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Understanding Hiv Patients' Perceptions of Nutrition Education at Mulago National Referral Hospital, a Qualitative Study

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Research Article

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Abstract

Background

Malnutrition is a prevalent and serious comorbidity among people living with HIV (PLHIV), affecting up to 69.1% of individuals in low- and middle-income countries. In Uganda, over 1.4 million people live with HIV, yet evidence on how inpatients at referral-level facilities perceive, understand, and engage with nutrition education remains critically limited. This study investigated HIV patients' perceptions of nutrition education at Mulago National Referral Hospital (MNRH), Uganda's largest tertiary HIV care facility, guided by the Health Belief Model (HBM).

Methods

A qualitative exploratory-descriptive design was employed. Seven HIV-positive adult inpatients were recruited through purposive sampling at MNRH. Data were collected via in-depth semi-structured interviews conducted in English or Luganda, audio-recorded, and transcribed verbatim. Thematic analysis followed Braun and Clarke's six-step framework using NVivo software, applying a hybrid deductive-inductive coding strategy anchored in HBM constructs. Trustworthiness was established through member checking, reflexive journaling, audit trail maintenance, and thick contextual description consistent with Lincoln and Guba's criteria.

Results

Three principal findings emerged. First, structured nutrition education was systemically absent from the inpatient HIV ward: six of seven participants reported receiving no dietary counselling during admission, and no ward-based nutritionist was present—a pattern termed structural silence. Second, despite broadly positive attitudes toward nutrition and recognition of its importance for immune recovery and antiretroviral therapy (ART) effectiveness, patients lacked practical dietary guidance, revealing a critical self-efficacy gap. Third, barriers to nutritional uptake were intersecting and cumulative, spanning health-system deficiencies, food insecurity, economic hardship, caregiver knowledge gaps, and clinical instability. Caregivers, present in six of seven cases, were consistently identified as an underutilised educational resource.

Conclusions

Structured nutrition education is critically absent from MNRH's HIV inpatient care, reflecting a failure to translate national policy into ward-level practice. Findings have direct implications for referral-level HIV facilities across sub-Saharan Africa. MNRH should appoint a dedicated ward-based nutritionist, embed nutrition messaging within routine clinical procedures, include caregivers systematically in counselling,

and establish food support mechanisms for vulnerable patients. The Ministry of Health should revise Nutrition Assessment, Counselling and Support (NACS) monitoring indicators to measure educational quality alongside assessment rates.

Background

Globally, HIV/AIDS claimed approximately 630,000 lives in 2024, reinforcing the continued public health urgency of the epidemic [1]. Malnutrition is one of the most common and clinically significant comorbidities among PLHIV with prevalence estimates varying from 10.3% in high income countries to as high as 69.1% in low and middle income countries (LMICs) [2, 3]. Nutritional adequacy is essential to immune competence, CD4 lymphocyte reconstitution and resistance to opportunistic infections especially among persons undergoing ART [4].

Sub-Saharan Africa carries around 65% of the global HIV burden and at the same time it harbors more than 23% of the world's undernourished population [1, 5]. In Uganda, over 1.4 million persons are living with HIV, and malnutrition remains common in persons on ART, compounded by food insecurity, poverty and poor health systems [6, 7]. Evidence from global and regional studies has confirmed that structured nutrition education promotes improvements in nutritional status, dietary diversity, ART adherence and quality of life in PLHIV [8, 9, 10]. The World Health Organization (WHO) thus recommends integrating nutrition education into the HIV care cascade [11].

Uganda's national HIV management policy, expressed in the Consolidated Guidelines for Prevention and Treatment of HIV and AIDS (2022) and the Uganda Public Health Act (2023), requires Nutrition Assessment, Counselling and Support (NACS) as an integral part of HIV care [12, 13]. Despite this policy framework, implementation has been inconsistent: sub-target NACS assessment coverage was recorded by the Ministry of Health Nutrition Annual Performance Report for Financial Year 2022/23 at national level, with Kampala being one of the worst performing districts [14]. These programmatic gaps point to a critical disconnect between policy intent and bedside practice.

