FINAL REPORT

To
The Member Secretary
Nepal Health Research Council
Ramshah Path, Kathmandu

Subject: Submission of Final Report for Approved Research Study

Dear Sir/Madam,

I am pleased to submit herewith the final report of my research study titled:

"Exploring the Intersection of HIV/AIDS and Orthopedic Health in Rural Nepal: Public Health Challenges, Barriers to Care, and Community Perspectives**"**

This study was approved by the Nepal Health Research Council under reference number **2370**, dated **22nd April 2025**. The research has been successfully completed in accordance with the approved protocol and ethical guidelines of NHRC.

I would like to express my sincere gratitude to the Nepal Health Research Council for granting ethical approval and providing continuous guidance throughout the study.

Kindly acknowledge the receipt of the final report at your earliest convenience.

Sincerely,

Dr Siddhartha Khanal
Principal Investigator
Act Chief Medical Superintendent
Province Hospital, Gorkha
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TITLE PAGE

Type of article: Original Article

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22 April 2025

Dr. Siddhartha Khanal
Principal Investigator
Province Hospital Gorkha

Ref: Approval of research protocol

Dear Dr. Khanal,

This is to certify that the following protocol and related documents have been reviewed and granted approval through the expedited review process for its implementation.

Protocol Registration No/ Submitted Date	197_2025 20 March 2025	**Sponsor Protocol No**	NA
Principal Investigator/s	Dr. Siddhartha Khanal	**Sponsor Institution**	NA
Title	Exploring Musculoskeletal Health Among Individuals Living with HIV/AIDS in Rural Nepal: Prevalence, Barriers to Care, and Community Perspectives		
Protocol Version No	NA	**Version Date**	NA
Other Documents	1. Data collection tool 2. Informed consent form 3. Support letter 4. CoI Declaration 5. Role of investigator 6. Training certificate 7. Work plan	**Risk Category**	Minimal risk
Co-Investigator/s	1. Suman Subedi 2. Shankar Sigdel 3. Rabin Dani 4. Sagun Khanal		
Study Site	Province Hospital Gorkha		
Type of Review	√ Expedited ☐ Full Board **Review Date:** 22 April 2025	**Timeline of Study** 22 April 2025 to AUG 2025 **Duration of Approval** 22 April 2025 to 21 April 2026	**Frequency of continuing review** NA

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		This approval will be valid for one year	
Total budget of research	**NRs 1,98,500.00**		
Ethical review processing fee	**NRs 5,000.00**		

Investigator Responsibilities

- Permissions from the study sites is required before initiating the study.
- If you do not start the project within 3 months of this letter, please contact the Ethical Review M & E Section at NHRC.
- Any amendments shall be approved from the ERB before implementing them
- Submit progress report every 6 months
- Submit final report after completion of protocol procedures at the study site
- Comply with all relevant international and NHRC guidelines
- Abide by the principles of Good Clinical Practice and ethical conduct of the research

If you have any questions, please contact the Ethical Review M & E Section at NHRC.

Thanking you,

Dr. Pramod Joshi
Member Secretary

Abstract:

Background

People living with HIV/AIDS (PLHIV) are at increased risk of musculoskeletal (MSK) disorders, yet the burden and barriers to care in rural Nepal remain underexplored. This study assessed the prevalence, determinants, healthcare access challenges, and community perceptions related to HIV-associated orthopedic health in Gorkha District.

Methods

A descriptive cross-sectional study was conducted at Gorkha Hospital among 158 PLHIV aged ≥18 years, recruited via purposive sampling. Data were collected using a pre-tested structured questionnaire and analyzed with descriptive statistics, Chi-square tests, and Cochran-Armitage tests for trend.

Results

Overall, 55.7% of participants reported at least one MSK condition, most commonly joint pain/arthritis (47.5%). Only 52.3% sought orthopedic care, mainly at the district hospital. Barriers included lack of specialized services (86.1%), transportation challenges (62.7%), and financial constraints (57.6%). Stigma persisted, with 70.9% perceiving the community as unwelcoming for open HIV-related discussions. MSK prevalence increased significantly with advancing age ($p=0.026$) and duration of HIV infection ($p=0.046$), peaking at 63.6% among those with 3–7 years since diagnosis. Participants prioritized public health education campaigns (94.3%), improved access to specialized rural orthopedic care (86.1%), financial assistance (52.5%), and community support groups (94.3%).

Conclusions

There is a high burden of MSK disorders among PLHIV in rural Nepal, compounded by healthcare access barriers and persistent stigma. Integrated HIV–orthopedic care models, age-targeted screening, stigma reduction strategies, and community-based education are urgently needed to improve outcomes.

Keywords: HIV/AIDS, musculoskeletal, orthopedics

Introduction:

The human immunodeficiency virus (HIV) is an RNA virus classified under the genus Lentivirus within the family Retroviridae, subfamily Orthoretrovirinae.[1] HIV was first identified in 1983 by Barré-Sinoussi, Montagnier, and colleagues at the Pasteur Institute in Paris, isolated from a patient at risk of developing acquired immunodeficiency syndrome (AIDS).[2] Later, Jellis and colleagues from Lusaka described the musculoskeletal manifestations associated with HIV/AIDS, highlighting the virus's broad clinical spectrum, which ranges from an asymptomatic phase to the progression of AIDS.[3] Globally, HIV remains a significant public health challenge. In 2023, an estimated 39.9 million people were living with HIV, with 1.3 million new infections and 630,000 deaths attributed to AIDS-related illnesses.[4] In Nepal, the first case of HIV/AIDS was reported in 1988. Since then, the epidemic has evolved from a low prevalence phase to a concentrated epidemic. By 2023, approximately 30,300 adults and children were living with HIV in Nepal, with 261 deaths and 457 new cases reported that year.[5] HIV affects nearly every organ system, with musculoskeletal manifestations being increasingly recognized. Common conditions include fractures, arthralgias, arthritis, infections, and myopathies. These manifestations, often underreported, can significantly impact the quality of life and functional capacity of individuals living with HIV.[3,6] Beyond its clinical impact, HIV/AIDS has profound socio-economic and community consequences. Socially, stigma and discrimination remain pervasive, creating barriers to care and support. Economically, the disease imposes direct healthcare costs, productivity losses, and other hidden expenses, often leading to catastrophic financial burdens for affected individuals and families. These factors contribute to a cycle of poverty, exacerbating the public health burden and hindering efforts to manage the disease effectively.[7-9] The intersection of HIV/AIDS with musculoskeletal health, particularly in resource-

limited settings like Nepal, remains underexplored. Addressing this gap is critical to improving patient outcomes and reducing the broader socio-economic impact of the disease. By understanding the unique challenges faced by individuals living with HIV/AIDS, particularly in rural areas, targeted interventions can be developed to enhance care, reduce stigma, and mitigate the economic burden of the disease.

Objectives:

General Objective:

1. To assess the nature of orthopedic conditions among individuals living with HIV/AIDS in rural Nepal, along with their knowledge, healthcare-seeking behavior, community perspectives, and associated barriers to accessing healthcare services for these conditions.

Specific Objectives:

1. To identify the demographic, socio-economic, and health-related factors contributing to the development of orthopedic conditions in individuals living with HIV/AIDS.

2. To evaluate community awareness, perceptions, and attitudes toward the intersection of HIV/AIDS and orthopedic health.

3. To explore the challenges and gaps in the healthcare system for the management of orthopedic issues from the patient's point of view.

Methodology:

Study Design and Setting

This was a descriptive cross-sectional study conducted at Gorkha Hospital, Gorkha. Gorkha Hospital was selected as the study site because it has a defined cohort of individuals living with HIV/AIDS who are enrolled in antiretroviral therapy (ART) programs, providing an appropriate population to explore the intersection of HIV/AIDS and orthopedic health in a rural setting.

Study Population

The study population comprised individuals diagnosed with HIV/AIDS and receiving ART from health facilities in Gorkha District.

Inclusion Criteria:

- Confirmed diagnosis of HIV/AIDS.
- Currently receiving ART in Gorkha.
- Aged 18 years and above.
- Willing to participate and provide informed consent.

Exclusion Criteria:

- Individuals unable to provide consent due to medical or psychological reasons.

Sample Size and Sampling Technique

The sample size is calculated using the following formula:

$$n = \frac{Z^2 . p . (1 - p)}{e^2}$$

Where:

- Z = 1.96 (for a 95% confidence level)
- p = 0.50 (Since, the prevalence of musculoskeletal disorder in people living with HIV/AIDS is not adequately studied in Nepal, assumed prevalence of musculoskeletal conditions is 50%)
- e = 0.05 (margin of error)

$$n = \frac{1.96^2 . (0.5) . (1 - 0.5)}{(0.05)^2}$$

n=384

Since the total population (N) is finite (229 individuals living with HIV/AIDS in Gorkha), the sample size is adjusted using the finite population correction formula:

$$\acute{n} = \frac{n}{1 + \frac{n-1}{N}} = \frac{384}{1 + \frac{384-1}{229}} = 144$$

Thus, the final sample size is 144 participants, accounting for a 10% non-response rate, yielding 158 participants.

