete, and little or no new information came from the discussions (saturation) [19]. Both interviews and FGDs were conducted in the local language (Afan Oromo and Amharic).

2.6. Ethical Consideration

Study participants were interviewed after obtaining ethical clearances from the Hiwot Fana specialized university hospital (HFSUH) oncology center. A written informed consent form was also obtained from participants, and all information obtained was kept confidential during all stages of the study. The collected data was used only for the purpose of the study.

2.7. Data Management and Analysis

The investigators followed clear file naming, developed a data tracking system, and established and documented data transcription and translation procedures. The initial coding was performed by one of the researchers, and fine-tuning was performed by supporting researchers, both with experience in qualitative data analysis.

Before analysis, all interviews, FGDs, field notes, and voice records were transcribed and translated to English. The authors transcribed each discussion verbatim and carefully checked each transcript for accuracy by simultaneously listening to the audio recording and reading the transcript. Notes taken during the interviews and FGDs were incorporated into the final transcripts. The preliminary coding of transcripts was done using an inductive thematic approach. During the data analysis, the PI read the transcripts line by line to identify codes. The codes were then collapsed into themes, and the themes were linked to literature, and finally, a point of view was created. Finally, the document was thoroughly reviewed using the COREQ (consolidated criteria for reporting qualitative studies) check list.

2.8. Trustworthiness of the Study

In qualitative research, trustworthiness is verified if the dimensions of credibility, dependability, and conformability are well addressed [20-22]. Interviewing a diverse group with a research goal and conducting member checks with participants enhanced credibility [19, 20, 23, 24]. Thus, in this study, to enhance trustworthiness, the pilot interview guide was tested two weeks before the actual interview with two participants. Two days of training were provided for interviewers regarding procedures, how to approach participants, interviewing and discussing sensitive issues, and using voice recordings and field note-taking. Diverse participants for both interviews and FGDs (residence and working experiences) were included. The data collected was stored on a secured and password-protected computer of the PI and the research assistant. All data was de-identified. No names or specific identifiers were used in the data processing, analysis, or dissemination of research results. Responses from the participants were anonymous on the tape. The data was transcribed verbatim, and content analysis was used to code the data.

3. Results

3.1. Participants' Profile

Twenty-four participants (14 women for interviews and 10 nurses for FGDs) were involved in the study. The median age of patients was 39 years (range 33-45) and nurses for FGD was 41 years (range 40-49). Majority participants were married [Table 1].

Table 1. *Demographic and obstetric characteristics of participants, Harar, Ethiopia, 2023.*

Characteristics		**Interview (n=14)**	**FGD (n=10)**
Median age (in completed years), years (minimum–maximum)		**39 years (33-45)**	**41 years (30-52)**
Sex	Male		4 (40)
	Female	All women	6 (60)
Residence, n (%)	Urban	5 (35.7)	4 (40)
	Rural	9 (64.3)	6 (60)
Marital status	Married	8 (57.1)	7 (70)
	Widowed	4 (28.6)	2 (18.2)
	Divorced	2 (14.3)	1 (10)
Education level	No formal education	2 (14.3)	BSc nurse=8 (80)
	Primary level (1-8)	4 (28.6)	
	Secondary level (9-12)	6 (42.8)	MSc=2 (20)
	Diploma	2 (14.3)	
Occupation	Housewife	2 (14.3)	All public employee (100%)
	Merchant	5 (35.7)	Work experience
	Private employee	4 ((28.6)	2-3 years=3 (30%)
	Government employee	3 (21.4)	>3 years=7 (70%)
Religion	Muslim	3 (21.4)	2 (20)
	Orthodox	5 (35.7)	3 (30)
	Protestant	4 (28.6)	4 (40)
	Catholic	2 (14.3)	1 (10)
Parity	2-4	10 (71.4)	2 (33.3)
	>4	4 (28.6)	4 (66.7)

3.2. Barriers to Adherence to PCL Treatment Follow-up

Three main themes emerged from the data of both individual interviews and focus groups: personal barriers, clinic barriers, and social barriers.

