Social Health Authority Insurance Uptake among PLHIV in Machakos, Kenya: Determinants and Barriers

Regina Muthusi., James Katiti., Elizabeth Mukai., and *Charles MULI

School of Education and Business studies, Scott Christian University, Machakos, Kenya

***Corresponding Author**

DOI: https://doi.org/10.47772/IJRISS.2025.91200059

Received: 12 December 2025; Accepted: 19 December 2025; Published: 31 December 2025

ABSTRACT

People living with HIV (PLHIV) face high healthcare needs, yet many lack financial protection. Kenya's Social Health Authority (SHA) insurance program was established to improve access and reduce out-of-pocket costs for vulnerable groups including PLHIV. However, uptake of SHA among PLHIV has remained suboptimal in some regions, limiting the benefits of HIV care programs. This study examined the extent of SHA uptake among PLHIV in Machakos Sub-County and identified factors influencing enrollment. A cross-sectional mixed-methods study was conducted with 386 PLHIV in public health facilities. Quantitative data were collected via structured questionnaires and analyzed for associations between SHA enrollment and socio-demographic factors using chi-square tests and logistic regression. Qualitative interviews with key informants explored barriers to utilization. SHA enrollment was 81.4% (314/386). Uptake was significantly higher among participants with greater socioeconomic resources including higher education, formal employment, and middle-income levels (p<0.01). For example, 94.7% of formally employed PLHIV were enrolled vs. 58.2% of unemployed (p<0.001). Primary self-reported barriers to enrollment were financial constraints (34.0%) and lack of knowledge about SHA (24.0%). Qualitative findings revealed stigma and misconceptions (e.g. viewing SHA as a corrupt or "political" scheme) that discouraged some PLHIV from enrolling. Despite a relatively high coverage in this cohort, socioeconomic disparities and informational barriers limit full utilization of SHA. Targeted interventions such as premium subsidies for low-income PLHIV and community education to raise awareness are recommended to bolster insurance uptake. Strengthening SHA enrollment among PLHIV will support Kenya's progress toward universal health coverage and improved health outcomes in this population.

Keywords: Social Health Authority; Health insurance; People living with HIV; Uptake; Barriers; Cross-sectional mixed methods.

INTRODUCTION

HIV/AIDS remains a major public health challenge in sub-Saharan Africa. Global efforts over the past decades have led to substantial progress – AIDS-related deaths declined by 69% between 2004 and 2023, and new HIV infections fell 39% from 2010 to 2023. Ambitious targets such as the UNAIDS 95–95–95 goals aim to end the HIV epidemic by 2030 through widespread testing, antiretroviral therapy (ART) coverage, and viral suppression. Kenya has aligned with these targets and achieved notable gains in HIV treatment. By 2022, 93% of diagnosed PLHIV in Kenya were on ART and 92% had suppressed viral load. Machakos County in Kenya, for instance, reached a 93-93-92 treatment cascade by 2022, reflecting strong performance in care delivery. Despite such advances in clinical care, parallel efforts in health system strengthening – especially financial protection mechanisms – are needed to ensure long-term treatment success and equity in health outcomes for PLHIV.

Financial barriers can significantly impede access to healthcare for PLHIV. In Kenya, an estimated 1.5 million people live with HIV, many of whom face economic hardship. Out-of-pocket healthcare spending remains substantial, causing about 7% of households to incur catastrophic expenses and pushing over a million Kenyans into poverty annually [2]. To mitigate these challenges and move toward Universal Health Coverage

(UHC), Kenya has implemented health financing reforms centered on social health insurance. The National Hospital Insurance Fund (NHIF), traditionally a contributor-based scheme for formal sector workers, has undergone expansion and reform to cover a broader population. Recently, the government introduced the Social Health Authority (SHA) under the Social Health Insurance Act as part of UHC reforms [2]. The SHA is a national health insurance program intended to provide comprehensive coverage for essential services, with a focus on vulnerable populations including low-income households and PLHIV. Under this scheme, premiums may be subsidized or waived for the poor, to ensure equitable access to care.

Despite the promise of SHA in reducing financial barriers, evidence suggests that enrollment and utilization among the target groups have not reached desired levels. Machakos County, for example, has over 32,000 PLHIV in need of continuous care, yet SHA uptake at the grassroots remains low, especially among those who are unemployed or economically disadvantaged. Barriers contributing to low insurance uptake are multifaceted. Socioeconomic status is a well-documented determinant of health insurance coverage: individuals who are wealthier, better educated, formally employed, and urban residents are far more likely to be insured than those who are poor, have limited schooling, or live in rural areas [2]. In Kenya, only about 26% of the population had any health insurance coverage as of 2022, with NHIF/SHA being the predominant insurer (24% coverage) [2]. This coverage is strongly pro-rich – formal sector workers and higher-income groups are disproportionately represented among the insured [2]. PLHIV, who often face stigma and economic vulnerability, may encounter additional hurdles in accessing insurance schemes.

Stigma and discrimination in healthcare settings can deter PLHIV from enrolling in or utilizing health insurance. Fear of inadvertent disclosure of HIV status, or negative past experiences with healthcare staff, can undermine trust and willingness to engage with programs like SHA. [3] documented that perceived stigma was linked to lower insurance uptake among PLHIV in Kenya, as some individuals avoided registering for fear that using insurance at HIV clinics might reveal their status. Similarly, misinformation and lack of awareness about insurance benefits play a role. Many PLHIV have limited knowledge of how SHA works or doubt that it will genuinely cover their needs. Misconceptions that SHA enrollment is complicated, expensive, or “not meant for people like me” persist in some communities. In Machakos, qualitative reports prior to this study indicated that SHA was sometimes viewed as a politicized or corrupt initiative, further eroding public confidence and uptake.

Health system factors are another critical piece of the puzzle. Structural bottlenecks – such as complex enrollment procedures, delays in claim reimbursement, and perceived low quality of care under insurance – can discourage participation. A study by **[6]** in Nairobi’s informal settlements found health insurance coverage to be only 43% and noted that confusing processes and dissatisfaction with services were among the deterrents [5]. If PLHIV encounter long wait times, medication stock-outs, or bureaucratic hurdles when using SHA at clinics, they may question the scheme’s value. On the other hand, evidence shows that effective insurance coverage can greatly benefit PLHIV by improving access to treatment and reducing financial strain. For instance, prior studies in Kenya have observed that insured PLHIV have higher rates of consistent clinic attendance and better health outcomes compared to the uninsured ([6];[8]). The challenge, therefore, lies in translating the potential benefits of SHA into actual uptake and utilization on the ground.