A **purposive sampling** method was used to recruit eligible participants. This approach ensured inclusion of individuals meeting the study criteria and capable of providing relevant information.

Data Collection Tools and Procedure

Data were collected using a **pre-tested structured questionnaire** designed to capture:

- **Demographic data:** age, sex, occupation, education, and socio-economic status.
- **HIV-related variables:** duration since diagnosis, ART adherence, comorbidities.
- **Orthopedic health data:** prevalence and types of musculoskeletal conditions (fractures, arthritis, infections, myopathies).
- **Healthcare access and barriers:** transportation, financial constraints, availability of services, and community stigma.

The questionnaire underwent **content validation** by experts in HIV/AIDS and musculoskeletal health. Reliability was ensured through pre-testing on 10% of the sample in a similar setting, followed by necessary revisions for clarity and consistency.

Data collection was conducted by trained interviewers in a private setting to maintain confidentiality.

Ethical Considerations

Ethical approval was obtained from the Nepal Health Research Council. Written and verbal informed consent was taken from all participants before data collection. Confidentiality and anonymity were maintained throughout the study.

Data Management and Analysis

Collected data were entered into Microsoft Excel and analyzed using SPSS software.

- **Descriptive statistics** (frequencies, percentages, means, and standard deviations) were used to summarize participant characteristics and prevalence of orthopedic conditions.
- **Inferential statistics** included Chi-square tests to assess associations between categorical variables and logistic regression to explore predictors of musculoskeletal conditions. Results were presented with odds ratios and 95% confidence intervals.

Result:

A Total of 158 participants were enrolled in the study conducted in Gorkha Hospital, Gorkha. Table 1 shows the characteristics of all the participants. The predominant age of the study was 41-50 years (n=57, 36.1%) and gender distribution showed male predominance (n=93, 58.9%). Most of the participants were married (n=121, 76.6%) with more than half had not received formal education till date. Farming was the predominant livelihood (n=142, 89.9%) reported by study population. The majority of the participants were diagnosed with HIV for more than 7 years (n=132, 83.6%). However all of the participants were under ART.

Healthcare utilization by most of the participants were done on three monthly basis (n=131, 82.9%) followed by monthly basis (n=27, 17.1%). Among 158 participants more than half of the participants have been diagnosed with at least one of the musculoskeletal condition (n=88, 55.7%) most commonly being a joint pain or arthritis (n=75, 47.5%). Figure 1 shows the different orthopedics issues participants had experienced. However of those diagnosed with musculoskeletal conditions, only 46 participants (52.3%) sought orthopedics treatment. Most of these participants received orthopedic care at the district hospital (n=34, 73.9%) followed by local health post (n=8, 17.4%). Four participants (8.7%) prefer private clinic. However 42 participants (47.7%) did not seek any form of orthopedic care despite having identifiable orthopedic problems. Among the 46 participants who received orthopedic treatment, 35 (76%) reported facing various challenges in accessing care most reported to be distance to health center (Figure 2). On the other hand, among the 42 patients who had orthopedic problems but did not seek healthcare, 20 (47.6%) reported encountering primary barriers that prevented access to care, most commonly distance to the health center and financial constraints (Figure 2).

Among all participants, 88 participants (55.7%) were aware regarding HIV/AIDS and their musculoskeletal health. When queried about barriers to accessing orthopedic care at nearby health centers, the vast majority identified a lack of specialized orthopedic services (n = 136; 86.1%), followed by inadequate transportation options (n = 99; 62.7%) and financial constraints (n = 91; 57.6%) (Figure 3). During assessment regarding community perception of HIV/AIDS 65.2% (n = 103) described prevailing attitudes toward HIV/AIDS as neutral, 27.2% (n = 43) viewed it very positively, 5.7% (n = 9) reported stigma or discrimination, and 1.9% (n = 3) were unsure. Most of the participants (n=103, 65.2%) think community people were unaware regarding the effect of HIV/AIDS in their musculoskeletal health (figure 4). Likewise still majority of the participants (n=112, 70.9%) think community is unwelcomed for such kind of conversation and only few (n=23, 14.6%) participant thinks they can openly communicate in the community as a public discussion and remaining (n=23, 14.6%) remain undecided.

Among multiple options to improve the awareness of HIV/AIDS related orthopedic conditions in the community majority (n=149, 94.3%) suggest to endorse more public health education campaigns (Figure 5). 136 participants (86.1%) cited improved access to specialized orthopedic care in rural area to improve the quality orthopedic care for the HIV patients (Figure 6). Similarly for personal support for managing of HIV and orthopedic health conditions 81.6% (n = 129) prioritized on-site specialized care followed by 52.5% (n = 83) requested financial assistance (Figure 7). Finally, 94.3% (n = 149) indicated willingness to join a community support group focused on HIV/AIDS and orthopedic health.

Association between age group and musculoskeletal symptoms

Table 2 shows the number of participants who belong to the certain age group. "A Cochran-Armitage test for trend revealed a statistically significant positive association between age and prevalence of musculoskeletal symptoms ($Z = 1.946$, $p = 0.026$), indicating that older age was associated with higher rates of MSK complications. Since age is an ordinal variable with a natural progression, the Cochran-Armitage test for trend is more appropriate for detecting a directional relationship. This test assesses whether there is a linear trend in the proportion of MSK symptoms across ordered age categories.

Association between Duration of HIV and Presence of MSK Symptoms

A test for trend analysis was conducted to examine the relationship between duration of HIV infection and presence of musculoskeletal symptoms, accounting for the ordered nature of the duration variable. The analysis revealed a statistically significant trend ($\chi^2 = 3.98$, $df = 1$, $p = 0.046$). A clear increasing pattern was observed with MSK symptom prevalence rising from 25.0% in those with <1 year of HIV diagnosis to 63.6% in those with 3-7 years, followed by a slight decrease to 57.6% in those with ≥7 years of diagnosis. Participants with ≥7 years of HIV diagnosis had 4.33 times higher odds (95% CI: 0.95-20.00) of experiencing MSK symptoms compared to those with <1 year of diagnosis (Table 3).

Discussion:

This study provides critical insights into the substantial burden of musculoskeletal (MSK) disorders among people living with HIV/AIDS (PLHIV) in rural part of Nepal and the complex barriers hindering their access to integrated care. Our findings reveal a high prevalence of MSK conditions (55.7%), predominantly manifesting as joint pain or arthritis (47.5%). This aligns consistently with global epidemiological data reporting MSK involvement in 48-63.33% of HIV patients, underscoring the pervasive nature of these comorbidities across diverse PLHIV populations.[10, 11] The predominance of joint pain/arthritis over fractures, despite the well-documented elevated fracture risk (35-75% higher than HIV-negative individuals) attributable to accelerated bone mineral density loss (particularly linked to ART initiation/tenofovir use), chronic inflammation, traditional risk factors, and increased fall risk, reflects the recognized clinical pattern of HIV-associated arthropathy.[12,13] This pathology is typically transient, non-erosive, oligoarticular, and lower-limb predominant [6] , with arthralgias affecting approximately 35% of HIV patients across disease stages, commonly impacting knees, shoulders, and elbows.[14, 15] While osteoporosis and vertebral fractures are significant concerns, particularly with aging and long-term medication exposure[16, 17], arthritis emerged as the primary MSK burden in this rural population.

Critically, the study uncovered profound systemic and socio-economic barriers preventing effective MSK care integration. A striking 47.7% of participants with identifiable MSK conditions did not seek any orthopedic treatment. Among those who accessed care (52.3%) and those who did not despite needing it, distance to health facilities and financial constraints were overwhelmingly cited as the primary obstacles, corroborating existing literature on healthcare access challenges in rural Nepal[18,19]. Furthermore, a pervasive lack of specialized orthopedic services (reported

by 86.1% of all participants) was identified as a fundamental gap in the healthcare infrastructure. This service deficit, coupled with inadequate transportation options (62.7%) and financial limitations (57.6%), creates a formidable barrier to timely and appropriate MSK management for patients in this setting. This situation highlights a critical disconnect between the high burden of MSK morbidity and the capacity of the local health system to respond.

Compounding these structural barriers is the persistent challenge of HIV-related stigma within the community. Only 23% of participants in our study felt that community attitudes toward PLHIV were positive, and 5.7% reported facing direct stigma or discrimination. Similarly, in a study conducted only 27% of respondents believed that the community was accepting of individuals with HIV/AIDS.[20] This perception aligns with national studies describing HIV as often framed as a 'bad man's disease' and linked to morality judgments [21], fostering an environment of non-disclosure and fear. Consequently, 70.9% of participants felt the community was unwelcoming for open discussions about HIV and its health impacts, including MSK complications. This stigma, along with the fact that most people in the community aren’t fully aware of how HIV/AIDS can affect the bones and joints (as 65.2% of participants admitted), probably makes people less likely to seek care and adds another layer of difficulty to treating them as whole patients.

