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Knowledge, Attitude, Practices, and Psychosocial Impact among People Living with HIV

Ekta Lahoti[1], Shivakumar. K. M[2]

[1]Intern, Department of Public Health Dentistry, Krishna Vishwa Vidyapeeth Deemed to be University, Karad
[2]Professor and HOD, Department of Public Health Dentistry, Krishna Vishwa Vidyapeeth Deemed to be University, Karad

ABSTRACT

Background: Oral health is often a neglected aspect of comprehensive care for people living with HIV (PLWH), even though it plays a key role in their overall quality of life. This study explores the levels of knowledge, attitudes, daily practices, and psychosocial challenges related to oral health among PLWH receiving antiretroviral therapy (ART) at a centre in Satara, India.

Materials and Methods: A descriptive, cross-sectional survey was carried out with 120 HIV-positive individuals aged 18 and above, all currently on ART. Data were gathered through a pre-tested, structured questionnaire that covered demographic details, oral hygiene behaviours, perceptions of oral health, experiences with oral health-related quality of life (OHRQoL), and stigma. Both descriptive and inferential statistics were used for analysis, performed using SPSS version 26.0.

Results: Most participants (96.8%) were on ART, and 78.2% acknowledged some link between HIV and oral health. However, only 18.5% had visited a dentist in the previous year. Despite 66.1% rating their oral health as “good” and 12.9% as “excellent,” almost all reported social and emotional impacts—99.2% had avoided social activities, and 96% had missed work or school due to oral health problems. Daily oral hygiene practices were inconsistent; 60.5% brushed once a day, and 69% did not use floss or other cleaning aids. Worryingly, myths persisted: 10% thought HIV could be spread by mosquito bites, and 5% believed in the harmful "virgin cure" myth.

Conclusion: The study reveals a clear gap between how PLWH in Satara perceive their oral health and the actual challenges they face. The results point to an urgent need for better integration of dental care within HIV services, improved oral health education, and more effective strategies to combat stigma.

Keywords: HIV/AIDS, oral health, stigma, Satara, antiretroviral therapy, OHRQoL, dental care, quality of life, public health, health literacy

INTRODUCTION

Human Immunodeficiency Virus (HIV) remains a major public health concern worldwide. Although advancements in antiretroviral therapy (ART) have significantly enhanced both the lifespan and overall health of individuals living with HIV (PLWH), oral health continues to receive limited attention within the scope of their medical care. Oral health-related quality of life (OHRQoL) encompasses how oral health influences an individual's physical comfort, psychological well-being, and social functioning. For people living with HIV, this concept holds particular importance due to the unique oral health issues they face, including HIV-associated oral lesions and side effects from prolonged antiretroviral therapy. These challenges can disrupt daily routines and underscore the importance of examining how oral health and HIV interact to affect overall quality of life.

The connection between HIV and oral health is intricate. As HIV weakens the immune system, it increases vulnerability to a wide array of infections, including those affecting the oral cavity—such as oral candidiasis, gingival inflammation, and periodontal disease. Studies consistently show that PLWH are disproportionately affected by these conditions, with a higher prevalence and severity noted for periodontal disease. Research by Casado et al. (2023) emphasized that HIV-positive individuals are significantly more prone to aggressive forms of periodontal disease, which may result in tooth loss and chronic oral discomfort [1].

Additionally, while ART is crucial for managing HIV, it may also contribute to oral health complications. Certain antiretroviral medications, particularly protease inhibitors, are associated with xerostomia (dry mouth), a condition that increases the risk of dental caries and periodontal problems. According to Zhou et al. (2024), many patients on ART experience dry mouth as a side effect, which impairs saliva production and creates an environment conducive to oral infections and tooth decay [2]. Saliva plays a key protective role in maintaining oral hygiene, and its reduction due to xerostomia exacerbates oral health vulnerabilities.

Oral health issues significantly influence the quality of life among PLWH. Conditions such as painful ulcers, missing teeth, and chewing difficulties can impede communication, nutrition, and social engagement. These limitations often lead to stigma and emotional strain. For instance, Lima et al. (2023) reported that individuals with visible oral conditions, like oral candidiasis, frequently experience psychological distress—including shame, anxiety, and reduced social interaction—thereby impairing their overall well-being [3].

Beyond the physical challenges, oral health issues can negatively affect mental health and self-perception. Tooth loss, for example, can result in diminished self-esteem and social discomfort, particularly in cultures where dental aesthetics are closely tied to personal identity. Hamer et al. (2023) found that HIV-positive individuals with noticeable oral issues often reported increased levels of anxiety and depression, further deteriorating their OHRQoL [4].