1. Personal Barriers

1) Awareness

The findings revealed that awareness (which includes awareness of a precancerous cervical lesion, what it is, its treatment, and its sequel) was the stated barrier to follow-up. A participant stated that "the word cancer by itself is lethal to myself and the community where I come from, and there is no cure for it except by God, or rarely by experienced traditional herbalists." Another participant narrated, "I remember hearing about it once during a campaign, but I'm not sure what it is or why it happens. I live in the rural part of the country and don't have access to the majority of health information." Similarly, another said, "I had heard of cervical lesion; I believe pre-

cancerous cervical lesion is a disease of women, similar to HIV/AIDS."

A participant from FGD narrated, "Patients lack awareness about treatment effectiveness, which is why they miss treatment follow-up regarding useless. Awareness about sequels is very important, but many patients lack it, which makes them miss follow-up."

2) Level of education

Women's education level is the other barrier to treatment follow-up. A participant said, "I don't understand what doctors informed me, and they also do not consider me; they tell everything on their own level." Participant from FGD narrated, "Those educated women listen and understand during counseling and come for follow-up well. But those who lack education ignore or even prefer traditional healers. Once they come, they seldom return."

3) Poverty

Despite the fact that women have access to PCL treatment services, there are some expenses associated with receiving services, such as the means to transport and food in the town, especially for those who come from rural areas and are poor. A participant said, "Although I know the benefit since my home is rural, that is why I missed follow-up two times; transport costs are expensive, and I am poor and cannot afford it." Similarly, FGDs reflected, "For those who come from rural areas, transportation costs are a barrier."

4) Fear

Patients with PCL fear side effects such as gastric ache and vaginal discharge, and they complain that the PCL treatment may lead them to be infertile or lose their uterus through surgery. A participant stated that "I fear that the treatment makes me a childless woman." FGDs stated that "Some women complain of side effects of treatment like infertility; it is unclear who tells them such associations."

5) Perceptions

The findings revealed that the patients' perceived cost of further screening is a barrier to PCL treatment follow-up. One participant stated, "I feared there may be further screening and expensive costs associated with it, so I avoided two follow-ups last year." A participant from FGD said, "Some women associate the cost of screening with other costs of health care services. and avoid follow-up."

The findings also revealed that women with PCL have a perception of 'no medical cure' and 'traditional healers are better'. A participant narrated, "Why am I having trouble? Is there a cure due to follow-up? If that's the case, let me know." Many people in my village told me that such diseases are cured by traditional healers; modern doctors give you antipain or paracetamol. So, I accept and attend it, missing the follow-up. I took traditional medicine from elsewhere that is better for me than modern medicine. That is why I interrupt follow-up."

Another participant said, "Many women, including me, accept the advice of traditional healers rather than modern health professionals. We perceive modern health professionals as recent, but traditional healers and witchdoctors are long-experienced, and God has gifted miracles to cure a disease."

In addition, FGDs reflected, "Still now, women, both urban and rural, prefer traditional healers for cancer-related issues. When health professionals ask them whenever they miss follow-up, directly and indirectly, they respond, 'Is there a cure?'"

6) Subjective emotion (a hopeless feeling)

Patients' emotions, such as treatment follow-up, have no effect on cure, particularly for precancer lesions in HIV/AIDS women, which is considered a barrier to their treatment follow-up. A participant stated that "I am an AIDS patient, so this world is not for me; I am simply living." FGDs explained that "Although the government is making the service accessible, patients display hopelessness with the treatment follow-up, especially HIV/AIDS positives with pre-cervical lesions; they lack hope to live."

2. Clinical Barriers

1) Staff attitude (both medical and non-medical)

The findings explored that staff attitudes (which include a lack of respectful care, insulting, or breaking privacy) were the stated barriers to treatment follow-up. A participant said, "Health professionals' disrespect and security guards insult me; I do not want to be insulted, and it is that makes me not to attend as scheduled." Another one said, "Both security guards and nurses use abusive words; they even insult me; medical staff break my privacy during sample taking as they want; due to these, I sometimes avoid coming for follow-up."