Our analysis also elucidated significant demographic and disease-related factors associated with MSK morbidity. A statistically significant positive association was found between advancing age and the prevalence of MSK symptoms (Cochran-Armitage $Z = 1.946$, $p = 0.026$), supporting findings such as those by Garg *et al.* (2025) in North India [22], which indicated rheumatological/MSK symptoms were significantly more common in older HIV+ adults.[23] This association likely reflects the confluence of age-related physiological changes, including accelerated

osteoporosis and bone density decline known to be potentiated by HIV infection itself[24], and the cumulative impact of long-term HIV infection and ART. Conversely, this finding contrasts with Saigal *et al.* (2020)[23], highlighting the need for further investigation into potential cohort-specific or regional variations in age-related MSK risk.

Perhaps one of the most salient findings pertains to the relationship between the duration of HIV infection and MSK symptomatology. A statistically significant trend was observed ($\chi^2 = 3.98$, df = 1, $p = 0.046$), with MSK prevalence rising sharply from 25.0% among those diagnosed for less than one year to 63.6% among those diagnosed for 3-7 years. While prevalence slightly decreased to 57.6% in those diagnosed for 7 years or more, participants in this long-duration group still had 4.33 times higher odds (95% CI: 0.95-20.00) of experiencing MSK symptoms compared to the newly diagnosed (<1 year).[25] This pattern strongly suggests an accumulation of MSK manifestations over time following HIV diagnosis, reinforcing evidence from studies like Chakladar *et al*[26] which found longer HIV duration strongly associated with increased MSK symptoms, including in children. This finding highlights that musculoskeletal (MSK) problems are a major part of the long-term health challenges faced by people living with HIV/AIDS. These issues may stem from ongoing immune system activation, the lingering presence of the virus, side effects of long-term antiretroviral therapy (ART), and other related health conditions. However, the fact that these symptoms seem to level off or slightly decline after 7 years raises important questions. Possible explanations might include survivorship bias (where only healthier individuals remain in the study), patients becoming more accustomed to their symptoms, improvements in ART over time, or the body developing ways to better cope with the effects. While a global scoping review[27] noted inconsistent reporting of HIV duration as a predictor across studies,

our data provide compelling evidence for its role in this rural Nepali study and emphasize the necessity for proactive, long-term MSK monitoring strategies integrated into routine HIV care.

In response to these challenges, participants overwhelmingly advocated for multi-faceted interventions to improve their MSK health and overall well-being. An overwhelming majority (94.3%) endorsed the implementation of extensive public health education campaigns to increase community awareness about HIV/AIDS and its musculoskeletal implications, aiming to combat stigma and misinformation. Our participants' clear call for community-driven solutions echoes findings from similar rural settings. Almost everyone (94.3%) urged broad public-health campaigns to shine a light on how HIV/AIDS can affect bones and joints, just as outreach workshops in Sub-Saharan Africa[28] and grassroots programs in India[29] have successfully busted myths and eased stigma. The same large majority felt strongly about joining local support groups—an approach shown in South India to boost confidence, foster solidarity, and help people living with HIV navigate daily challenges together.[29]

Recognizing the gap in specialist care, 86.1% of respondents' prioritized bringing orthopedic expertise closer to home—whether that means training community health workers, organizing visiting clinics or camps, or tapping into telemedicine. This mirrors innovative models in Botswana, where mobile multidisciplinary teams (including orthopedic surgeons) travel to remote clinics, and digital platforms in Africa that spare patients long, costly journeys while preserving their privacy.[30]

Finally, more than half (52.5%) highlighted financial help as a must—covering transport fares or treatment fees—to prevent missed appointments and ensure uninterrupted care.[31] Studies in East and Southern Africa confirm that small stipends

or vouchers for travel and meals can make a world of difference in keeping people engaged with their treatment.[32]

Taken together, these insights underline a straightforward truth: strengthening rural health systems means weaving together education, peer support, specialist outreach, telehealth, and practical subsidies. Only by tackling each of these fronts can we truly ease the musculoskeletal burdens faced by people living with HIV in remote communities.

In conclusion, this study confirms a substantial and under-addressed burden of MSK disorders, particularly arthritis, among PLHIV in rural Nepal. The high prevalence is compounded by significant, multi-level barriers to care, including geographic isolation, financial hardship, a critical shortage of specialized services, and persistent community stigma. The strong associations identified between both increasing age and longer HIV infection duration with higher MSK morbidity underscore the need for integrated, long-term care models that proactively screen for and manage these conditions throughout the HIV care continuum. The solutions prioritized by the participants themselves – widespread health education, accessible specialized care, financial support, and community-based support networks – provide a clear roadmap for developing effective, context-specific interventions. Addressing these challenges is essential not only for improving the musculoskeletal health and quality of life of PLHIV in rural Nepal but also for achieving equitable and comprehensive HIV care. Future research should focus on evaluating the implementation and impact of such integrated care models in similar resource-limited settings.

Conclusion and Recommendations:

This study reveals a substantial burden of musculoskeletal conditions among people living with HIV/AIDS in rural Gorkha District, Nepal. The result clarifies the increased musculoskeletal symptoms in PLHIV highlight the growing challenge of managing age-related comorbidities in aging HIV populations. To address the critical disconnection between robust HIV care systems and fragmented orthopedic services, we recommend implementing integrated HIV-musculoskeletal care models at district hospitals, training community health workers in basic musculoskeletal assessment through task-shifting approaches, and establishing targeted transportation subsidies. Age-targeted screening protocols should be incorporated into routine HIV care, particularly for patients aged 41 years and older. Additionally, community awareness campaigns addressing the connection between HIV and musculoskeletal health are needed to reduce stigma. Such interventions would enhance quality of life for this targeted population, ensuring that extended life expectancy which provides meaningful improvements in overall well-being for people living with HIV in rural Nepal.

Limitation of the study:

This study has several important limitations. The study design limits causal inference regarding the relationship between HIV duration and musculoskeletal symptoms. Reliance on self-reported symptoms likely led to underestimation of asymptomatic conditions such as osteopenia that require clinical diagnosis. The absence of physical examinations and imaging studies limits the precision of prevalence estimates and may have resulted in symptom misclassification. Recall bias may have affected participants' accuracy in reporting HIV diagnosis duration and symptom history. Additionally, the study did not collect detailed antiretroviral therapy history, which could have provided insights into potential medication-related musculoskeletal complications.

Acknowledgements:

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ANNEXURE

Tables and Illustrations:

Table 1: Demographic data, HIV/AIDS and Musculoskeletal Health of the participants

Characteristics		All participants (n=158)
Age (Years), n (%)		
	18-30	14(8.9)
	31-40	16(10.1)
	41-50	57(36.1)
	51-60	47(29.7)
	≥60	24(15.2)
Sex, n (%)		
	Female	65(41.1)
	Male	93(58.9)
Marital Status, n (%)		
	Single	11(7)
	Married	121(76.6)
	Widowed	25(15.8)
	Divorced	1(0.6)
Level of Education, n (%)		
	No formal education	90(57
	Primary school	50(31.6)
	Secondary school	15(9.5)
	College/University	3(1.9)
Occupation, n (%)		
	Farmer	142(89.9)
	Laborer	5(3.2)
	Business Owner	5(3.2)
	None	1(0.6)
	Cook	1(0.6)
	None /Student	4(2.5)
Duration of the diagnosis of HIV		
	< 1 year	8(5)
	1-3 year	7(4.4)
	3-7 year	11(7)
	≥ 7 year	132(83.6)

Participants under ART treatment, n (%)		
	Participants	158(100)

Table 2: Association between age group and musculoskeletal symptoms

Age Group	Total Patients	Assigned score	Patient with MSK symptoms	Proportion of patient with MSK symptoms
18–30	14	24	5	35.71%
31–40	16	35.5	7	43.75%
41–50	57	45.5	32	56.14%
51–60	47	55.5	29	61.70%
≥61	24	66	15	62.5%

Z statistic: 1.946

P-value (one-tailed): 0.026 (<0.05)

Interpretation: The Cochran-Armitage test using one-tailed test revealed a statistically significant positive trend (Z = 1.946, p = 0.026), indicating that the proportion of patients with MSK symptoms increases with advancing age.

Table 3. Association between Duration of HIV and Presence of MSK Symptoms

Duration of disease	*Assigned score*	*Total Patients*	*Patient with MSK symptoms*	*Proportion of patient with MSK symptoms*
< 1 year	0.5	8	2	25.0%
1-3 year	2.0	7	3	42.9%
3-7 year	5.0	11	7	63.6%
≥7 years	10.0	132	76	57.6%

Result:

- Overall proportion with MSK symptoms: 88/158 = 55.7%
- Test statistic (Z) = 1.99
- Chi-square for trend = Z^2 = 3.98
- χ^2_trend = 3.98
- df = 1
- P-value = 0.046 (<0.05)

Interpretation: The Cochran-Armitage test for trend revealed a statistically significant association between duration of HIV infection and presence of MSK symptoms ($\chi^2 = 3.98$, df = 1, p = 0.046). This indicates a significant increasing trend in MSK symptoms with longer HIV duration.