Mulago National Referral Hospital (MNRH) is Uganda's largest and most clinically complex HIV care tertiary facility, providing care for a heterogeneous and often horribly sick HIV-positive population drawn from all over the country. Despite its institutional capacity, there is a noticeable lack of published qualitative evidence to look at how PLHIV at MNRH are perceiving, understanding, and engaging with nutrition education. Understanding such perceptions is indispensable for the design of contextually appropriate and patient-centred nutritional interventions.

Earlier studies from Uganda [15], Nigeria [16], Ghana [17], and Ethiopia [18, 19] have addressed the issue of nutrition knowledge, attitudes and practices (KAP) among PLHIV, mainly using cross-sectional quantitative approaches. These studies consistently identify a gap between knowledge and practice but have limited explanatory depth related to the cognitive, institutional and contextual processes mediating uptake of nutrition advice. Qualitative inquiry in referral-level hospital environments is especially limited, even though the unique logistical and interactional complexities defining high-volume tertiary hospitals

such as high patient-to-providers, time constrained consultations, and complex multimorbidity profiles [20].

The Health Belief Model (HBM) originally developed by Rosenstock [21] represents a theoretically rigorous model for examining the impact of individual perceptions of susceptibility, severity, benefits and barriers, self-efficacy and cues to action on health behaviours. The HBM has proven useful in HIV related research in East and West Africa [17, 22] and can offer a conceptually coherent scaffold for exploration of motivational and structural determinants of nutrition education engagement.

This study aimed at exploring the perception of nutrition education by HIV patients at MNRH, Kampala, Uganda guided by HBM. The specific objectives were: (i) explore HIV patient's understanding of nutrition education given to them at MNRH; (ii) describe HIV patient's attitude to and usefulness of nutrition education in health management; and (iii) identify beliefs and barriers; including cultural and health-system factors that influence uptake and application of nutrition education. The findings are of direct relevance to tertiary HIV care facilities in the region of sub-Saharan Africa facing similar programmatic implementation gaps.

Methods

Study Design

A qualitative exploratory-descriptive design was employed, consistent with the epistemological requirement to generate in-depth, contextually rich understanding of lived experience [23]. This design was appropriate given the limited existing qualitative evidence regarding patient perceptions of nutrition education in referral-level HIV care settings and the exploratory nature of the inquiry. The study did not seek to test hypotheses but to generate conceptually grounded insights that could inform subsequent intervention development.

Study Setting

The study was done at MNRH, the main national tertiary teaching hospital in Kampala, Uganda. MNRH offers a full range of HIV services, including antiretroviral therapy and NACS, to a socioeconomically diverse patient population. The hospital's combination of high patient volume, clinical complexity of admissions and specialist HIV infrastructure made it an ideal setting to examine the operationalisation of nutrition education policy in a high complexity referral environment.

Study Population

The study population comprised HIV-positive adult inpatients admitted to the HIV ward at MNRH. Inclusion criteria were: (i) confirmed HIV-positive status; (ii) age 18 years or above; (iii) admission for HIV-related inpatient care; (iv) clinical stability sufficient to participate in an interview; and (v) ability to

provide informed consent and communicate verbally in English or Luganda. Participants were excluded if they were critically ill or cognitively/psychiatrically impaired in a manner precluding meaningful engagement, or if they were simultaneously enrolled in another HIV or nutrition-related research study at MNRH.

Purposive non-probability sampling was employed to recruit participants with direct lived experience of inpatient HIV care and ward-based nutritional practices. Clinicians assisted in identifying potentially eligible individuals; however, eligibility confirmation and consent procedures were conducted independently by the research team to ensure voluntariness and minimise undue influence. A standardised recruitment script and eligibility checklist were applied throughout.

Sample Size

Sample size was not predetermined but was guided by the principle of information power and the concept of data saturation [24, 25]. An initial flexible target of up to 15 interviews was established, consistent with saturation thresholds documented in comparable qualitative HIV studies [26]. Recruitment was continued until thematic and meaning saturation were achieved that is, until no new codes, categories, or conceptual insights emerged from successive interviews. Saturation was reached after the sixth interview; a seventh interview was conducted to confirm thematic stability. The final sample size was therefore n = 7.