FGDs stated that "Some health professionals lack concern, empathy, and ethics. This surely makes women miss treatment follow-up."

2) Staff communication (both medical and non-medical)

The findings revealed that PCL treatment follow-up is influenced by the quality of communication between healthcare workers and clients. A participant narrated, "I visited a public hospital for my treatment follow-up, but nobody gave me a good response. Doctors do not explain what to do in procedures; I really feel pain when they take some samples. When I explain the pain, they ignore it or recommend keeping it silent." FGDs also described, "Some women avoid follow-up due to a lack of adequate or inappropriate communication with healthcare staff. Some nurses and doctors do not do proper counseling, informed consent, and others. This irritates patients and causes them to lose follow-up."

3) Referral and service access

As per the findings, the PCL treatment follow-up is influenced by the quality of the appropriate referral to the service and service accessibility in the referred hospitals. A participant said, "I decided to avoid my follow-up because service is not there; simply the name of service is written." Another one said, "My home is in a remote area; the town hospital is very far." FGDs said, "Some healthcare workers do not have a proper referral system, and women with this problem complain, and this might be one reason for their lack of fol-

low-up."

3. Social Barriers

1) Distance

Some women come from remote rural areas; transport facilities and cost are the other barriers to PCL treatment follow-up. A participant stated that "I am a rural dweller, and the road is difficult; cars are not accessible. As a result, I miss my treatment follow-up." FGDs reflected, "Although women may have interest, distance and transportation issues affect their follow-up.".

2) Male partner influence

The findings revealed that husbands are major decision-makers, and their dominance still influences the PCL treatment follow-up of women. A participant stated that "Sometimes I miss my treatment follow-up since my husband refused to attend it, saying it was useless to go to pray." Another one said, "My husband does not allow me to follow up on modern treatment; he recommends that I take advice from religious fathers. Fearing breaking his command, I lost some follow-up." FGDs narrated, "Some women would like to inform their husbands or get their consents before they receive treatment. If husband refuses her, she will miss follow-up. Sometimes, the male partners stop the women from receiving treatment for unknown reasons.".

3) Family, friends, and neighbors' influence

As per this study, family, friends, and neighbors influence due to societal beliefs is the other barrier to the PCL treatment follow-up services. This means that those societal beliefs, for instance, that PCL is belied as cancer issues that have no modern cure by society, influence women to engage in either religious practice or traditional practice. A participant narrated, "In our society, even I believe that cancers are not cured by modern treatments but rather by religious or traditional healers. So, when I attended modern treatment, my family and my husband's family said this was wasting time, money, and life. So highly influenced me and my husband to go traditional healer in rural." FGDs stated that "women, families, even friends, neighbors... can have influence to stop or to continue follow-up."

4) Religious fathers' influence

Some religious fathers do not encourage modern PCL treatment follow-up services, including PCL treatment follow-ups, and this is explored as one of the hidden barriers.

FGDs described, "Some women with this problem interrupt follow-up reasoning because God knows best and I attend religious practices. Some religious fathers obviously discourage women from modern treatment follow-up, especially if they hear the word 'cancer'."

A participant said, "My stepmother told me that your case is, one way or another, cancer, although doctors said it was a precancerous cervical lesion, so discuss it with your religious father. The religious father recommended that I stop hospital follow-up and attend what he recommended."

5) Traditional healers and witch doctors' influence

Participants shared that they were coerced by their families to visit traditional healers and witch doctors, who were believed to have superior knowledge compared with medical doctors and traditional healers. Traditional healers and witch doctors create terror in women whenever they seek advice or treatment from them and inflect that modern treatment is less effective than theirs. This is the other explored hidden barrier to women's follow-up for the treatment of PCL.