The psychological and social repercussions of oral health concerns among PLWH are often underestimated. Stigma plays a central role in this dynamic, as those living with HIV may already face societal discrimination. Visible oral symptoms can intensify this stigma, leading to further alienation. Miller et al. (2023) noted that oral manifestations of HIV can reinforce negative stereotypes, contributing to greater social marginalization and mental health struggles [5]. This overlapping stigma—from both HIV status and oral health problems—can significantly heighten risks of depression, isolation, and emotional distress.

Moreover, the stress associated with managing both HIV and oral health problems can further impact mental health. Studies by Robinson et al. (2024) suggest that PLWH with untreated oral health issues are at a higher risk of developing mental health conditions such as depression, as they are forced to navigate both the physical effects of the virus and the social consequences of their oral health problems [6]. Therefore, improving oral health care for PLWH can have significant benefits not only for their physical health but also for their emotional and psychological well-being. Despite the clear need for regular oral health care for PLWH, many individuals face significant barriers to accessing care. One of the most prominent barriers is financial constraints, particularly in low-income settings where dental care is not always covered by health insurance or government programs. A study by Henderson et al. (2024) found that the cost of dental services is a major obstacle preventing PLWH from seeking routine oral health care [7]. Financial limitations can lead to delayed care, which in turn worsens oral health conditions and affects overall health outcomes. In addition to financial barriers, a lack of integrated care between HIV treatment and dental care can further complicate access to oral health services. Many HIV clinics do not provide on-site dental services, and PLWH may be required to seek dental care separately, often without the necessary support or coordination between healthcare providers. According to Doukas et al. (2023), integrating dental care into HIV treatment regimens is essential for improving both oral health and OHRQoL outcomes for PLWH [8]. Integrated care would ensure that oral health is regularly monitored and that any issues are addressed promptly.

Prevention is key to improving oral health outcomes in PLWH, as early intervention can help prevent the progression of oral diseases. Regular dental check-ups and early detection of oral conditions such as gingivitis, periodontal disease, and oral infections can reduce the burden of these conditions and improve OHRQoL. Lee et al. (2024) emphasized that routine dental visits and proper oral hygiene practices can significantly reduce the incidence of oral health problems in PLWH, ultimately leading to better OHRQoL scores [9]. In addition to preventive care, health promotion efforts are crucial in addressing the psychosocial aspects of oral health. Education on proper oral hygiene, the importance of regular dental visits, and the impact of ART on oral health can empower PLWH to take control of their oral health. Furthermore, health promotion programs that reduce stigma and foster acceptance of HIV-related oral health conditions can help mitigate the social and psychological effects of these conditions. A study by Robinson et al. (2024) found that community-based health promotion programs aimed at reducing the stigma surrounding HIV and oral health can significantly improve both oral health outcomes and OHRQoL in PLWH [10].

Oral health is a critical component of overall health, and for people living with HIV, maintaining good oral health is essential to enhancing quality of life. The oral manifestations of HIV, compounded by the side effects of ART, pose unique challenges that can have a profound impact on both physical and psychosocial well-being. PLWH often experience oral health issues such as periodontal disease, xerostomia, and oral infections, which can lead to functional impairments and social stigma. These conditions not only affect physical health but also contribute to emotional distress, social isolation, and diminished quality of life. Addressing the oral health needs of PLWH requires a comprehensive approach that includes regular dental check-ups, preventive care, and integrated HIV and dental services.

METHODOLOGY

Study Design
This study adopts a cross-sectional design to explore how oral health affects the health-related quality of life (HRQoL) among people living with HIV (PLWH). By capturing data at a single point in time, this approach is well-suited to assess the current status of oral health issues and their broader impacts in a defined group.

- **Study Population and Sampling**

The study will involve HIV-positive adults aged 18 and above who are currently undergoing antiretroviral therapy (ART) and receiving care at selected healthcare facilities. A total of 120 participants will be recruited, based on sample sizes used in similar research investigating oral health and quality of life in PLWH populations.

Inclusion Criteria:
- Confirmed HIV-positive diagnosis
- Age 18 years or older
- Currently receiving ART
- Ability to understand the study and provide informed consent

Exclusion Criteria:
- Cognitive impairments that may hinder understanding or participation
- Presence of other systemic conditions that could independently affect HRQoL

Data Collection Tools:-
Data will be collected using a structured questionnaire, thoughtfully divided into four key sections:

1. **Demographic and Clinical Information**
This includes details such as age, gender, education, employment status, duration since HIV diagnosis, and information related to their ART regimen.