Data Collection

Prior to fieldwork, a pre-familiarisation visit to MNRH was conducted to understand ward workflows and establish administrative coordination with HIV service leadership. Data were collected through in-depth semi-structured interviews conducted between October and November 2025. Interviews were conducted in private, quiet spaces within the inpatient ward to ensure confidentiality and minimise disruption to clinical care. A semi-structured interview guide was developed to address the three study objectives and the corresponding HBM constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. The guide was organised into six thematic sections covering: (A) demographic background; (B) knowledge and awareness of nutrition education; (C) attitudes and perceived usefulness; (D) beliefs and barriers to uptake; (E) gender and social influences; and (F) overall evaluation and suggestions. The guide was pre-tested outside the inpatient setting and minor refinements were made prior to full data collection.

Interviews were conducted in English or Luganda according to participant preference. With participant consent, all interviews were audio-recorded to ensure accuracy; field notes were simultaneously taken to record contextual observations and non-verbal cues. Basic demographic data including age, sex, educational level, occupation, marital status, and ART duration were collected at the start of each interview to contextualise findings descriptively. In three cases, where participants were clinically

unstable, caregiver accounts supplemented participant responses with prior informed agreement and within established ethical parameters. Each interview lasted approximately 45 to 60 minutes.

Data Analysis

Audio recordings were transcribed verbatim and cross-checked against the original recordings for accuracy. All data, including transcripts and field notes, were imported into NVivo (Lumivero, version 14) to facilitate systematic coding and data management [27]. Thematic analysis followed Braun and Clarke's six-step reflexive framework: (1) familiarisation with data through repeated reading; (2) generation of initial codes using a hybrid deductive-inductive strategy deductive codes were anchored in HBM constructs (perceived susceptibility, benefits, barriers, self-efficacy, and cues to action), while inductive codes were permitted to emerge from the data; (3) searching for themes by clustering related codes; (4) reviewing and refining candidate themes against the full dataset; (5) defining and naming themes with supporting data extracts; and (6) producing an integrative analytical narrative connecting themes to study objectives and the HBM [28, 29]. The iterative and reflexive nature of the analytical process was maintained through regular supervisory debriefing, memo-writing, and reflexive journaling throughout coding and interpretation.

Trustworthiness

Rigour was imposed in line with the criteria of credibility, transferability, dependability, and confirmability developed by Lincoln and Guba [30]. Credibility was supported by member checking: emergent themes were distributed to a subset of participants and accuracy of interpretations was verified. Dependability and confirmability was ensured by an audit trail of analytical decisions and a reflexive journal of researcher positionality, assumptions, and new understandings. Transferability was aided with thick contextual description so that readers could consider applicability to similar settings. Triangulation was achieved by combining the data from the field notes and interview information.

Results

Participant Characteristics

The sample comprised seven HIV-positive adult inpatients (five female, two male), aged 24 to 45 years (mean age approximately 36.6 years). Duration on ART ranged from less than one week to five years, reflecting a clinically diverse group spanning newly diagnosed patients to those with established treatment histories. Educational attainment was predominantly primary-level, consistent with the general MNRH patient population. Most participants were informally employed in food service or petty trade. Six of seven participants had a caregiver present during admission; in three cases, caregiver accounts supplemented participant data due to clinical instability. Participant characteristics are presented in Table 1.

Table 1
Participant characteristics (n = 7)

Participant Code	Age	Sex	ART Duration	Education	Occupation	Caregiver Present
P1	45	Female	5 years	Primary	Chips seller	Yes
P2	37	Female	1 month	Primary 6	Restaurant	Yes
P3	35	Male	4 months	Primary	Formerly employed	Yes (wife)
P4	39	Male	3 weeks	Senior 4	Carpenter	Yes
P5	24	Female	1 year	Certificate	Mobile money	Yes
P6	44	Female	< 1 month	Primary 5	Restaurant	Yes
P7	32	Female	< 1 week	Primary	Restaurant	No

Objective One: HIV Patients' Understanding of Nutrition Education at MNRH

Analysis of data related to the first objective generated three interrelated themes: (1) structural silence reported absence of nutrition education in the inpatient ward; (2) experiential understanding nutrition knowledge grounded in lived experience rather than formal instruction; and (3) facility-dependent variation differential prior exposure to counselling across health system entry points.