A participant stated that "I was forced to go to a popular traditional healer, convinced to do so by my father and uncle. Then the traditional healer strictly warned not to combine his medicine with modern treatment, stating that the modern one is useless." The other one said, "My husband's grandma told my husband and me that witch doctors know everything better than doctors, and this is their gift knowledge. Then, my husband forced me to go there, although I do not believe in them. I went to the recommended witch doctor, and he ordered me not to go to hospitals, neither public nor private; if so, his medicine will not work." Likewise, another participant shared, "After I heard from someone, I asked a witch doctor, and he gave me medication, recommended hen meat, and told me not to tell doctors to avoid their medicine."

Moreover, FGDs stated that "Obviously, traditional healers discourage women from attending treatment in hospitals, and this is probably the greatest reason for missing or avoiding follow-up."

3.3. Facilitators of Adherence to Follow-up

In this theme, a series of strategies to overcome or improve the PCL treatment follow-up were explored, which include reminder phone calls, letters or messages, template preparation, counseling, creating access in a nearby area, and awareness in media (radio, television, etc.). The following quotes explain these:

1. Reminder: phone calls, messages, or letters

A participant narrated, "I didn't think about coming for follow-up unless I became sick or felt bad, so if my husband or family reminded me, I could come for follow-up. So, send a message by phone from doctors, but they do not do that; they are careless." Another participant said, "Maybe if I was reminded by a letter or messages through the phone or people, honestly, I will come every follow-up. Phone calls or messages can play a role. People heads are full of many issues, and usually we forget, so maybe reminding them each time will help." FGDs are also described as "forgetfulness emerged as a challenge, and one of the ways of overcoming it is through reminder phone calls. We need to send messages by community health extension workers to remind them that in addition to giving cards for follow-up dates, some may forget."

2. Counselling

A participant said, "If doctors tell you appropriately during follow-up, it is good to come back." FGDs stated that "professionalism, respectful health care, and good counseling can break some follow-up barriers."

3. Template preparation

FGDs explained that "as a program, we can strengthen this follow-up if we can prepare templates; if so, I think they will come back. Preparing easily understandable health information on a template to read about precancerous cervical lesions, what it is, risk factors, treatment, or prevention. This may reduce traditional, unproven concepts and their preference for traditional healers and others."

4. Access in a nearby area and raising awareness in the media

A participant stated that "opening a health facility near a transport facility is good; it can increase my follow-up." Another one said, "Educating on television is good to convince people of the importance of follow-up and good to remind them."

In addition, FGDs explained, "Service access in their near area, especially for rural sites; good health facilities make good efforts to reduce social and clinical barriers; if so, most women will come. Awareness to religious leaders, community leaders, and traditional healers to reduce their negative influence on the follow-up of women is a must. But what to do for witch doctors remains a question."

4. Discussion

This qualitative study examined the barriers and facilitators contributing to adherence to PCL treatment follow-up.

The findings revealed that women with positive PCL have a number of barriers that contribute to missing their PCL treatment follow-ups, which are linked to personal, clinical, and social barriers. Additionally, this study identified facilitators contributing to adherence to PCL treatment follow-up that include improving follow-up can be achieved through reminders, template preparation, counseling, nearby access, and media awareness.

These findings are significant in the context of global efforts to reduce PCL treatment follow-ups and its sequels, particularly in low-resource settings. Understanding these barriers and facilitators is essential for developing effective interventions to support women with PCL in Ethiopia and other similar settings.

As per the findings, personal barriers like lack of awareness and education play as barriers to PCL treatment follow-ups. Studies reflected the congruent concept that women's education and awareness have a role in the follow-up of precancerous cervical lesions [11, 14, 15]. This might be due to the fact that a lack of awareness and education might lead women to understand less about PCL, which includes what they are, their treatment, and their sequelae, which may lead them to ignore their attentive follow-up. The personal barrier like poverty is associated with expenses, and this leaves women unable to pay transportation fees to hospitals and miss their PCL treatment follow-up. Other studies explored personal barriers like fear, which is associated with side effects of treatment, particularly the fear of being infertile as a barrier to PCL treatment follow-ups [15, 16].