2. Oral Health Assessment
Participants will self-report any oral health issues—such as dry mouth (xerostomia), oral lesions, or difficulties with chewing or swallowing. Oral hygiene practices, including toothbrushing frequency and use of dental floss, will also be recorded.

3. General Health-Related Quality of Life (HRQoL)
This will be measured using the 36-Item Short Form Health Survey (SF-36), which evaluates various dimensions like physical functioning, bodily pain, and social participation.

4. Oral Health-Related Quality of Life (OHRQoL)
The Oral Health Impact Profile short form (OHIP-14) will be used to assess how oral health affects the participants' daily life and emotional well-being..

Data Collection Procedure:-
- Participant Recruitment: Eligible individuals will be identified and invited to participate during their routine clinic appointments at selected healthcare centres.
- Informed Consent: All participants will be briefed on the study purpose and procedures, and informed consent will be obtained before participation.
- Questionnaire Administration: The questionnaire will be completed privately within the clinic environment, with trained research staff available to provide assistance when necessary.

Ethical Considerations:-
The study will conform to ethical standards as outlined in the Declaration of Helsinki. Approval will be sought from the appropriate institutional review board. Participant confidentiality will be ensured through data anonymization, and individuals will be informed of their right to withdraw from the study at any stage without penalty.

Data Analysis:-
Statistical analysis will be conducted using SPSS version 26. Descriptive statistics will summarize participant demographics and clinical variables. Inferential analyses, including chi-square tests and logistic regression models, will examine associations between oral health status and HRQoL indicators. Statistical significance will be determined at a p-value threshold of less than 0.05.

RESULTS

1. Participant Demographics

A total of 120 individuals took part in the study. Nearly all (99.2%) confirmed their HIV-positive status, and most (96.8%) were actively on antiretroviral therapy (ART). The majority were middle-aged, with 54% between 35 and 54 years, suggesting that many have been living with HIV through key adult life stages—navigating both long-term treatment and the realities of aging with a chronic illness.

In terms of gender, 54% identified as male and 45.2% as female, with a small proportion (0.8%) either not specifying or identifying outside the binary. Education levels varied widely: 6.45% had no formal education, 40.2% had completed only primary school, and just 23.2% had attended college or higher, hinting at possible challenges in accessing and understanding complex health information.

Many participants had been living with HIV for a significant time: 47.6% for over 10 years, while 23.4% had been diagnosed between 1–5 years ago, and 9.7% within the past year. Encouragingly, 70.2% reported attending clinic appointments monthly, indicating strong and consistent engagement with HIV care services.

Table I. Demographic Characteristics of Participants (N = 120)

Characteristic	Categories	Percentage (%)
Age	Under 18	0.8
	18–24	8.9
	25–34	17.7
	35–44	23.4
	45–54	30.6
	55+	18.8
Gender	Male	54
	Female	45.2
	Non-binary/Prefer not to say	0.8
Education Level	No formal	6.45
	Primary	40.2
	Secondary	30.76
	Graduate	20.78
	Postgraduate	2.4
Years Living with HIV	<1 year	9.7
	1–5 years	23.4
	6–10 years	19.4
	>10 years	47.6
Receiving ART	Yes	96.8
	No	3.2
Frequency of HIV Care Visits	Monthly	70.2
	Every 3 months	27.4
	Every 6 months	1.6
	Rarely/Never	0.8

2. Awareness and Understanding of HIV and Oral Health

While most participants (78.2%) had at least some awareness of a connection between HIV and oral health, deeper understanding was mixed. Only 39.5% agreed that HIV increases the risk of oral problems, while an equal number disagreed, and 21% were unsure—revealing a clear knowledge gap that calls for focused education on oral complications.

Basic HIV-related knowledge showed strengths and weaknesses. For example:

- 75% correctly knew that a person with HIV can look healthy.
- 70% understood that condoms help reduce transmission risk.
- 65% recognized that being in a monogamous relationship with an uninfected partner lowers risk.

However, several harmful misconceptions persisted:

- 10% believed mosquitoes could transmit HIV.
- 5% thought sharing food could spread it.
- Another 5% endorsed the dangerous myth that sex with a virgin could cure HIV.

Also troubling was that only 75% knew there is currently no cure for HIV, with 10% believing otherwise and 15% unsure. These findings underscore the urgent need for culturally sensitive, myth-busting education.