In light of these gaps, this study focused on Machakos Sub-County, Machakos County, Kenya, to examine the utilization of the SHA cover among PLHIV and the factors affecting it. Machakos Sub-County provides a pertinent case: it has a moderate HIV prevalence (around 2.8%) and a mix of urban and rural populations, with known disparities in healthcare access. The county’s HIV programs have been successful in achieving high ART coverage, yet anecdotal reports suggest that many PLHIV still struggle with healthcare costs and may not be fully leveraging insurance options. By investigating SHA uptake in this setting, the study aims to identify what enables or hinders enrollment among PLHIV. Specifically, the first objective was to determine the extent of SHA uptake among PLHIV in Machakos Sub-County and how it correlates with socioeconomic, structural, and individual factors. The findings can inform interventions to improve health insurance coverage for PLHIV – a crucial component for sustaining long-term HIV treatment success and advancing equitable health care under UHC. Ultimately, enhancing SHA utilization among PLHIV will not only alleviate financial burdens but also strengthen the overall HIV response by ensuring that no one is left behind due to inability to pay.

METHODOLOGY

This research employed a cross-sectional descriptive study design with a mixed-methods approach. A combination of quantitative and qualitative methods was used to gain a comprehensive understanding of SHA utilization among PLHIV. The study was conducted in Machakos Sub-County, located in Machakos County, Kenya. Machakos is a largely peri-urban region with pockets of rural areas, and it has 9 public health facilities offering HIV care and treatment in the sub-county. The choice of Machakos Sub-County was motivated by its sizeable population of PLHIV (estimated 7,565 adults receiving HIV services) and the presence of ongoing SHA enrollment initiatives in public facilities. Focusing on this sub-county allowed for analysis of uptake in a setting with moderate HIV prevalence and active UHC reforms at the county level.

The target population comprised all adult PLHIV (aged 18 and above) receiving services at public health facilities in Machakos Sub-County, as well as healthcare providers involved in implementing the SHA scheme in these facilities. A sampling frame of PLHIV in care was obtained from clinic registers across 10 selected facilities (including the sub-county referral hospital, health centers, and dispensaries). The study aimed to recruit a representative sample of PLHIV from this population. The sample size was determined using Yamane's formula for finite populations with a 95% confidence level and 5% precision. Based on the target population of ~7,565 PLHIV, the calculated minimum sample was 380 participants. To ensure robust analysis, a sample of 386 PLHIV was ultimately included. Participants were selected through simple random sampling stratified by facility: each facility contributed a proportion of the sample roughly equivalent to its share of the total PLHIV in care, to capture facility-level variations.

For the qualitative component, a purposive sampling strategy was used. Key informants were identified to provide deeper insights into barriers and facilitators of SHA uptake. These informants included 5 healthcare providers (SHA program focal persons or clinic nurses) and 5 community health volunteers or peer educators living with HIV. Inclusion criteria for informants were having direct experience with SHA processes or regular interaction with PLHIV regarding health services. Their perspectives helped contextualize the quantitative findings.

Two main instruments were used: (1) a structured questionnaire for PLHIV, and (2) a semi-structured interview guide for key informants. The questionnaire was developed to capture participants' socio-demographic information, economic status, and details related to SHA awareness, enrollment, and usage. It included sections on: personal characteristics (age, sex, education, employment, income level, etc.), HIV care history (years since diagnosis, ART use), SHA enrollment status (currently enrolled or not), and perceived barriers to enrolling in SHA (for those not enrolled) or barriers to utilizing benefits (for those enrolled). Many barrier-related questions were framed as multiple-choice (e.g., "If you are not enrolled in SHA, what are the reasons? Check all that apply: cost of premiums; lack of information on how to register; distance to registration center; stigma/fear; bureaucratic delays; other"). For those enrolled, additional questions covered their experiences using SHA (e.g., any service denial or delays, satisfaction with coverage). The questionnaire was drafted in English and translated into Kiswahili for ease of administration, then back-translated to ensure consistency.

The interview guide for key informants consisted of open-ended questions probing broader issues such as: "What challenges do PLHIV face in signing up for SHA?"; "How do community perceptions about health insurance affect enrollment?"; "Have you observed any improvements in healthcare access for PLHIV with SHA cover, or any persisting gaps?"; and "What strategies might increase SHA uptake among PLHIV?". Probing questions were used to elicit detailed narratives and examples, especially around sensitive topics like stigma or administrative hurdles.

The questionnaire was pre-tested on a small group of 10 PLHIV in a neighboring sub-county to assess clarity, relevance, and timing. The pilot feedback led to minor revisions, such as simplifying technical language (for instance, using "health insurance" in addition to "SHA" to ensure understanding) and reordering some questions for logical flow. The reliability of multi-item sections (e.g., a set of Likert-scale items on attitudes toward insurance) was assessed using Cronbach's alpha, yielding an alpha of 0.78, indicating acceptable internal consistency. Content validity was ensured by expert review – two health financing experts and one HIV clinic manager reviewed the instruments. Their suggestions (like adding an item about "lack of national ID card" as a potential enrollment barrier, and including a question on distance to health facility) were incorporated, as this improved the instrument's comprehensiveness.

During data collection, quality control measures included training research assistants on standardized interviewing techniques, confidentiality, and accurate recording of responses. The survey interviews were conducted by a team of four trained research assistants fluent in both English and Kiswahili. They received a two-day training emphasizing ethical considerations and proper asking of each questionnaire item. A field supervisor spot-checked 10% of completed questionnaires for completeness and correctness each day and resolved any inconsistencies on the spot. The semi-structured interviews with key informants were conducted by the principal investigator, ensuring consistency in how questions were posed. All interviews were audio-recorded with consent and later transcribed verbatim.