Theme 1: Structural silence Reported absence of nutrition education in the inpatient ward

The dominant and most striking finding was the consistent report across interviews that structured nutrition education was entirely absent from the inpatient ward environment. Six of seven participants stated explicitly that no healthcare provider had discussed diet, food choices, or nutritional needs with them during their current admission. These accounts were unambiguous, unprompted, and consistent across participants varying in age, ART duration, sex, and clinical condition.

"Two weeks at Mulago, no one ever asked me whether I ate or not, no health education about nutrition has been done. They never told me anything about nutrition education. (P4, Male, 39 years, 3 weeks on ART)"

"No one has ever told me about nutrition. No one has asked me whether I ate or not, no nutrition education. (P2, Female, 37 years, 1 month on ART reported by caregiver)"

"Ever since I came here no nutrition education has been given to me. No one has asked whether I ate today or not. No one has educated me about foods to eat. (P7, Female, 32 years, newly diagnosed)"

Participants described a complete absence of nutrition-focused dialogue during admission, not an isolated omission. In several cases, clinical assessments such as anthropometric measurements had been conducted without any accompanying dietary explanation, revealing a procedural-educational disjunction. The structural nature of this absence was reinforced by the observed lack of a visible ward-based nutrition professional.

"There is no nutritionist on the ward. (P1, Female, 45 years, 5 years on ART)"

Within the HBM framework, this institutional silence represents a critical failure to provide cues to action the prompts or information that ordinarily catalyse behavioural engagement with health-promoting practices.

Theme 2: Experiential understanding Nutrition knowledge grounded in lived experience

Despite the reported absence of formal counselling, several participants demonstrated a degree of understanding regarding the importance of nutrition for HIV management. Critically, this knowledge was derived from personal bodily experience and prolonged HIV care trajectories rather than from systematic institutional instruction. Participants described nutrition in functional, somatic terms, linking dietary intake to physical strength, illness trajectory, and medication tolerance.

"I feel a great change when I have a change in meals. (P1, Female, 45 years, 5 years on ART)"

"If someone does not eat properly, the virus can increase. (P1, Female, 45 years, 5 years on ART)"

This experiential awareness corresponds to the HBM constructs of perceived susceptibility and perceived benefits; however, participants consistently reported an inability to translate this intuitive awareness into practical dietary action, as no guidance on specific food types, quantities, or preparation had been provided.

"It helps him to eat nutritious meals, but he has not yet got a proper person to educate him about nutrition. (P4, Male, 39 years, 3 weeks on ART caregiver report)"

Theme 3: Facility-dependent variation Differential exposure across health system entry points

A third theme concerned discrepancies in prior nutrition education experience across different healthcare facilities. Where any counselling had been received, it was typically at lower-level facilities rather than at MNRH. One participant (P1) reported prior nutrition education at Kitebi Health Centre and demonstrated comparatively greater confidence in dietary decision-making. In contrast, the majority described no exposure to nutrition counselling at any facility.

"No one has ever told me about nutrition. (P2 caregiver, referencing prior facility experiences)"

These accounts suggest that access to nutrition education was contingent on the specific health system entry point rather than embedded within a standardised care pathway. This variability implies systemic rather than individual-level failure, with implications for understanding observed heterogeneity in nutritional literacy among PLHIV at the national level.

Objective Two: HIV Patients' Attitudes Toward and Perceived Usefulness of Nutrition Education

Analysis related to the second objective yielded three themes: (4) nutrition as essential for survival and recovery; (5) perceived benefit without practical confidence the self-efficacy gap; and (6) institutional feeding practices as contextual determinants of attitude.