Figures:

Figure 1: Different types of MSK issues participants have experiences

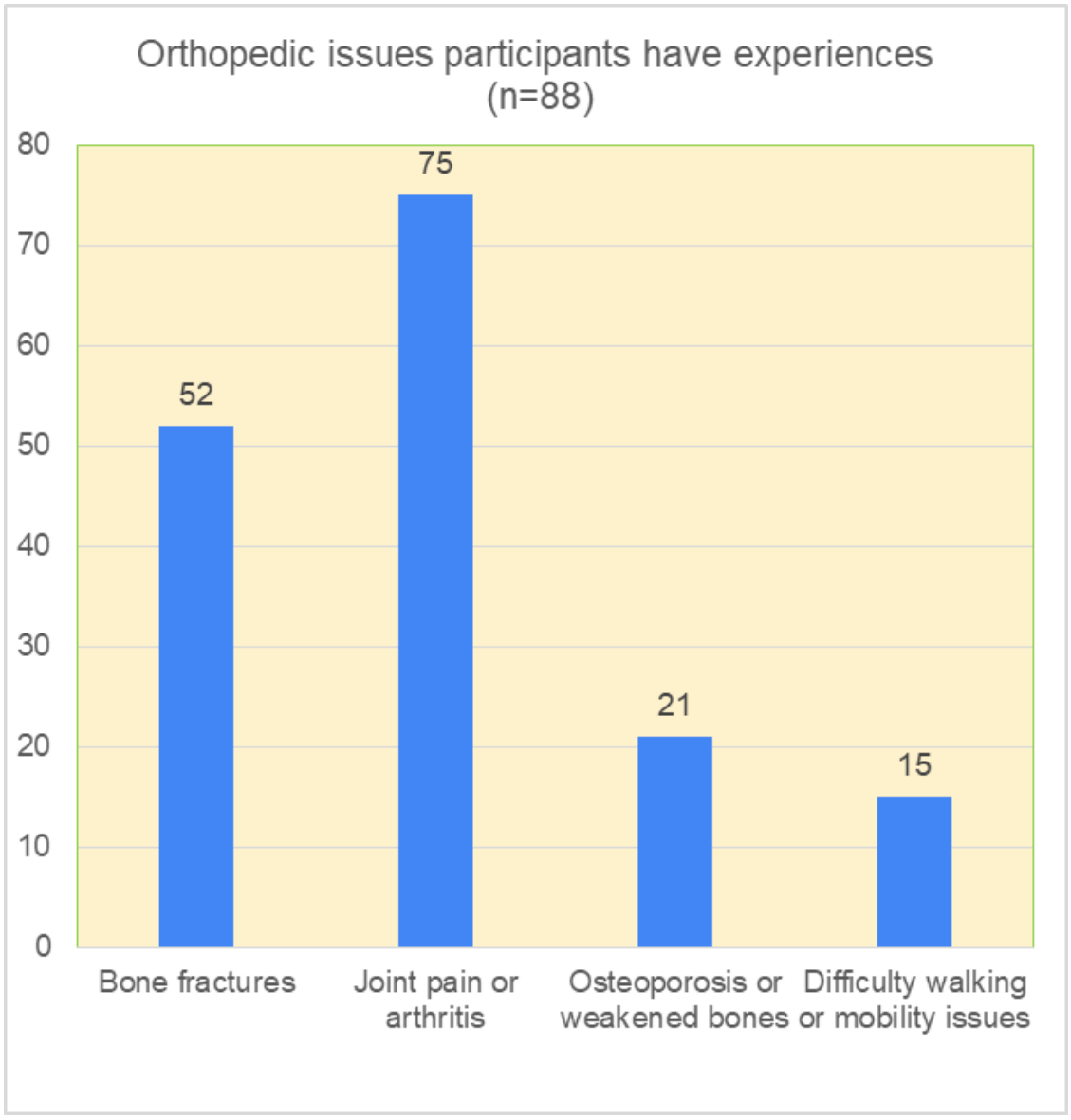


Figure 2: Challenges faced by the participants seeking orthopedic care in health care centre

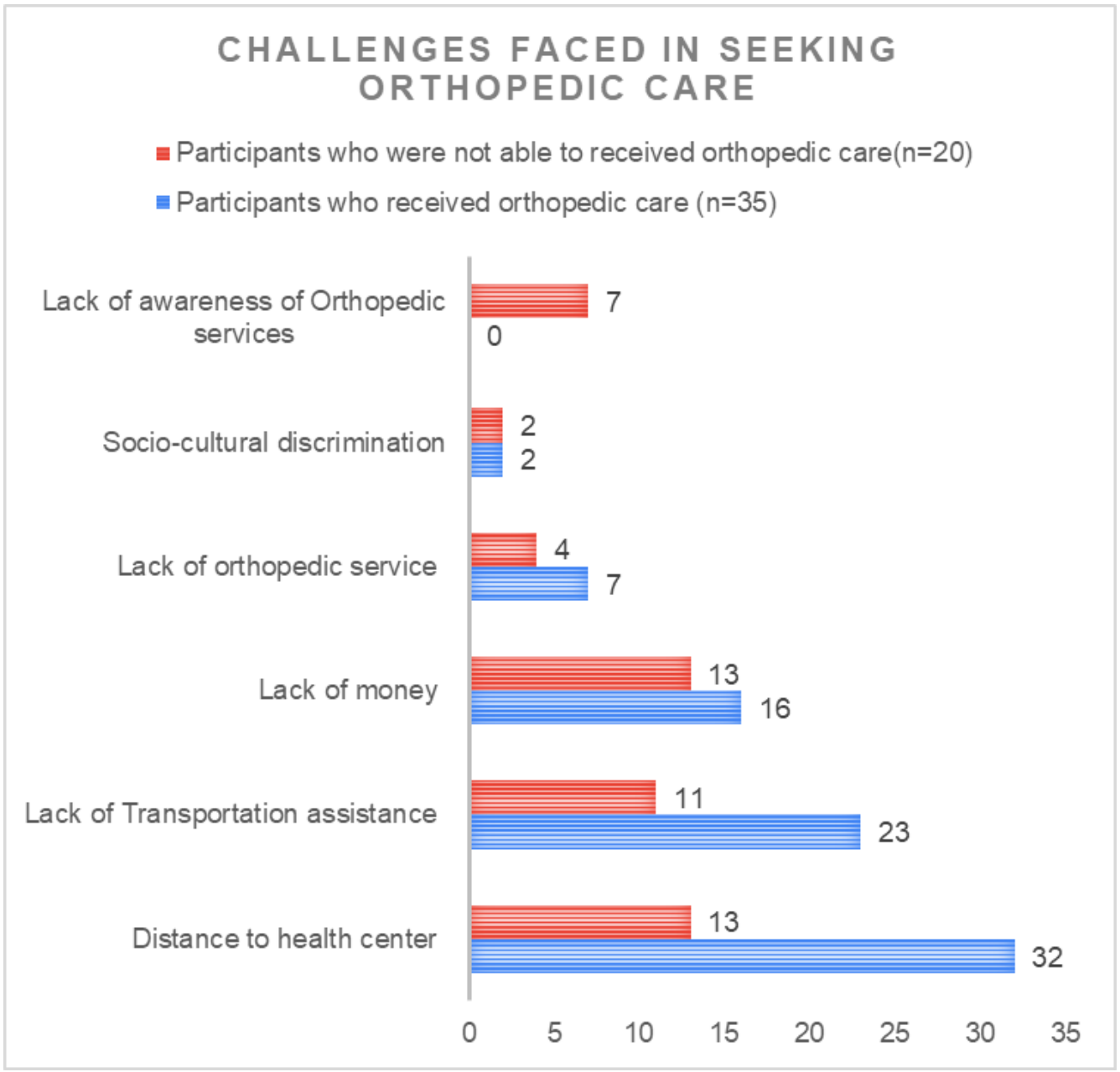


Figure 3: Support or services participants felt lacking in their local health facility for patients with both HIV/AIDS and orthopedic concerns