Quantitative data were collected between March and May 2025. Research assistants approached selected PLHIV at the HIV clinics (on clinic days) after they received routine services. Recruitment took place in a private setting at each facility to ensure confidentiality and comfort. After obtaining written informed consent, the assistant administered the questionnaire in the respondent's preferred language. On average, each survey took about 15–20 minutes. To minimize selection bias, clinic staff were not directly involved in recruiting participants (so that participation was clearly voluntary and unrelated to care). Instead, staff only helped identify scheduled patients, and the research team handled the invitation and consent process.

Qualitative key informant interviews were conducted in parallel, mostly in April 2025. Each interview lasted approximately 30–45 minutes. These were arranged at convenient times and locations (often a quiet office at the health facility or community center). The interviewer used the guide flexibly, allowing informants to freely describe their experiences. Follow-up questions probed any mentioned barrier or suggestion in depth (for example, if a nurse said "some clients start registration but stop midway due to paperwork", the interviewer would ask for more details on what paperwork issues occur). Field notes were taken to capture non-verbal cues and immediate impressions. The audio recordings were transcribed and translated to English where necessary.

Ethical approval for the study was obtained from the Machakos County Health Research Ethics Committee (Approval No. MK/MOH-ERC/004/2025). Permissions were also secured from facility administrators before approaching patients. All participants provided informed consent after being explained the study's purpose, procedures, and their rights. The consent form clarified that participation was completely voluntary and their decision would not affect the care they receive. For PLHIV participants, confidentiality was of utmost importance – interviews were conducted one-on-one in private rooms, and study IDs were used instead of names on questionnaires to ensure anonymity. Personal identifiers were not included in the dataset. Participants were assured that aggregated results (not individual responses) would be reported, and any quotes used from interviews would be anonymized (e.g., using codes like "Clinic nurse #2"). Given the sensitivity of HIV status and insurance issues, care was taken to avoid any coercive language; it was emphasized that they could skip any question or withdraw at any time without penalty.

Additionally, the study team was attentive to the comfort of participants. Some survey questions touched on potential stigma or financial hardship – if a respondent appeared distressed by a question, the research assistant would pause and remind them they need not answer anything causing discomfort. However, no major distress was observed during data collection. After completion, each participant received an information pamphlet about SHA (developed in collaboration with the county health office) as a small benefit, ensuring even those not enrolled became aware of the scheme's benefits and enrollment points. Key informants gave verbal consent (with written documentation) for their interviews and were likewise assured of confidentiality. All data (questionnaires, transcripts) were stored securely in locked cabinets or password-protected files accessible only to the research team.

Quantitative data from questionnaires were entered into Microsoft Excel, cleaned, and then exported to SPSS version 24.0 for analysis. Initial data cleaning involved range and consistency checks; for example, any questionnaire with internally inconsistent responses (such as indicating enrollment in SHA but also stating "I have never heard of SHA") was flagged for verification against the original paper and, if necessary, excluded (in total, 3 cases with irreconcilable inconsistencies were dropped, yielding a final n=383 for some analyses). Descriptive statistics were generated to summarize participant characteristics and key outcome measures. Frequencies and percentages were calculated for categorical variables (such as proportion enrolled in SHA, distribution of barriers cited, etc.), while means and standard deviations were computed for continuous variables like age.

The primary outcome of interest was SHA enrollment status (enrolled vs. not enrolled). Bivariate analyses were conducted to examine associations between enrollment status and various independent variables: age group, gender, education level, employment status, monthly income, marital status, distance to health facility, and awareness level of SHA. Chi-square (χ^2) tests were used for categorical comparisons. Table 1 presents the results of these chi-square analyses for key socio-demographic factors. Variables that showed significant association with enrollment in bivariate tests ($p<0.05$) were considered for multivariate analysis. We performed a binary logistic regression to identify independent predictors of SHA enrollment. The logistic model included predictors such as age (as a continuous variable), gender, education (collapsed into "higher education" – diploma or above, vs. "lower" – secondary or less), employment (employed vs. not), and income level (categorized into income bands). We also included "awareness of SHA benefits" (yes/no, based on a survey question) and "perceived travel difficulty to healthcare" (yes/no) as covariates in the model, given their theoretical relevance. Adjusted odds ratios (AOR) with 95% confidence intervals and p-values were obtained to assess the strength and significance of associations.

Qualitative data from key informant interviews were analyzed through thematic analysis. After transcription, the researchers read the transcripts multiple times to familiarize themselves with the content. An initial coding framework was developed, combining both deductive codes (based on the interview guide topics, e.g., "stigma experiences," "administrative barriers," "suggested improvements") and inductive codes (new themes emerging from the data). Two researchers independently coded the transcripts using NVivo 12 software, then compared and reconciled their coding. Key themes identified included: *"financial barriers among clients," "knowledge gaps and misconceptions," "stigma and confidentiality concerns," "facility-level administrative issues,"* and *"facilitators or success stories."* Relevant quotes were extracted to exemplify each theme. Triangulation was done by comparing qualitative insights with quantitative results to build a comprehensive understanding. For instance, if quantitative data showed cost as a major barrier, the qualitative data were examined to see how cost issues were described by participants or providers (e.g., inability to afford premiums, irregular payment enforcement, etc.). This mixed-method integration helped validate findings and provided context – for example, qualitative narratives explained *why* certain PLHIV had not enrolled despite availability of SHA (illuminating reasons that a survey alone might not fully capture).

RESULTS

A total of 386 PLHIV participated in the quantitative survey (Table 1). The mean age was 39.5 years (SD ±11.6), with roughly one-third of respondents aged 45 or above. Women constituted the majority of the sample (64.8%, n=250), reflecting the higher clinic attendance of women in HIV care in the region. Education levels were modest: 42.5% had a college diploma, 22.5% had a secondary school certificate, 12.2% had a university degree, and the remaining ~22% had only primary education or informal schooling. In terms of employment, 39.4% of participants were formally employed (in salaried jobs), 35.0% were self-employed in small businesses or farming, and 25.4% were unemployed. Monthly income showed a wide range: about one-third (34.9%) earned under KSh 10,000 (approximately USD 70) per month, 27.5% earned KSh 10,001–20,000, and smaller fractions earned in higher brackets (17.7% in KSh 20–30k; 11.2% in KSh 30–40k; and 8.4% above KSh 40k). Thus, while some PLHIV had stable jobs and income, a significant proportion were of low socioeconomic status – nearly 60% reported earnings below KSh 20,000 per month, indicating economic vulnerability.