Table II. Knowledge and Beliefs Related to HIV and Oral Health

Question	Yes (%)	No (%)	Not Sure (%)
Aware of HIV's link to oral health?	78.2	21.8	—
HIV affects oral health more than others?	39.5	39.5	21
HIV from mosquito bites?	10	70	20
HIV from sharing a meal?	5	80	15
Reduced risk with one faithful, uninfected partner?	65	15	20
Can healthy-looking person have HIV?	75	10	15
Do condoms reduce HIV risk?	70	10	20
Reduced risk by abstaining from sex?	60	20	20
Cured by sex with virgin?	5	80	15
Is there a cure for HIV/AIDS?	10	75	15

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3. Oral Health Condition and Dental Service Use

Despite 66.1% rating their oral health as "good" and 12.9% as "excellent," the reported symptoms suggested otherwise:

- Just 18.5% had visited a dentist in the past year.
- 17.7% had been diagnosed with an HIV-related oral issue.
- 12.9% experienced tooth pain, while 5.6% struggled with chewing or swallowing.
- 3.2% reported recent mouth sores or dry mouth.

This disconnect between self-perception and clinical indicators hints at a normalization of discomfort—where symptoms are underplayed or overlooked.

Oral hygiene practices also raised concerns:

- 60.5% brushed once a day,
- 33.9% brushed twice,
- Only 3.2% brushed more frequently.
- A large 69% did not use dental floss, and 45.2% did not use mouthwash or other hygiene aids.

These habits reflect a clear need to improve both awareness and access to oral hygiene tools.

Table III. Oral Health Status and Hygiene Practices

Variable	Categories	Percentage (%)
Condition of mouth and teeth	Very poor	0.8
	Poor	3.2
	Fair	16.9
	Good	66.1
	Excellent	12.9
Brushing frequency	<Once daily	2.4
	Once daily	60.5
	Twice daily	33.9
	>Twice daily	3.2
Use of floss/interdental aids	Yes	31
	No	69
Use of mouthwash	Regularly	41.1
	Occasionally	13.7
	No	45.2
Dental check-up in last year	Yes	18.5
	No	81.5
Diagnosed with HIV-related oral condition	Yes	17.7
	No	82.3

4. Psychosocial Effects and Quality of Life

The psychosocial burden of oral health issues was striking. Although 87.1% denied that oral pain limited eating or speaking, nearly 99.2% admitted to avoiding social activities due to oral health concerns. Moreover, 96% missed work or school at some point because of oral issues, highlighting the far-reaching impact on daily life and responsibilities.

Despite these challenges, overall self-rated well-being remained relatively positive:

- 65.3% described their quality of life as "good," and
- 19.4% said it was "excellent."
- Similarly, 76.6% rated their general health positively.

However, emotional and physical distress was not uncommon:

- 16.9% occasionally felt emotionally unwell, and
- 4% reported feeling emotionally distressed often.
- 16.1% experienced physical discomfort sometimes, while
- 3.2% said it was a frequent problem.

Additionally, stigma still weighed heavily: 16.9% reported experiencing stigma occasionally, and 3.7% faced it often—factors that likely contribute to both emotional distress and reduced healthcare-seeking behavior.

Table IV. Quality of Life, Stigma, and Functional Impact

Variable	Categories	Percentage (%)
Avoided social activities due to oral health	Yes	99.2
	No	0.8
Missed work/school	Yes	96
	No	4
Oral pain limits eating/speaking	Frequently	4
	Occasionally	8.9
	No	87.1
Oral health affects eating	Significantly	4
	Somewhat	13.7
	No	82.3
Oral health affects speech	Significantly	3
	Somewhat	5.6
	No	92.7
Emotional impact of oral health	A lot	8
	Somewhat	13.7
	A little	26.6
	Not at all	57.3
HIV-related stigma	Never	66.9
	Rarely	14.5
	Sometimes	16.9
	Often	3.7
Felt emotionally unwell (last 7 days)	Sometimes/Often/Always	21.3
Felt physically unwell (last 7 days)	Sometimes/Often/Always	19.3

5. Frequency of Symptoms and Their Impact

While less frequent overall, oral symptoms still affected a meaningful portion of participants:

- 5% reported dry mouth frequently; 12.1% experienced it occasionally.
- 4.8% had tooth sensitivity, 3.2% experienced mouth sores, and 2.4% reported bleeding gums.