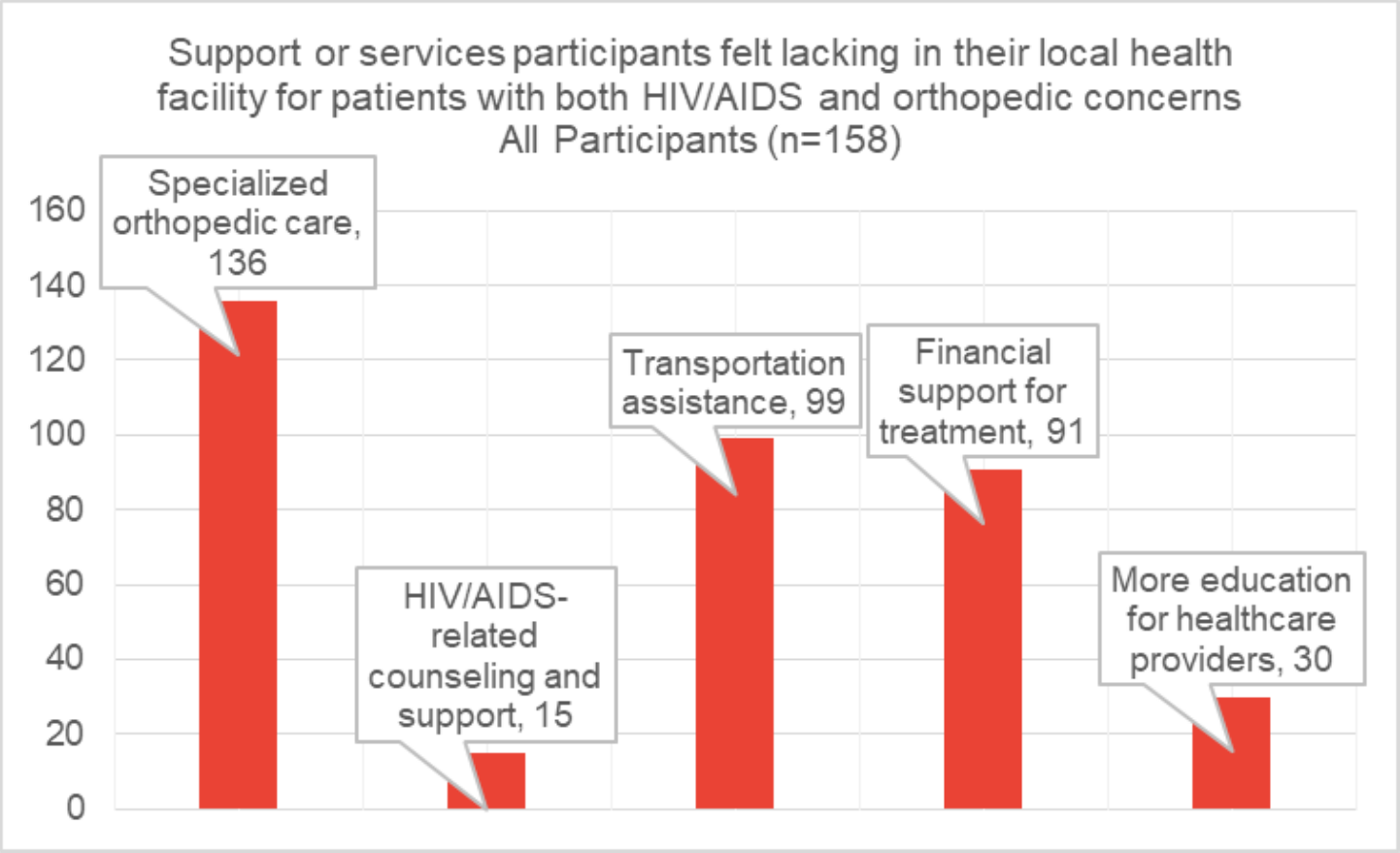


Figure 4: Things to be done to improve awareness of HIV/AIDS-related orthopedic conditions in your community

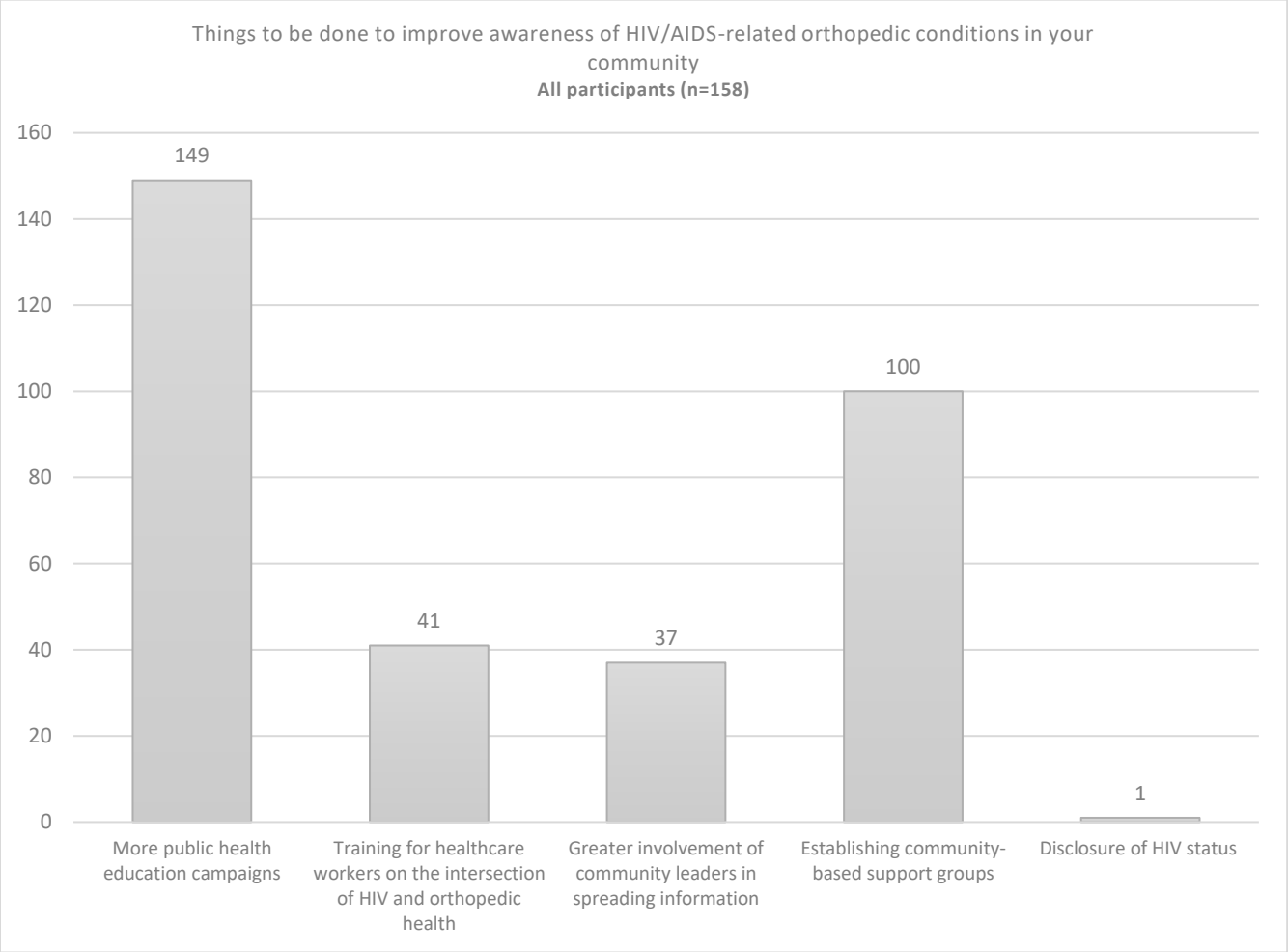


Figure 5: Suggestions from participants to improve the quality of care for HIV/AIDS patients with orthopedic conditions in rural areas