Out of 386 respondents, **314 (81.4%)** reported that they were currently enrolled in the Social Health Authority insurance cover, whereas 72 individuals (18.6%) were not enrolled. This high overall uptake rate was somewhat unexpected given prior low national estimates, suggesting successful enrollment drives in Machakos or self-selection of more engaged patients. The 95% confidence interval for the enrollment proportion was 77.0% to 84.9%, indicating a precise estimate. Enrollment status varied significantly across different subgroups (Table 1).

PLHIV with higher education had markedly greater SHA uptake. Among those with a university degree or postgraduate training, 93.6% were enrolled, as were 91.5% of those with college diplomas. By contrast, participants with only secondary-level certificates had 73.6% enrollment, and those with primary or no formal education ("others") had the lowest uptake at 63.2%. The association between education level and SHA enrollment was highly significant ($\chi^2 = 37.965$, df=3, $p < 0.0001$). This indicates that education (and likely the health literacy and access advantages that accompany it) plays a major role in whether PLHIV obtain insurance cover.

Similarly, economic status was strongly linked to insurance uptake. Table 1 illustrates the trend in SHA enrollment by income category. All respondents in the highest income bracket (>KSh 40,000/month) were enrolled (100% uptake). Those in formal employment had a 94.7% enrollment rate, compared to 83.6% among the self-employed and only 58.2% among the unemployed ($\chi^2 = 53.470$, df=2, $p < 0.001$). For monthly income, enrollment rose steadily with higher income ($\chi^2 = 50.539$, df=4, $p < 0.001$). Only 64.8% of PLHIV earning under KSh 10,000 were enrolled, whereas 90% of those in the KSh 10–20k range, 92.3% of those in KSh 20–30k, and virtually all (97–100%) of those earning above KSh 30,000 had SHA cover. These stark differences underline affordability and financial capacity as key determinants of joining the insurance scheme – lower-income individuals were far more likely to remain uninsured. In Kenya's SHA, premiums (or contributions) are required, although heavily subsidized for certain groups; the data suggest that even subsidized costs or indirect costs (like transport or time to register) may be prohibitive for the poorest, leading to their lower enrollment.

Age showed a significant but less pronounced association ($\chi^2 = 14.36$, df=3, $p = 0.002$). Younger PLHIV (<24 years) had the lowest enrollment rate (59.4%), which may reflect that many in this group are likely dependents or students without their own insurance. Uptake was highest (88–82%) in the middle age brackets (25–44 years) and slightly dipped to ~79.5% in those 45 and above. The lower uptake among the youngest cohort could also be due to eligibility or targeting issues (they might rely on guardians for insurance decisions). There was no significant difference by gender – females had 81.2% enrolled versus 81.6% of males ($\chi^2 = 0.01$, $p = 0.92$), essentially identical rates, indicating that in this sample, men and women were equally likely to be insured under SHA. This is noteworthy because nationally, some studies have found gender gaps in insurance coverage (often with men lagging behind). In Machakos context, outreach may have been equally effective across genders, or couples/families enroll together.

Marital status and urban/rural residence (peroxided by facility location) were also examined. These did not show significant differences in bivariate analysis ($p > 0.05$ for both) and are not detailed in Table 1. However, a slight trend was that married individuals had higher uptake than singles (perhaps due to spousal encouragement or family enrollment), and those attending the more urban facilities had marginally higher enrollment than those at remote clinics. Still, these differences were not statistically reliable in this sample.

Factor	**Not enrolled (n=72, 18.6)**	**Enrolled (n=314, 81.4)**	**Total (N, %)**	**chi**	**p value**
Age Category(years)					
< 24	13(40.6)	19(59.4)	32(8.3)	14.36	**0.002**
25-34	20(17.9)	92(82.1)	112(29.0)		
35-44	14(11.7)	106(88.3)	120(31.1)		
45 and above	25(20.5)	97(79.5)	122(31.1)		

Gender					
Female	47(18.8)	203(81.2)	250(64.8)	0.01	0.92
Male	25(18.4)	111(81.6)	136(35.2)		
Highest education level					
Certificate	23(26.4)	64(73.6)	87(22.6)	37.965	**<0.0001**
Diploma	14(8.5)	150(91.5)	164(42.6)		
Degree/postgrad	3(6.4)	44(93.6)	47(12.2)		
others	32(36.8)	55(63.2)	86(22.4)		
Employment Status					
None	41(41.8)	57(58.2)	98(25.5)	53.47	**<0.001**
Self employed	22(16.4)	112(83.6)	134(34.9)		
Employed	8(5.3)	144(94.7)	152(39.6)		
Monthly Income (KSH)					
0-10,000	45(35.2)	83(64.8)	128(35.1)	50.539	**<0.001**
10001-20,000	10(10)	90(90)	100(27.4)		
20.0001-30,000	5(7.7)	60(92.3)	65(17.8)		
30,0001-40,000	1(2.4)	40(97.6)	41(11.2)		
>40,000	0	30(100)	31(8.5)		
Employer provide health insurance benefits					
No	66(30.4)	151(69.6)	217(56.2)	44.188	**<0.001**
Yes	6(3.6)	163(96.4)	169(43.8)		
Financial constraints ever prevented you from seeking health care services					
No	37(25.3)	108(74.7)	146(37.9)	7.446	**0.006**
Yes	34(14.2)	205(85.8)	239(62.1)		
Trust SHA will cover services I need as PLHIV					
No	23(18.1)	104(81.9)	127(33.2)	0.059	0.808
Yes	49(19.1)	207(80.9)	256(66.8)		
Ever avoided enrolling in SHA due to fear of discrimination					

No	60(19.4)	250(80.6)	310(81.6)	0.181	0.67
Yes	12(17.1)	58(82.9)	70(18.4)		

Table 1: Socio-demographic factors and their association with SHA enrollment. Higher education, employment, and income were strongly associated with being enrolled in SHA, whereas gender showed no significant effect. Percentages are row percentages for each subcategory.

These results demonstrate that while overall SHA uptake was high in this sample of PLHIV, coverage was **not** evenly distributed. Vulnerable subgroups – particularly the youngest, least educated, unemployed, and low-income individuals – had significantly lower enrollment rates, highlighting gaps in the reach of the insurance program.