Functional impacts included:

- 4% said oral pain regularly disrupted eating or speaking.
- 13.7% reported moderate difficulty eating.
- 8.6% experienced at least some speech difficulty due to oral discomfort.

Key Findings and Implications

1. High ART adherence and engagement with HIV care were observed, yet dental care was significantly underutilized, even among those reporting symptoms.
2. There was limited awareness of HIV-related oral health risks, and several myths and misconceptions still prevailed.

3. Oral health issues had a tangible social and emotional impact, affecting work, social life, and mental well-being—even in participants who considered their overall health "good."
4. Basic oral hygiene practices were lacking, with low rates of flossing, mouthwash use, and routine dental visits.
5. Stigma and misinformation remain persistent barriers, emphasizing the need for integrated, stigma-sensitive care models.

These findings reveal the urgent need to embed oral health care into HIV service frameworks. Educational interventions tailored to the cultural context, regular dental screenings, and compassionate counseling can greatly improve not just oral health—but emotional resilience, self-image, and overall quality of life for people living with HIV..

DISCUSSION

This research examined the knowledge, attitudes, and practices concerning oral health among people living with HIV (PLHIV), drawing attention to how limited health literacy, restricted access to dental care, and experiences of stigma collectively influence quality of life. Although most participants reported regular engagement in HIV-related care and gave favourable self-assessments of their health, the findings revealed critical gaps in oral health awareness, underutilization of dental services, and notable psychosocial distress.

1. Limited Understanding of HIV's Oral Health Impact
While 78.2% of respondents recognized a general connection between HIV and oral health, only 39.5% understood that HIV increases susceptibility to oral conditions when compared to the general population. This highlights a shortfall in education around the systemic implications of HIV. Such misunderstandings are not isolated to this group; studies from Cameroon and Italy found that although HIV awareness was common, specific knowledge regarding transmission routes and health complications was lacking—evidenced by continued belief in outdated myths such as mosquito-borne transmission [11,12].

This pattern of partial understanding is also found across diverse educational and geographic contexts, including Ghana, Kuwait, and the Philippines [1,12,13]. These findings underscore the importance of including oral-systemic health education in both clinical settings and community-based programs.

2. Gaps in Preventive Oral Hygiene and Dental Service Use
Although a majority rated their oral health as "good" or "excellent," objective measures revealed insufficient dental care utilization. Only 18.5% had visited a dentist within the past year, despite 17.7% reporting an HIV-related oral diagnosis. This suggests a disconnect between self-perception and actual health behaviours.

Similar inconsistencies between health knowledge and practice have been observed in other studies, such as one conducted in India where participants demonstrated good theoretical knowledge of nutrition but poor practical application [13]. This discrepancy is echoed in research from Laos and other parts of India, where students and the general population showed awareness of preventive health practices but low compliance in daily routines [14,15].

In this study, oral hygiene routines were clearly inadequate: 60.5% brushed only once a day, 69% did not use floss or interdental aids, and nearly half never used mouthwash. These findings call for the inclusion of tailored oral hygiene counselling during ART consultations to mitigate the risk of oral infections in PLHIV.

3. Social and Emotional Impact of Oral Health
Even though many participants felt satisfied with their general health, the study revealed a considerable impact of oral health issues on social participation and work performance. Nearly all participants (99.2%) reported avoiding social gatherings due to concerns about their oral condition, and 96% missed work or school for the same reason.

These limitations extend beyond physical discomfort—they also reflect psychological strain. While 57.3% reported no emotional distress related to oral health, a substantial portion experienced moderate to severe emotional effects. This aligns with findings from Saudi Arabia, where healthcare professionals displayed stigmatizing attitudes, believing PLHIV should be isolated or treated differently [14].

The visible symptoms of HIV-related oral conditions can worsen internalized stigma, deterring individuals from seeking care. Similar attitudes among healthcare trainees in Saudi Arabia and professionals in Oman highlight the ongoing need for stigma-reduction training in medical and allied health education [15,16].

4. Continued Misbeliefs and Incomplete Knowledge on Transmission
Participants showed uneven understanding of HIV prevention and transmission. Although 75% recognized that someone could appear healthy while living with HIV and 70% understood the protective role of condoms, only 60%

identified abstinence as a preventive strategy. Alarmingly, 10% believed HIV/AIDS is curable, and 5% still adhered to the harmful myth that sexual contact with a virgin can provide a cure.