Theme 4: Nutrition as essential for survival and recovery

Across all interviews, participants expressed broadly positive attitudes toward nutrition and identified adequate dietary intake as central to their recovery, treatment efficacy, and disease trajectory. Nutrition was consistently framed not as a supplementary or optional health behaviour, but as a fundamental determinant of clinical outcomes. These positive attitudes were present irrespective of duration on ART, clinical stability, or educational attainment, suggesting a generalised and deeply held conviction regarding the role of food in HIV management.

"I feel a great change when I have a change in meals. (P1, Female, 45 years, 5 years on ART)"

"If someone does not eat properly, the virus can increase. (P1, Female, 45 years, 5 years on ART)"

Even recently diagnosed participants, who had minimal prior exposure to HIV care, acknowledged the perceived link between nutrition and health. Within the HBM framework, these accounts reflect strong perceived benefits, a necessary but insufficient condition for sustained health behaviour change.

Theme 5: Perceived benefit without practical confidence;The self-efficacy gap

A critical paradox emerged from the data: while participants broadly recognised the importance of nutrition, this recognition was not matched by confidence in how to operationalise dietary recommendations within their lived circumstances. Awareness of benefit existed in the absence of actionable knowledge, structural support, or professional guidance a constellation this study characterises as a self-efficacy gap.

"It helps him to eat nutritious meals, but he has not yet got a proper person to educate him about nutrition. (P4, Male, 39 years, 3 weeks on ART caregiver report)"

"No one has educated me on foods to eat. (P7, Female, 32 years, newly diagnosed)"

Participants did not report disinterest in nutrition education; rather, they expressed a desire for it. The absence of counselling was experienced as a gap in care rather than as a reflection of individual indifference, underscoring that low self-efficacy in this context is an institutionally produced condition rather than a patient-level attribute.

Theme 6: Institutional feeding practices as contextual determinants of attitude

Participants' attitudes toward nutrition and nutritional care were also shaped by their direct experiences of hospital meal provision. Ward meals were described as limited in variety, inconsistently distributed, and nutritionally inadequate. In some cases, patients were entirely dependent on caregivers to obtain supplementary food from outside the facility.

"They usually bring rice and beans for us, though some patients get some, do not. (P6, Female, 44 years, newly diagnosed)"

"They give us porridge every morning and food at lunch, but when you come late you find when it is finished. (P1, Female, 45 years, 5 years on ART)"

"I always send my caretaker to get me food outside the hospital, which is somehow far. (P6, Female, 44 years, newly diagnosed)"

These structural feeding deficiencies constituted an implicit institutional message that nutrition was peripheral to care. Within the HBM framework, inconsistent and inadequate institutional feeding practices weakened cues to action and reinforced perceived barriers, thereby diminishing the likelihood of sustained dietary engagement during admission.

Objective Three: Beliefs and Barriers Influencing the Uptake and Application of Nutrition Education

Analysis for the third objective revealed that barriers to nutritional uptake operated not in isolation but as intersecting, cumulative constraints. Four interrelated categories of barriers were identified, which collectively shaped patients' lived experiences of nutrition during inpatient care.

Health-system barriers

The absence of a ward-based nutritionist represented the primary structural determinant of suboptimal nutrition education delivery. Without a designated professional, neither patients nor caregivers had access to dietary guidance, counselling, or interpretation of clinical assessments. The procedural-educational disjunction whereby anthropometric measurements were conducted without accompanying dietary explanation was particularly salient.

"There is no nutritionist on the ward. (P1, Female, 45 years, 5 years on ART)"

"No one has weighed my weight and height. (P7, Female, 32 years, newly diagnosed)"

This systemic absence reduced institutional cues to action and precluded the reinforcement of perceived benefits necessary to support behavioural change.

Economic and food-access barriers

Participants described food insecurity and economic hardship as pervasive constraints on dietary practice. The need to purchase supplementary food from outside the facility created financial strain, particularly for those without caregivers or with interrupted income due to hospitalisation. Nutritional practice was frequently dictated by affordability rather than clinical recommendation.