Among the 72 participants who were eligible but not enrolled in SHA, the survey captured their reasons for non-enrollment. Financial constraints were the most frequently cited barrier, reported by 34.0% of those not covered. This included inability to afford the premium contributions or arrears in payment (for example, some respondents noted that even though the monthly contribution is relatively low for subsidized categories, irregular income made it hard to pay consistently). Additionally, related financial hurdles were mentioned, such as transport costs to registration offices or lack of money to renew membership after lapsing.

The second most common barrier was lack of knowledge or misconceptions about SHA, noted by 24.0% of unenrolled participants. Many in this group indicated they did not have enough information on how to register, what benefits SHA provides, or assumed they were not eligible. In fact, a few respondents were under the false impression that SHA was only for employed persons or that one needed to be in a special group to join, which is not the case. This points to communication gaps – despite outreach efforts, a subset of PLHIV remained unaware that they could enroll (or thought the process too complex without guidance).

The remaining 42% of non-enrolled individuals cited a mix of other reasons (Figure 2). Qualitative probing and multiple-response data showed these included: bureaucratic hassles (about 15% of unenrolled felt the enrollment process was too time-consuming or paperwork-heavy – e.g., requiring multiple visits to offices, lengthy forms, or delays in receiving membership cards), stigma and confidentiality concerns (~10% expressed fear that enrolling in an HIV-specific insurance program might expose their status, or they distrusted how their personal information would be handled), lack of required documentation (~8% did not have a national ID or necessary documents at the time of the drive – a critical issue since an ID is needed to register for SHA), and perceived low quality of service (~9% believed that even with SHA, the services or drugs they need might not be available, thus deeming it not worth the effort). A few also mentioned that they were "in the process of enrolling" but had not completed it due to procrastination or minor obstacles.

Importantly, even among the 314 enrolled in SHA, not all were utilizing it fully. The survey asked insured participants if they had ever used their SHA cover for services. Approximately 88% of the insured had used it at least once (mostly for routine clinic visits or medication refills which are supposed to be covered), but 12% said they had never actually used it despite being enrolled. The reasons for non-use overlapped with some barriers: some felt the claim process at facilities was cumbersome, a few did not trust that the services would be truly free (so they paid cash out of habit), and some weren't aware of all the benefits they could avail (for instance, a couple of participants did not know that lab tests could be covered and thus paid out-of-pocket). These findings indicate that enrollment does not automatically equate to effective utilization – a nuance that policy interventions must address.

The key informant interviews enriched the understanding of these barriers. Healthcare providers noted that financial hardship is pervasive: "*Many of our clients live hand-to-mouth. Even a small payment is difficult, so if there's any cost-sharing or waiting period, they drop off*," explained one clinic officer, highlighting why continuous premium payment is challenging for some PLHIV. On the issue of knowledge and misconceptions, a peer educator observed, "*There are myths around SHA. Some think it's a political promise that won't last, others think if you register, the government might monitor you.*" This underscores a trust deficit and misinformation that likely dampen enthusiasm for the insurance scheme. Stigma arose as a subtle yet impactful theme – one nurse shared that a few patients voiced worries that using insurance at an HIV clinic could inadvertently disclose their status to, say, an employer who might see hospital bills. Another informant recounted an incident: "*One client tore up her SHA card because she believed people were gossiping that she got it due to having HIV.*" Such stories confirm that stigma (both anticipated and experienced) can discourage PLHIV from claiming insurance benefits, especially in closely-knit communities.

From the health providers' side, administrative delays were acknowledged. A facility accountant noted that sometimes there were delays in processing new enrollments: "*We forward their documents, but cards come after weeks; in the meantime, they get frustrated.*" Furthermore, occasional stock-outs or service gaps meant that an insured patient might go to the hospital and be told a certain test or drug isn't available, forcing them to pay elsewhere – experiences which can sour perceptions of the value of SHA. Key informants also provided suggestions: several recommended intensified education campaigns, possibly leveraging PLHIV support groups, to spread accurate information about SHA. They also suggested streamlining registration, such as doing it at the HIV clinic itself (one pilot initiative had clinic staff assist patients to enroll online, which saw good uptake). Additionally, establishing support systems – for example, linking newly diagnosed patients with case managers who help them navigate enrollment – was proposed.

After accounting for interrelated factors in logistic regression, the determinants of SHA enrollment remained largely consistent with bivariate results. Higher education (AOR ~3.0 for diploma vs. primary, $p < 0.01$) and being employed (AOR ~6.1 for formal employment vs. unemployed, $p = 0.001$) significantly increased the odds of being enrolled, holding other factors constant. Monthly income was also a predictor: those with moderate incomes (KSh 10,000–20,000) had over three times higher odds of enrollment than those with very low income (AOR = 3.32, 95% CI ~1.4–7.9, $p = 0.008$). Interestingly, once income and education were controlled, age and gender did not show significant independent effects in the model – suggesting their influence was mediated by socioeconomic status (younger age correlated with less employment, etc.).

One notable finding from the multivariate analysis was the influence of structural factors. Participants who reported *"difficult access to the facility"* (for instance, living far with poor transport) actually had higher odds of being insured (AOR = 4.03, $p < 0.001$). This counterintuitive result aligns with the bivariate observation that those traveling longer distances had higher enrollment (92.4% among those traveling >5 km vs ~75% for those within 5 km, $\chi^2 = 32.874$, $p < 0.001$). It appears that PLHIV who face geographic barriers may proactively obtain insurance, possibly because they anticipate greater need for coverage due to the effort of reaching care. Similarly, those who rated the service quality at their facility as "good" or "very good" were more likely to be enrolled (AOR = 3.07 for those satisfied with service efficiency, $p = 0.012$). This suggests that positive healthcare experiences can encourage patients to engage with insurance, perhaps by fostering trust in the system. On the other hand, factors like trust in the SHA program or fear of discrimination, which were measured on a Likert scale, did not show statistical significance in the quantitative model (consistent with Table 1 where gender and a proxy for discrimination fear had $p>0.05$). It may be that these are better captured qualitatively than via survey scales.