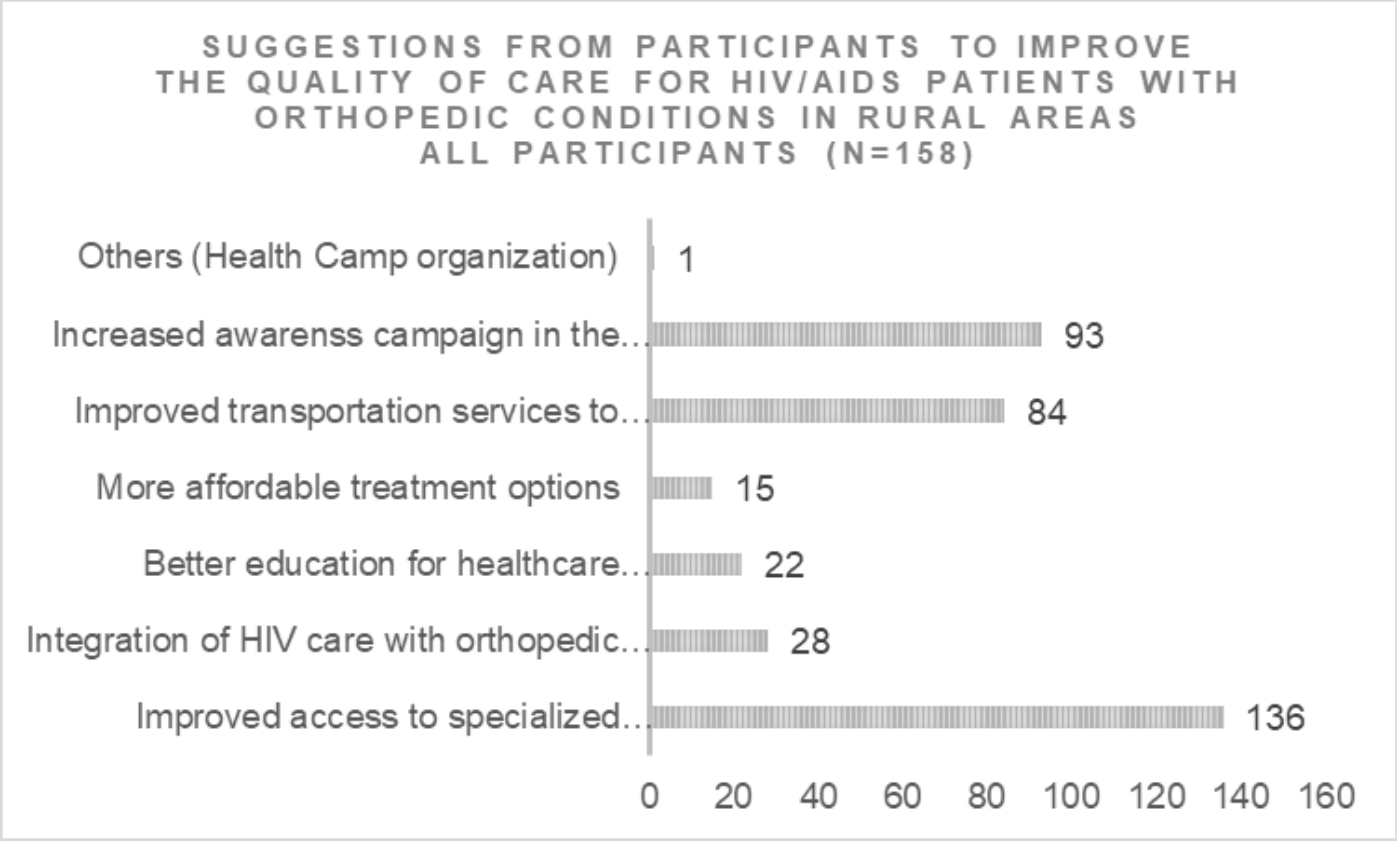


Figure 6: Support would help participants most in managing both your HIV and orthopedic health conditions

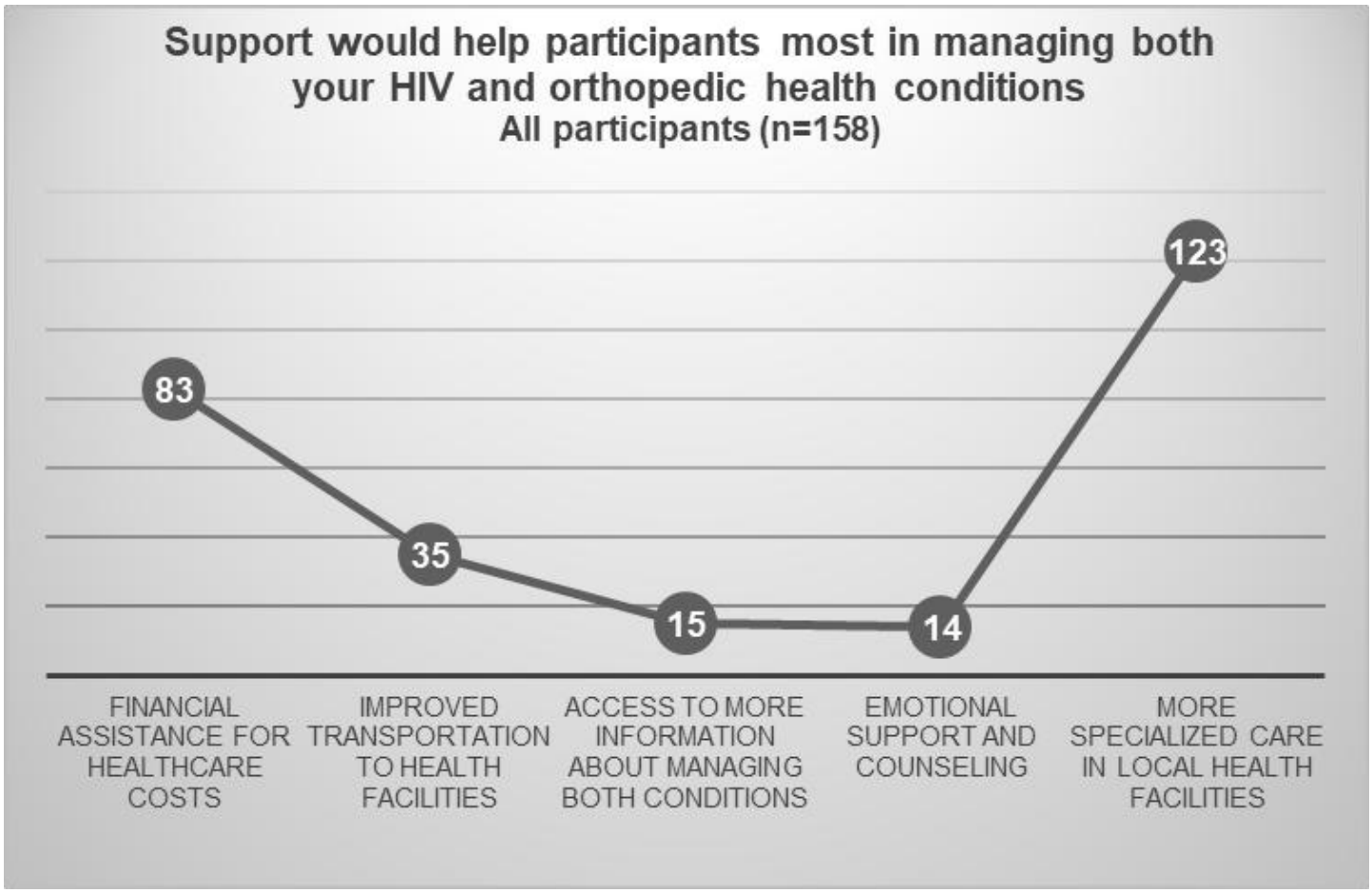
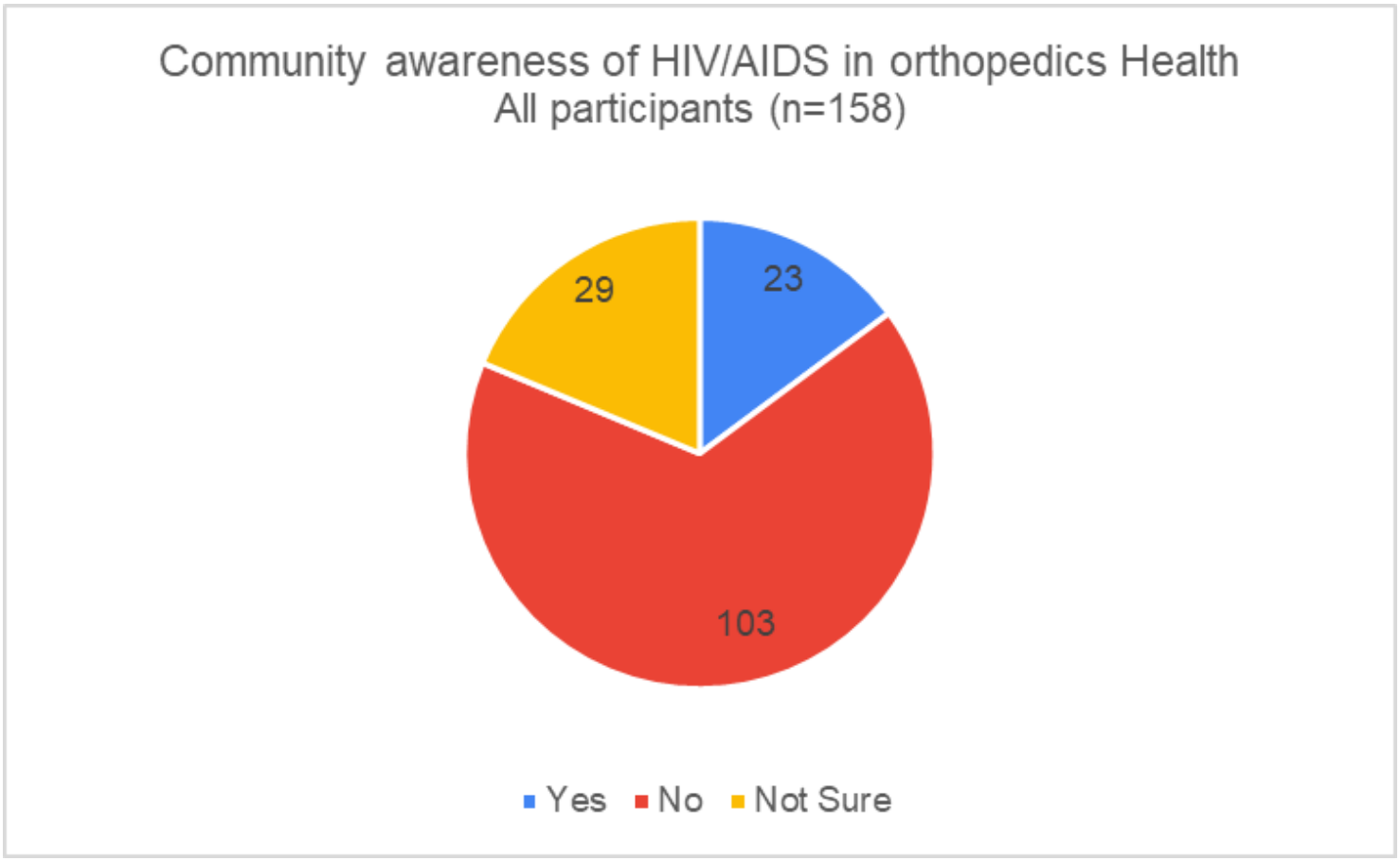