Additionally, the present study explored two new personal barriers affecting women's adherence to PCL treatment follow-up: perception and subjective emotion (a hopeless feeling). Perceptions of the cost of further screening and the perception 'no medical cure for PCL' hinder follow-up, especially for HIV/AIDS women. This implies psychological interventions and health professionals' counseling effort and information dissemination are crucial.

The findings also explored clinical barriers like staff attitude, communication, referrals, and service access. Other studies also found that low accessibility of the program (in respect to cost and distance), disrespectful treatment by healthcare workers, and a lack of appropriate referrals were identified as barriers to PCL treatment follow-ups [15, 18].

Studies examined that healthcare workers' attitude significantly influences women's PCL treatment follow-ups [15, 18]. This implies that healthcare workers' unfriendly communication, disrespect, or privacy issues can discourage women from revisiting for PCL treatments.

Moreover, the findings explored social barriers like male partners, family, friends, neighbors, religious fathers, traditional healers, and witch doctor influences, which play a pivotal role in PCL treatment follow-ups. Studies identified that women living in rural regions continue to face significant obstacles due to the long travel times to health facilities for PCL treatment [15, 25]. This is due to the fact that treatment center access is lacking and some women come from remote rural areas; transport facilities and cost are the other challenges, leading women to miss their PCL treatment follow-up. Husbands' decisions and societal beliefs, such as the belief that PCL has no modern cure, hinder women's adherence to PCL treatment follow-up services. Studies affirm that male partners are significant barriers to PCL screen-and-treat programs [15]. This implies that due to societal beliefs, such as the belief that 'PCL has no modern cure,' hinder women's adherence to PCL treatment follow-ups, forcing women to engage in religious or traditional practices. However, some traditional healers and religious fathers may not promote modern PCL treatment follow-up services, potentially acting as a hidden barrier. Similarly, research conducted in Cameroon revealed that women with alternative treatment options, such as herbal or other methods, often neglected their PCL treatment follow-ups [15].

Moreover, unlike the prior studies available so far, the present study explored a new hidden social barrier to adhering to PCL treatment follow-ups. This is the 'influence of witch doctors'; witch doctors create terror in women, declaring that modern PCL treatment is less effective or has no effect than theirs. This is the other hidden social barrier to women's PCL treatment follow-ups and needs further research findings, which we recommend as a research direction for interested scholars.

Furthermore, this study identified facilitators of adherence

to PCL treatment follow-up, which can be improved through reminders, template preparation, counseling, creating nearby access, and media awareness. Similarly, a study revealed that enhancing follow-up adherence could be achieved through phone reminders, fee reductions, peer counseling, and orientation for patients with PCL [15]. A review of studies shows patient reminders positively impact appointment rates, reducing missed appointments by 41% and increasing clinic attendance by 34%, with multiple reminders resulting in better outcomes [26]. Studies also reflected the congruent concept that women's awareness plays a role in the follow-up of cervical precancerous cells [15, 17]. Appointment reminder systems are effective but not optimal because all patients may not receive a reminder [27]. So, enhancing health literacy might be an additional intervention [15, 28]. This implies that, while system-directed interventions can employ reminders to increase referral completion, awareness development might be a patient-directed intervention incorporating counseling or education. Furthermore, unlike the prior studies available so far, the present study explored a new facilitator for adhering to PCL treatment follow-up, such as preparing templates that inform them about the illness (precancerous cervical lesions, including what they are, treatment options, and others). And psychological interventions such as counseling during screening, diagnosis, and treatment follow-up to improve their perceptions and reduce hopelessness, especially for women with PCL and HIV-positive status. This implies the need for follow-up interventions to improve adherence to PCL treatment follow-up based on the status of individuals. Consequently, the present study findings have implications for society, healthcare practice, and research. Health service leaders and staff need to consider sociocultural factors of women in health care services, including addressing misperceptions and counseling what to do, why, and when to come for follow-up. This includes addressing attitude, communication, and follow-up factors, which have implications for health service practice to achieve the SDGs in the reduction of PCL treatment barriers by the year 2030. The societal implications include the need to address community awareness to clear misperceptions and negative impacts by influencing women's follow-up (religious fathers, traditional healers, witch doctors) and social, psychological, and financial support. Moreover, the research implications include the need for future research on the influence of witch doctors and research from different perspectives (healthcare service providers, community, and family) to provide further evidence.