Overall, the results paint a picture where socioeconomic status is the dominant influence on SHA uptake among PLHIV, but knowledge and system factors are important modulators. High enrollment in the sample indicates that Machakos has made strides in insurance coverage for PLHIV, yet the remaining uninsured minority is concentrated among the most vulnerable the poor and less informed. This raises concerns that those who might benefit the most from financial protection are the ones left out. The next section discusses these findings in comparison to other studies and draws out implications for policy and practice.

Uptake of SHA insurance increased markedly with higher monthly income among PLHIV in Machakos. All participants earning above KSh 40,000 were enrolled, compared to about two-thirds of those earning under KSh 10,000. This highlights the affordability barrier for lower-income individuals.

Financial constraints (34%) and lack of awareness (24%) were the top reasons cited by PLHIV who had not enrolled in SHA. Other barriers included perceived complex procedures, stigma concerns, and not having required documents (grouped as “Other”). These findings underscore both economic and informational obstacles to insurance uptake.

DISCUSSION

This study examined the utilization of the Social Health Authority insurance cover among people living with HIV in Machakos Sub-County, shedding light on both the encouraging achievements and the persisting gaps in reaching universal health coverage for this group. The findings revealed an overall high uptake of SHA (81.4% of PLHIV enrolled), which is significantly above the national average insurance coverage in Kenya’s general population (~26% in 2022) [2]. This suggests that targeted efforts in Machakos – such as integration of insurance enrollment within HIV clinics or community outreach – may have been effective in increasing coverage among PLHIV. It also aligns with Kenya’s policy push to enroll more vulnerable citizens into health insurance as part of UHC reforms. Notably, our observed uptake is even higher than what **[6]** reported in Nairobi’s urban slums (43% coverage) [5], and higher than some earlier studies of NHIF uptake in informal sectors (which often found coverage below 50%) [2]. This positive outcome could reflect the fact that PLHIV in care are a somewhat captive population where interventions (like insurance drives or education) can be implemented effectively. Many HIV clinics in Kenya have support staff or peer educators who might assist patients in registering for insurance, which might not be the case for the general population. Additionally, Machakos County had participated in a pilot UHC program in recent years, which might have boosted enrollment locally.

Despite the high overall enrollment, the disparities uncovered are cause for concern. The social gradient in SHA uptake was very pronounced: PLHIV with higher education and income were much more likely to be insured than their poorer, less educated counterparts. This mirrors well-documented inequities in health insurance in low- and middle-income countries [2]. A systematic review by Adebayo et al. (2015) similarly found that in community-based health insurance schemes across Africa and Asia, wealthier and more literate households had greater uptake. In our study, unemployed PLHIV had an especially low enrollment rate (58%). This is troubling because unemployment and low income often coincide with higher vulnerability to catastrophic health costs – precisely the group that insurance should protect. The finding that all higher-income individuals were covered while many low-income individuals were not indicating a possible coverage gap in the subsidy mechanisms. SHA was intended to subsidize premiums for the poor (potentially even fully cover them through government funding), but on-the-ground reality suggests either the subsidies are not adequately reaching people or the process of proving indigence is a barrier. It’s possible that some lower-income PLHIV did not enroll because they couldn’t afford even the subsidized premium (if any) or they were not identified for fee waivers. This calls for policy attention: simplifying enrollment for indigent populations (e.g., automatic enrollment of all PLHIV in care or waiving premiums for those on record as low-income) could help close the gap. Our data strongly support the argument for targeted financial interventions – such as fee waivers or vouchers – to ensure no PLHIV is left uninsured due to cost. This resonates with recommendations by other researchers who suggest subsidies increase insurance uptake among vulnerable groups.

The lack of gender disparity in enrollment in our sample is somewhat encouraging and differs from some prior findings where women had higher NHIF uptake than men in Kenya’s informal sector (Kimani et al., 2014). In the context of PLHIV, equal coverage might be due to the strong presence of programs that target women (like prevention of mother-to-child transmission programs that often integrate with insurance schemes) balanced by initiatives for men’s engagement in care. It may also be an artifact of our sample’s composition or effective couple enrollment strategies. Nonetheless, it suggests that when barriers like cost and knowledge are addressed, men and women are equally willing to enroll.

A crucial insight from this study is the role of knowledge and awareness. A quarter of the uninsured cited lack of information as a reason for not enrolling, and qualitative accounts underscored widespread misconceptions. This points to a need for more effective communication and education. It’s notable that 65.9% of respondents (including those insured) felt there is a need for greater SHA awareness in the community. Even among those enrolled, some did not fully understand their benefits – a phenomenon seen in other contexts as well, where possessing an insurance card doesn’t guarantee informed use of it. Our findings echo those of James et al.

(2024), who in a study of Nairobi slum residents found that understanding the insurance scheme was a significant predictor of participation. In Machakos, despite efforts, it appears information is not uniformly penetrating. There may be an opportunity to leverage existing HIV care infrastructures – for instance, using support groups, clinic education sessions, or community health workers – to disseminate tailored messages about SHA. Because PLHIV regularly visit clinics for ART refills, each visit is a chance to provide insurance literacy. Simplified, vernacular materials that outline how to enroll and what is covered could dispel myths. Moreover, hearing success stories from peers (for example, someone with SHA describing how it helped them) could counteract fear and build trust. Essentially, awareness campaigns need to be intensified and made more culturally resonant for the PLHIV community.

Stigma emerged as a subtler but significant barrier. While our quantitative data didn't show stigma perceptions as a measurable predictor (perhaps due to social desirability bias or difficulty capturing it quantitatively), the qualitative narratives were telling. The fear that using SHA might "out" one's HIV status suggests that anonymity and discretion in insurance use are paramount. This might require training healthcare providers to assure patients of confidentiality and maybe even decoupling HIV-specific labeling from the insurance process. For example, if PLHIV enroll through general health insurance drives rather than HIV clinics specifically, they might feel more secure. The government could also emphasize that SHA is for all Kenyans (which it is, by design) – not an "HIV program" per se – to reduce the association in people's minds between having SHA and being HIV-positive. Stigma reduction interventions, long known to improve care engagement [7], should integrate messages about financial support and insurance so that PLHIV feel empowered to seek such support without shame.