Figure 7: Community awareness of HIV/AIDS in orthopedics health



Questionnaire:

Section 1: Demographic Information

Age:

☐ 18-30

☐ 31-40

☐ 41-50

☐ 51-60

☐ 61 and above

Gender:

☐ Male

☐ Female

☐ Other (please specify): _____

Marital Status:

☐ Single

☐ Married

☐ Widowed

☐ Divorced

Level of Education:

☐ No formal education

☐ Primary school

☐ Secondary school

☐ College/University

☐ Other (please specify): _____

Occupation:

☐ Farmer

☐ Laborer

☐ Business owner

☐ Government employee

☐ Other (please specify): _____

Section 2: HIV/AIDS and Health History

How long have you been diagnosed with HIV/AIDS?

☐ Less than 1 year

☐ 1-3 years

☐ 4-6 years

☐ 7+ years

Are you currently receiving HIV treatment (ART)?

☐ Yes

☐ No

☐ Sometimes

If yes, how regularly do you visit the health center for ART treatment?

☐ Weekly

☐ Monthly

☐ Every 3 months

☐ Less frequently

Have you ever been diagnosed with any orthopedic conditions? (e.g., joint pain, fractures, osteoporosis)

☐ Yes

☐ No

If yes, which of the following orthopedic issues have you experienced? (Check all that apply)

☐ Bone fractures

☐ Joint pain or arthritis

☐ Osteoporosis or weakened bones

☐ Difficulty walking or mobility issues

☐ Other (please specify): _____

Have you been treated for any orthopedic condition in the past?

☐ Yes

☐ No

☐ Not applicable (I haven't experienced orthopedic conditions)

Section 3: Access to Healthcare

Where do you usually go for your HIV treatment and care?

☐ Local health post

☐ District hospital

☐ Private clinic

☐ Other (please specify): _____

Where do you usually go for your orthopedic care?

☐ Local health post

☐ District hospital

☐ Private clinic

☐ I don’t seek orthopedic care

☐ Other (please specify): _____

Have you encountered any challenges accessing healthcare for your orthopedic issues?

☐ Yes

☐ No

☐ Not applicable (I haven’t needed orthopedic care)

If yes, what challenges have you faced in accessing orthopedic care? (Check all that apply)

☐ Distance to health facility

☐ Lack of specialized orthopedic care

☐ Financial barriers (cost of treatment)

☐ Lack of transportation

☐ Cultural or social stigma

☐ Lack of awareness about orthopedic care

☐ Other (please specify): _____

Do you feel that healthcare workers in your community are knowledgeable about the intersection of HIV and orthopedic health?

☐ Yes

☐ No

☐ Not sure

What kind of support or services do you feel are lacking in your local health facility for patients with both HIV/AIDS and orthopedic concerns?

☐ Specialized orthopedic care

☐ HIV/AIDS-related counseling and support

☐ Transportation assistance

☐ Financial support for treatment

☐ More education for healthcare providers

☐ Other (please specify): _____

Section 4: Community Awareness and Perception

In your community, how is HIV/AIDS perceived?

☐ Very positively

☐ Neutral

☐ With stigma and discrimination

☐ Not sure

Are people in your community aware of the potential orthopedic complications that can arise from HIV/AIDS?

☐ Yes

☐ No

☐ Not sure

Do you think the community is open to discussing both HIV/AIDS and orthopedic health in a public health setting?

☐ Yes

☐ No

☐ Not sure

What do you think should be done to improve awareness of HIV/AIDS-related orthopedic conditions in your community?

☐ More public health education campaigns

☐ Training for healthcare workers on the intersection of HIV and orthopedic health

☐ Greater involvement of community leaders in spreading information

☐ Establishing community-based support groups

☐ Other (please specify): _____

Section 5: Suggestions for Improving Healthcare

What changes would you suggest to improve the quality of care for HIV/AIDS patients with orthopedic conditions in rural areas?

☐ Improved access to specialized orthopedic care

☐ Integration of HIV care with orthopedic care

☐ Better education for healthcare providers about the intersection of HIV and orthopedic health

☐ More affordable treatment options

☐ Improved transportation services to healthcare facilities

☐ Increased awareness campaigns in the community

☐ Other (please specify): _____

What support would help you most in managing both your HIV and orthopedic health conditions?

☐ Financial assistance for healthcare costs

☐ Improved transportation to health facilities

☐ Access to more information about managing both conditions

☐ Emotional support and counseling

☐ More specialized care in local health facilities

☐ Other (please specify): _____

Would you be interested in participating in a community support group focused on health issues related to both HIV/AIDS and orthopedic care?

☐ Yes

☐ No

☐ Maybe

Consent Form for Participation in Research Study

Study Title: Exploring Musculoskeletal Health Among Individuals Living with HIV Rural Nepal: Prevalence, Barriers to Care, and Community Perspectives

Principal Investigator(s): Dr. Siddhartha Khanal

Institution: Gorkha Hospital, Gorkha

Contact Information: +977-9856010918

Purpose of the Study:

This study focuses on exploring the intersection between HIV/AIDS and orthopedic health in rural Nepal. Specifically, it aims to investigate the prevalence, causes, and barriers to treatment of musculoskeletal issues among individuals living with HIV/AIDS. Additionally, the study will assess community perceptions and awareness regarding these conditions.

Objectives of the study:

- To identify the prevalence and types of musculoskeletal conditions among individuals with HIV/AIDS.
- To analyze the demographic, socio-economic, and health-related factors contributing to these conditions.
- To evaluate community awareness and perceptions regarding HIV/AIDS-related orthopedic health issues.
- To explore healthcare barriers experienced by patients seeking treatment for musculoskeletal issues.

Findings from this research will contribute to improving healthcare policies, service delivery, and awareness programs for individuals living with HIV/AIDS.

Benefits to Participants:

1. Increased Health Awareness: Participants will gain knowledge about the musculoskeletal complications associated with HIV/AIDS.
2. Free Health Screening: Participants will receive a basic musculoskeletal health assessment, which may help identify undiagnosed conditions.

3. Improved Healthcare Access: Research findings will contribute to policy recommendations that enhance healthcare services tailored to the needs of individuals with HIV/AIDS.

4. Reduced Social Stigma: The study aims to raise community awareness and reduce the stigma associated with HIV/AIDS, improving social support for affected individuals.

5. Contribution to Medical Research: Participants' involvement will help generate valuable data, leading to better treatment strategies and improved healthcare services in the future.

This study not only seeks to improve healthcare services but also aims to positively impact participants' overall health and well-being._____

What Participation Involves:

If you agree to participate, you will be asked to:

1. Take part in a one-on-one interview lasting approximately 45-60 minutes.

2. Answer questions about your experiences with HIV/AIDS and orthopedic health.

3. Share your perspectives on healthcare challenges and barriers in your community.

_____

Potential Risks and Benefits:

Risks:

- Some questions may be personal or sensitive in nature. You may decline to answer any question or stop the interview at any time.
- There is a small risk of a breach of confidentiality, but measures will be taken to ensure your privacy and data security.

Benefits:

- Your participation may help improve healthcare services for individuals living with HIV/AIDS in rural areas.
- You may find the experience of sharing your story meaningful.

Confidentiality:

Your privacy is important to us. All information collected will be kept strictly confidential and used only for research purposes. Your name or any identifying details will not appear in any reports or publications resulting from this study. Data will be stored securely and accessed only by authorized personnel.

_____

Voluntary Participation:

Your participation is entirely voluntary. You may choose not to participate or withdraw from the study at any time without any penalty or loss of benefits.

_____

Compensation:

You will not receive any monetary compensation for participating in this study. However, your contribution will provide valuable insights into public health challenges in your community.