Such misconceptions persist globally. Research in Cameroon found that a segment of the population believed in similar myths, and a significant number in Italy held inaccurate beliefs about transmission through casual contact or shared utensils [11,12]. Further studies among Pakistani fishermen and communities near the French Guiana–Brazil border similarly recorded widespread misinformation about HIV cures and routes of infection [17,18].

These results reinforce the need for culturally sensitive, myth-busting educational programs that not only spread awareness but also change behaviour through community engagement.

5. Stigma and Discrimination Remain Major Barriers

Stigma remains a significant obstacle to healthcare access and emotional well-being among PLHIV. In this study, while 66.9% of participants reported no personal experience of stigma, 16.9% encountered it occasionally and 3.7% faced it frequently. Social withdrawal, work absenteeism, and emotional distress often stem from internalized stigma and the fear of being judged.

Attitudinal studies in Saudi Arabia revealed that a considerable number of healthcare workers held discriminatory views—some were unwilling to purchase food from HIV-positive vendors, while others believed children with HIV should be separated from their peers [14]. Such biases reflect systemic discrimination that discourages PLHIV from accessing necessary care.

On a positive note, these negative attitudes were shown to decrease when healthcare providers received structured training and had direct exposure to PLHIV. Studies in Saudi Arabia and Oman have demonstrated that education and experience foster more compassionate and equitable care [14–16].

6. Recommendations for Practice and Policy

The findings of this study suggest several crucial areas for intervention:

- Incorporation of Oral Health in HIV Care: Routine oral screenings, education on hygiene, and direct referrals to dental professionals should become standard practice within ART clinics.
- Community-Based Education: Public health campaigns must confront and correct myths about HIV with culturally adapted messages and delivery methods.
- Reducing Healthcare Stigma: Regular training and sensitization workshops should be implemented to improve provider attitudes and foster non-discriminatory environments.
- Health Literacy Enhancement: Educational tools should be adapted to different literacy levels. This is essential, especially considering that nearly half of the participants had primary-level education or less.

Considering that almost half the respondents had been living with HIV for over a decade, the long-term effects of stigma, misinformation, and neglected oral care could compound over time. These results stress the importance of sustainable, integrated strategies that address not only the medical but also the psychosocial dimensions of HIV care.

SUMMARY

Although participants in this study showed strong adherence to antiretroviral therapy (ART) and consistent access to general healthcare services, oral health emerged as a significantly neglected area. Preventive practices were insufficient, dental care utilization was low, and many experienced notable social and emotional consequences tied to poor oral health. Misconceptions about HIV transmission and potential cures remain prevalent, and both internalized and societal stigma continue to hinder access to comprehensive care. These findings highlight the urgent need for integrated, stigma-aware, and education-focused strategies that treat oral health as a vital part of holistic HIV care.

CONCLUSION

This study highlights the critical but often overlooked role of oral health in the overall well-being of people living with HIV (PLHIV). While most participants showed strong adherence to ART, their knowledge and practices related to oral health were limited. Routine dental care was underutilized, and many held misconceptions about HIV transmission and treatment. Untreated oral issues led to emotional distress, social withdrawal, and missed work or school. Despite rating their general health positively, participants experienced significant oral discomfort and stigma. A clear disconnect existed between perceived and actual oral health status. Stigma and lack of awareness continue to act as major barriers to accessing oral care. To address this, oral health must be integrated into HIV care models. Education and community-based interventions can help dispel myths and reduce stigma. Ultimately, a person-centred, holistic approach is essential to improving the quality of life for PLHIV.

RECOMMENDATIONS

To bridge the identified gaps, a multi-faceted strategy is necessary:

- Incorporate Oral Health Education into HIV Care: HIV clinics should provide regular education on oral hygiene, early symptom recognition, and the importance of timely dental visits.
- Enhance Collaboration Between ART Centres and Dental Services: Establish partnerships that facilitate routine oral health screenings, referrals, and treatment for PLHIV.
- Community-Based Awareness Campaigns: Public health efforts must actively dismantle myths about HIV transmission and cure using culturally sensitive and accessible messaging tailored to diverse populations.
- Train Healthcare Providers on Stigma Reduction: Continuous professional development should emphasize compassionate care and awareness of the oral health challenges faced by PLHIV.
- Policy-Level Integration: National and regional health policies should formally recognize oral health as an essential element of HIV care, allocating appropriate resources for dental infrastructure, personnel, and service accessibility.
- Support Further Research: Continued investigation is needed to evaluate the long-term benefits of integrated oral healthcare on health outcomes and quality of life among HIV-positive populations across different settings.

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