5. Study Strengths

The study design enabled in-depth inquiry into the barriers of adherence to precancerous cervical lesion treatment follow-ups. The study identified facilitators, in addition to barriers contributing to precancerous cervical lesion treatment follow-ups. The study used diverse participants (urban and rural dwellers, nurses with different working experiences). The accuracy of the data was improved by the use of primary data (individual in-depth interviews) supported by focus group discussants as well as experienced.

6. Study Limitation

The study only included the participants' and nurses' perspectives and did not assess the perspectives of hospital administrators, the community, or families, which is a limitation of this study.

7. Conclusion

Personal, clinical, and social barriers impact adherence to precancerous cervical lesion treatment follow-ups. Strategies such as reminders, template preparation, counseling, nearby access, and media awareness can help improve adherence. It is essential to develop programs that are patient, family, society, and clinical-oriented, culturally sensitive, and inclusive to effectively address these barriers.

Abbreviations

HPV	Human Papilloma Virus
SDG	Sustainable Development Goal
HIV	Human Immunodeficiency Virus
SEM	Social Ecological Model
WHP	Women's Health Program

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Author Contributions

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Ethics Approval and Consent to Participate

Ethical approval was obtained from the Health and Research Ethics Committee of the Hiwot Fana Specialized University Hospital (File-HFSUH-10/May/2023). Informed written consent was obtained from all study participants. All protocols were carried out in accordance with the relevant guidelines and regulations of Helsinki.

Declaration

We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed. We further confirm that the order of authors listed in the manuscript has been approved by all of us.

Data Availability Statement

The datasets collected and analyzed for this study are available from the corresponding author and can be obtained upon reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

Appendix

Table A1. *Preamble and Interview guide used for the study, Harar, Ethiopia.*

I: Preamble

Thank you so much for meeting with me today and agreeing to participate in this interview. I want to remind you that what you say here is confidential and will not be linked back to you or your family or identify you in any way. I am recording this interview so that I can transcribe it. This means I will type out the words said in this interview (Discussion for nurses in FGDs) into a secure document for analysis. There will be no identifiers on the transcripts. The de-identified transcripts will be accessed by other members of the research team to perform the analysis. The purpose of this interview is to explore barriers and facilitators to adherence to follow-up among women with precancerous cervical lesions in Harar, Ethiopia, in order to better understand them and recommend healthcare services for improvement. We are here to learn from you, so anything you have to share is welcome. There are no right or wrong answers.

II: Major points for focus

Domain	SEM factors	Individual (IDI) for women	Focus group Discussions (FGDs) for nurses	Remarks
Living with precancerous cervical lesions	Intrapersonal and interpersonal factors	Could you kindly tell us about your experiences being diagnosed with precancerous cervical lesions?	Can you please share your experiences with caring for women with precancerous cervical lesions?	
Specific challenges	Institutional and community factors	Could you elaborate on any obstacles you experienced when seeking post-treatment follow-up?	Can you describe any challenges that you have experienced with the follow-up care of women with precancerous cervical lesions?	
General barriers	Institutional and community factors	What are the barriers to getting follow-up care after getting a diagnosis of precancerous cervical lesions?	What do you think are the barriers to effective follow-up for women with precancerous cervical lesions in Women's Health Program (WHP)?	
Recommendations	Healthcare system	What recommendations would you make to improve the fol-	What recommendations would you make to improve the follow-up of	

factors	low-up of women with precancerous cervical lesions?	women with precancerous cervical lesions in your clinic?

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