_____

Contact for Questions:

If you have any questions about the study or your rights as a participant, you may contact:

Mr. Rabin Dani (+9779840011341)

_____

Consent Statement:

I have read and understood the information provided above. I have had the opportunity to ask questions and received satisfactory answers. I voluntarily agree to participate in this study.

]Participant Name:	Researcher Name:
Participant Signature:	Researcher Signature:
Date:	Date:

For Additional information:

Nepal Health Research Council (NHRC)

Ramshah path, Kathmandu, Nepal

P.O.Box 7626

Contact No: 977-1-5354220 / 977-1-5327460 / 977-1-5346008

Consent Form for Participation in Research Study(Nepali Language)

अध्ययन शीर्षक: *(Exploring Musculoskeletal Health Among Individuals Living with HIV Rural Nepal: Prevalence, Barriers to Care, and Community Perspectives)*

(एचआईभी सङ्क्रमित व्यक्तिहरूमा मांसपेशी तथा हड्डीसम्बन्धी स्वास्थ्यको अध्ययन ग्रामीण नेपालमा: प्रचलन, उपचारमा अवरोधहरू र समुदायको दृष्टिकोण)

मुख्य अनुसन्धानकर्ता(हरू): डा. सिद्धार्थ खनाल

संस्था: प्रदेश अस्पताल, गोरखा

सम्पर्क जानकारी : +९७७-९८५६०१०९१८

अध्ययनको उद्देश्य:

यो अध्ययन ग्रामीण नेपालमा एचआईभी/एड्स र हाडजोर्नी स्वास्थ्य बीचको अन्तरसम्बन्ध बुझ्न केन्द्रित छ। विशेष गरी, यसले एचआईभी संक्रमित व्यक्तिहरूमा देखिने मांशपेसी तथा हाडजोर्नी समस्याहरूको अवस्थिति, कारण, उपचारमा आउने अवरोधहरू तथा समुदायको धारणा अन्वेषण गर्नेछ।

यस अध्ययनको उद्देश्यहरू:

- एचआईभी संक्रमित व्यक्तिहरूमा हाडजोर्नी समस्याहरूको प्रचलन र प्रकार पहिचान गर्ने।
- हाडजोर्नी समस्याहरू उत्पन्न गराउने जनसांख्यिकीय, सामाजिक-आर्थिक, र स्वास्थ्य सम्बन्धी कारकहरूको अध्ययन गर्ने।
- समुदायमा एचआईभी/एड्स र हाडजोर्नी स्वास्थ्यसम्बन्धी चेतना तथा धारणा मूल्याङ्कन गर्ने।
- एचआईभी संक्रमित बिरामीहरूले हाडजोर्नी समस्याको उपचारमा भोग्ने अवरोधहरू पहिचान गर्ने।

यस अनुसन्धानबाट प्राप्त निष्कर्षहरूले स्वास्थ्य सेवा सुधार, नीति निर्माण, र रोगसम्बन्धी सचेतना अभिवृद्धिमा योगदान दिनेछ।

सहभागीहरूलाई हुने लाभहरू:

1. स्वास्थ्य जानकारीमा वृद्धि: सहभागीहरूले एचआईभी/एड्स र हाडजोर्नी समस्याहरूको सम्बन्धमा वैज्ञानिक जानकारी प्राप्त गर्नेछन्।

2. निशुल्क स्वास्थ्य परीक्षण: सहभागीहरूलाई आधारभूत मांशपेसी तथा हाडजोर्नी परीक्षण प्रदान गरिनेछ, जसले अप्रत्याशित स्वास्थ्य समस्याहरू पहिचान गर्न सहयोग गर्नेछ।

3. स्वास्थ्य सेवा पहुँच सुधार: अनुसन्धानको निष्कर्षले स्वास्थ्य सेवा प्रणाली सुधार गर्न मद्दत पुऱ्याउनेछ, जसले सहभागीहरूलाई लामो समयसम्म लाभ दिनेछ।

4. समुदायमा कलङ्क निवारण: अध्ययनले समुदायमा एचआईभी/एड्स सम्बन्धी सचेतना बढाउने लक्ष्य राखेको छ, जसले सामाजिक कलङ्क घटाउनेछ।

5. चिकित्सकीय अनुसन्धानमा योगदान: सहभागीहरूको अनुभवले एचआईभी संक्रमित बिरामीहरूको हाडजोर्नी समस्याहरूमा आधारित भविष्यका उपचार रणनीति विकास गर्न मद्दत गर्नेछ।

यसरी, यस अध्ययनले न केवल स्वास्थ्य सेवा सुधार गर्ने लक्ष्य राखेको छ, तर सहभागीहरूको व्यक्तिगत स्वास्थ्य स्थितिमा पनि सकारात्मक प्रभाव पार्नेछ।

सहभागिताले समेट्ने कुरा:

यदि तपाईंले सहभागी हुन सहमति जनाउनुहुन्छ भने, तपाईंले:

१. करिब ४५-६० मिनेट अन्तरवार्तामा भाग लिनु पर्नेछ।
२. एचआईभी/एड्स र हाडजोर्नी स्वास्थ्य सँग सम्बन्धित आफ्ना अनुभवहरूबारे प्रश्नहरूको उत्तर दिनु पर्नेछ।
३. तपाईंको समुदायका स्वास्थ्य सेवा चुनौतीहरू र अवरोधहरूबारे आफ्नो दृष्टिकोण साझा गर्नुपर्नेछ।

संभावित जोखिम र लाभहरू:

जोखिमहरू:

केही प्रश्नहरू व्यक्तिगत वा संवेदनशील प्रकृतिका हुन सक्छन्। तपाईं कुनै पनि प्रश्नको उत्तर दिन अस्वीकार गर्न वा अन्तरवार्ता कुनै पनि बेला रोक्न सक्नुहुन्छ।

- गोपनीयताको उल्लंघन हुने न्युन जोखिम रहन सक्छ, तर तपाईंको गोपनीयता र डेटा सुरक्षा सुनिश्चित गर्न सबै उपायहरू अपनाइनेछन्।

लाभहरू:

- तपाईंको सहभागिताले ग्रामीण क्षेत्रमा एचआईभी/एड्स भएका व्यक्तिहरूका लागि स्वास्थ्य सेवा सुधार गर्न मद्दत गर्न सक्छ।
- आफ्नो कथा तथा अनुभव साटासाट गर्नु अर्थपूर्ण हुन सक्छ।

गोपनीयता:

तपाईंको गोपनीयता हाम्रो लागि महत्त्वपूर्ण छ। सङ्कलित सबै जानकारीलाई पूर्ण रूपमा गोप्य राखिनेछ र अनुसन्धान प्रयोजनका लागि मात्र प्रयोग गरिनेछ। तपाईंको नाम वा कुनै पनि पहिचानयोग्य विवरण कुनै पनि प्रतिवेदन वा प्रकाशनमा समावेश गरिने छैन। डेटा सुरक्षित रूपमा भण्डारण गरिनेछ र केवल अधिकृत व्यक्तिहरूद्वारा मात्र पहुँच गरिनेछ।

स्वेच्छिक सहभागिता:

तपाईंको सहभागिता पूर्ण रूपमा स्वेच्छिक हो। तपाईं सहभागी नहुने वा अध्ययनबाट कुनै पनि बेला बिना कुनै जरिवाना वा लाभ गुमाइ फिर्ता हुन सक्नुहुन्छ।

प्रतिपूर्ति:

यस अध्ययनमा सहभागी हुन तपाईंलाई कुनै आर्थिक प्रतिपूर्ति / लाभ दिइने छैन। तथापि, तपाईंको योगदानले तपाईंको समुदायका सार्वजनिक स्वास्थ्य चुनौतीहरूको बुझाइमा महत्त्वपूर्ण योगदान पुर्याउनेछ।

प्रश्नका लागि सम्पर्क:

यदि तपाईंलाई अध्ययन वा सहभागीको अधिकारबारे कुनै प्रश्न छ भने, तपाईं सम्पर्क गर्न सक्नुहुन्छ:

श्री रबिन दानी (+९७७-९८४००११३४१)

<u>सहमति विवरण:</u>

मैले माथि प्रदान गरिएको जानकारी पढेको छु र बुझेको छु। मैले प्रश्न सोध्ने मौका पाएको छु र सन्तोषजनक उत्तर प्राप्त गरेको छु। म स्वेच्छाले यस अध्ययनमा सहभागी हुन सहमत छु।

सहभागीको नाम:
सहभागीको हस्ताक्षर:
मिति:

अनुसन्धाताको नाम:
अनुसन्धाताको हस्ताक्षर:
मिति:

<u>थप जानकारीको लागि :</u>

नेपाल स्वास्थ्य अनुसन्धान परिषद् (NHRC)

रामशाह पथ , काठमाडौँ , नेपाल

सम्पर्क न.: ९७७-१-५३५४२२०/९७७-१-५३२७४६०/९७७-१-५३४६००८