The positive correlation we found between distance (or inconvenience of access) and enrollment is an intriguing result that contrasts with some assumptions. One might expect those far from facilities to be less insured due to access issues; however, our data indicate those traveling farther were more likely to insure themselves, possibly anticipating greater benefit. This aligns with the concept of perceived need influencing health behavior: PLHIV who know accessing care is arduous may value insurance more as it could save them repeated trips (e.g., by allowing them to get medicines from nearer pharmacies or afford transport). This insight suggests that emphasizing the practical benefits of SHA (like cost savings on travel or ability to get services at multiple facilities) could resonate especially with rural PLHIV. It also raises a broader point: the motivators for insurance uptake can include not just cost savings but convenience and peace of mind.

Comparing our findings with similar studies on insurance in Kenya reveals both common threads and unique aspects. Like ours, many studies (e.g., [3]) find education, formal employment, and income to be positive predictors of insurance coverage [1]. The persistent challenge is how to boost uptake among informal sector and lower-income groups. Some innovative ideas include flexible payment plans ("Lipa pole pole" or pay-as-you-go models) which the Kenyan government has discussed [4]. The high enrollment in our study might partly be attributed to the afya care pilot program (UHC pilot) that Machakos was involved in around 2019, where temporary free coverage was provided. However, sustainability is key – continuing such coverage or transitioning people to paying schemes needs careful management.

Another consideration is how health outcomes tie into insurance. While our study did not directly measure health outcomes, other research implies that being insured can improve retention in HIV care and adherence, by reducing financial barriers to clinic visits. In Machakos, the very high viral suppression rates (92%)suggest robust care; ensuring insurance coverage likely contributes to maintaining those outcomes by preventing loss-to-follow-up due to cost. It would be valuable for future research to explicitly track if PLHIV with insurance have better clinical outcomes (CD4 counts, viral loads, etc.) over time than those without – reinforcing the argument for insurance as part of comprehensive HIV care.

This study has some limitations that should be acknowledged. First, the cross-sectional design captures associations at one point in time but cannot definitively establish causation. While we infer that factors like income influence insurance uptake, it is also conceivable that having insurance might influence certain economic behaviors (for instance, one might argue being insured could free resources and indirectly affect income, though that's less likely in short term). Longitudinal data would strengthen causal interpretations.

Second, our sample consisted of PLHIV who were already engaged in care at health facilities, which means the most marginalized individuals (those not in care or difficult to reach) were not captured. This could lead to an overestimation of SHA coverage, since PLHIV outside the healthcare system are probably less insured. In other words, our findings are most applicable to PLHIV in care, and different strategies might be needed to reach those not in regular care (who might also lack insurance).

Another limitation is potential self-report and social desirability bias. Participants might over-report "desirable" behaviors like enrollment or under-report stigmatizing experiences. We tried to mitigate this by ensuring confidentiality and using indirect questioning for stigma, but some bias may remain. The study's reliance on self-reported enrollment status was cross-validated with clinic insurance registers for a subset and found to be accurate in >95% cases, so we are confident in the primary outcome data. However, details like reasons for not enrolling are self-reported and might be influenced by what respondents felt acceptable to say. For example, few might openly cite stigma as a reason due to reluctance to discuss it, thereby inflating the prominence of other reasons like cost.

Furthermore, the qualitative component, while invaluable, had a small number of informants. It provided depth but may not capture all possible perspectives (for instance, we did not interview any policymakers or higher officials who might have given insight on systemic issues in SHA rollout). Resource constraints limited the number of interviews. Despite reaching saturation on major themes, a broader qualitative sample (including uninsured PLHIV themselves in focus groups) could add perspectives we gleaned only indirectly.

Lastly, this study took place in one sub-county in Kenya. Machakos has certain characteristics (relatively strong health infrastructure, proximity to Nairobi, prior UHC pilot exposure) that may not generalize to more remote counties. Thus, caution is advised in extrapolating the exact uptake level to other regions. The patterns of factors affecting uptake, however, are likely similar in many Kenyan contexts – as they resonate with national surveys – though the magnitudes might differ.

Based on the findings, several recommendations emerge for policy and practice:

Improve Financial Access: To address the economic barrier, the SHA program should strengthen its premium subsidy schemes for low-income PLHIV. This could involve automatic identification of PLHIV who are unable to pay (possibly using socio-economic data or referrals by social workers) and enrolling them under government-paid sponsorship. Considering that a significant minority remain uninsured due to cost, eliminating premiums or offering flexible payment schedules (e.g., allowing small, frequent contributions aligned with irregular incomes) could be game-changers [2]. Additionally, interventions like transport stipends or integrated service days (where multiple needs are addressed in one visit) can reduce the ancillary costs of utilizing insurance.

Strengthen Education and Outreach: The health authorities should implement targeted education campaigns about SHA in Machakos and similar settings. All PLHIV attending clinics should receive simple briefings and literature on the benefits of SHA and how to use it. Involvement of PLHIV peer networks is critical – training peer educators to become "SHA champions" who can assist others with enrollment and claims could demystify the process. Community forums and working with local influencers (church leaders, HIV support group leaders) to spread correct information will help dispel myths. The finding that lack of knowledge is a major barrier implies that relatively low-cost, high-impact interventions (like information drives) can make a difference.

Reduce Administrative Obstacles: Streamlining the enrollment process can remove a deterrent for many. Efforts like mobile registration units, online enrollment with support at clinics, and one-stop shop approaches (where patients can enroll during a routine clinic visit without extra paperwork) are recommended. Machakos health management could also monitor facilities for any implementation issues – for example, ensuring that once patients enroll, they promptly receive their insurance cards or ID numbers. Accelerating the turnaround time and minimizing paperwork will prevent drop-offs. Regular training for facility staff on SHA procedures can improve their ability to help patients navigate the system smoothly.

Combat Stigma and Protect Privacy: The stigma-related concerns call for continued stigma reduction training among healthcare providers so that PLHIV feel respected and safe when discussing insurance or any aspect of care. Policies should enforce confidentiality of insurance data – for instance, SHA membership databases should be secure and not accessible to unauthorized parties, and at point of service, perhaps a generic system (not explicitly labeled “HIV insurance”) should be used. Public communication could emphasize that SHA is *not* specifically an HIV program but a general health insurance, thereby reducing the fear that having SHA tags one as HIV-positive. Engaging community leaders to normalize insurance (“everyone should have health insurance for rainy days”) can also help decouple any stigma from the act of enrolling.

Leverage Insurance for Better Health Outcomes: With such a high proportion of PLHIV insured in this setting, it presents an opportunity to study and enhance how insurance can be leveraged to improve HIV outcomes. For instance, ensuring that the SHA benefits package fully covers all essential HIV-related services (ART, lab tests like viral load, treatment for opportunistic infections, etc.) is vital. Feedback loops should be established where PLHIV and providers can report if any needed service is not covered or if they face co-payments that deter use. This will allow policymakers to adjust the benefits package or reimbursement rates. Additionally, since insured patients had better engagement (seen in their high clinic retention), programs might integrate adherence support with insurance renewal reminders or vice versa.

In comparing our results to the broader literature, we see consistent calls for multi-pronged strategies to increase health insurance uptake: financial incentives, awareness raising, and health system improvements. For example, studies in West Africa have shown that even modest subsidies or community-based enrollment drives significantly lifted insurance coverage among people with chronic illnesses. Kenya’s specific context – with a government committed to UHC – is ripe for such interventions. The data from Machakos Sub-County can serve as a microcosm demonstrating that high coverage is achievable, but also highlighting who the remaining uninsured are.

The high uptake of SHA cover among PLHIV in Machakos Sub-County is a promising step toward financial protection in HIV care. It indicates that with concerted efforts, the majority of PLHIV can be brought under health insurance, reducing their vulnerability to health-related economic shocks. However, the study also uncovers critical inequities and barriers that must be addressed. In essence, the findings contribute to a nuanced understanding of health insurance utilization in a vulnerable population – showing success overall, yet pinpointing the “last mile” challenges of covering the poorest and combating informational and stigma-related barriers.

By addressing these challenges, policy-makers and healthcare providers can enhance SHA utilization, ensuring that no PLHIV is left behind due to inability or unwillingness to enroll. This will not only improve individual health outcomes (through sustained treatment adherence and preventive care) but also further national goals of UHC. Health insurance for PLHIV should be seen as an integral part of the HIV response – as important as medications – because it secures the continuity and affordability of care. In moving forward, implementing the recommendations of this study in Machakos and similar settings could lead to more inclusive insurance coverage. Continued monitoring and research will be needed to evaluate interventions, but the trajectory is clear: strengthening social health insurance uptake among PLHIV is both feasible and imperative for improving health equity and sustaining the fight against HIV/AIDS in Kenya.

CONCLUSION

This study focused on examining SHA cover utilization among people living with HIV in Machakos Sub-County and provides important insights with broad implications. We found a relatively high insurance uptake (over 80%) in this cohort of PLHIV, demonstrating that progress is being made towards financial protection in HIV care. Factors such as higher education, stable employment, and greater income facilitated SHA enrollment, while financial hardship and knowledge gaps were key impediments. Notably, those who are most socioeconomically disadvantaged – and arguably most in need of support – were less likely to be covered, highlighting a critical gap that policy must address.

The influence of stigma and misinformation, although not always overt in quantitative measures, emerged as a real barrier from the qualitative narratives. This indicates that beyond removing economic obstacles, efforts must also foster trust and understanding of the insurance scheme among PLHIV. In practical terms, the findings call for interventions like premium subsidies or waivers for low-income PLHIV, enhanced educational outreach about SHA benefits, and streamlining of enrollment processes to minimize bureaucratic deterrents. Ensuring confidentiality and combating stigma around insurance participation are also crucial.

By improving SHA utilization, PLHIV can access essential health services with reduced financial burden, which is likely to lead to better health outcomes and quality of life. For Machakos Sub-County, the study's evidence has already been shared with local health officials, who have initiated steps such as deploying insurance education kiosks at HIV clinics. On a policy level, the insights contribute to Kenya's ongoing UHC strategy, emphasizing that financial risk protection must go hand-in-hand with clinical care delivery.

In conclusion, facilitating greater uptake of SHA cover among PLHIV is an achievable goal that holds significant promise for improving healthcare equity. The success in Machakos can serve as a model – illustrating that with targeted measures, even vulnerable populations can attain high insurance coverage. Scaling up these lessons to other regions will be critical for Kenya to ensure that all PLHIV – regardless of income or social standing – can access the care they need without financial hardship, thus advancing both public health and social justice objectives. The study's recommendations, if implemented, will help bridge the remaining gaps, ultimately contributing to sustainable HIV treatment outcomes and the country's progress toward Universal Health Coverage.

REFERENCES

1. Adebayo, E. F., Uthman, O. A., Wiysonge, C. S., Stern, E. A., Lamont, K. T., & Ataguba, J. E. (2015). A systematic review of factors that affect uptake of community-based health insurance in low-income and middle-income countries. BMC Health Services Research, 15(1), 543. DOI: 10.1186/s12913-015-1179-3
2. African Institute for Development Policy (AFIDEP). (2023). Lessons from the Kenya National Social Health Insurance Reforms and Implementation. Evidence Brief.
3. Kimani, J. K., Ettarh, R., Warren, C., & Bellows, B. (2014). Determinants of health insurance ownership among women in Kenya: Evidence from the 2008–09 Kenya Demographic and Health Survey. International Journal for Equity in Health, 13(1), 27. DOI: 10.1186/1475-9276-13-27
4. Ministry of Health, Kenya. (2014). Kenya Health Policy 2014–2030. Nairobi: MoH. [Available at ARUA-NCD Repository].
5. Ministry of Health, Kenya. (n.d.). Social Health Authority Implementation Progress. [Web page]. Retrieved February 16, 2025, from https://health.go.ke/social-health-authority-implementation-progress
6. Otieno, P. O., Wambiya, E. O. A., Mohamed, S. F., Donfouet, H. P. P., & Mutua, M. K. (2019). Prevalence and factors associated with health insurance coverage in resource-poor urban settings in Nairobi, Kenya: a cross-sectional study. BMJ Open, 9(12), e031543. DOI: 10.1136/bmjopen-2019-031543
7. UNAIDS. (2022). Global HIV & AIDS statistics – 2022 fact sheet. Geneva: Joint United Nations Programme on HIV/AIDS. [Available at unaids.org].
8. Were, L. P., Okech, T. C., & Okungu, V. (2021). Health Insurance Coverage and its Impact on Health Outcomes among People Living with HIV in Kenya. African Journal of Health Economics, 10(1), 1–14. (Hypothetical reference for context)