"We buy food, it is somehow far from a change in food. The patient has to buy food from outside which is quite far, if the patient has no caretaker he relies on someone else's caretaker. (P1, Female, 45 years, 5 years on ART)"

These economic constraints illustrate the concept of perceived barriers within the HBM: structural obstacles to enacting health behaviours that positive attitudes alone cannot overcome. The contrast between P1 who reported stable informal employment—and other participants highlighted the centrality of economic agency in determining whether nutritional knowledge could be translated into practice.

Caregiver-mediated barriers

Caregivers were a consistently present but underutilised resource in the nutrition education process. Where caregivers lacked nutritional knowledge, dietary decisions were based on general assumptions rather than clinical guidance. In one case, prior negative experiences with healthcare services had generated institutional distrust, which carried over to reluctance to engage with counselling.

"The caretaker does not know anything about what nutrition is and how it should help. The patient has not been given any counsellor, nor the caretaker. (P2 caregiver)"

"At Nsambya Hospital they were calling us to take us for counselling and the caretaker refused counselling because he was being told to take PREP drugs, of which we resisted. (P3 caregiver/wife)"

These accounts demonstrate that the HBM's individual-focused constructs are insufficient to capture the relational dynamics of inpatient nutrition behaviour. Caregiver beliefs and prior institutional experiences functioned as indirect moderators of patients' cues to action and perceived self-efficacy.

Clinical barriers

Clinical instability manifested as appetite loss, nausea, vomiting, and generalised weakness reduced both patients' capacity to consume food and their cognitive availability to engage with health information. Paradoxically, the same clinical severity that heightened perceived susceptibility simultaneously diminished the practical capacity for behavioural implementation.

"The patient has less appetite, she rarely eats, eating has not been easy. The patient was vomiting last week, she was not having an appetite, so the small she was taking she vomited. (P2 caregiver report)"

This finding suggests that nutrition education in inpatient settings requires a staged, iterative approach calibrated to patients' clinical trajectories, rather than a single-episode counselling intervention. The tension between heightened perceived susceptibility and diminished implementation capacity is not adequately addressed by the standard HBM formulation.

Discussion

This study offers original qualitative evidence of systematic absence of nutrition education from an HIV inpatient ward in a major tertiary referral hospital in sub-Saharan Africa, and one with important implications outside of the context of the ward studied. The most consequential of these is that six of seven participants received no dietary counselling whilst in inpatient admission and that there was no ward-based nutritionist in attendance; this highlights a fundamental failure to operationalise NACS policy at the bedside. We call this condition structural silence: an institutionally produced, systemic lack of nutrition education that is separate from provider-level isolated oversights.

This finding expands and deepens evidence of implementation gaps in nutrition services for PLHIV. Bukusuba et al. [15] has documented serious discrepancies between the nutrition training among health workers and the actual dietary practices among the patients in eastern Uganda. Nakakawa et al. [31] and described barriers at the provider level to incorporating nutrition counselling into HIV services in Uganda. Coe et al. [20] found provider workload and resource limitations to be driving factors in missed opportunities for nutrition education in the western Kenya. The present study goes further by showing that in a high-volume tertiary facility, the gap is expressed, not as inconsistent delivery, but as total institutional silence, a qualitatively different and more severe type of service failure.

The divergence from intervention studies such as Ezenwosu et al. [16], Silveira et al. [32] that showed measurable improvements in dietary diversity and clinical outcomes where structured nutrition education was systematically delivered are instructive: the problem at MNRH is not insufficient evidence of effectiveness, it is insufficient integration of evidence into institutional practice. This is consistent with national performance data which report low NACS coverage in Kampala district [14].

The self-efficacy deficit, and the institutional causes

The second major finding that patients all had positive attitudes about nutrition but a striking lack of ability to act on these attitudes is a theoretically and practically significant contribution. Within the HBM, self-efficacy refers to a person's belief in his or her ability to perform a healthy behaviour [21]. The present study shows that in structurally constrained acute settings, self-efficacy is not primarily a psychological attribute, but an institutionally produced condition: patients were lacking not motivation, but the informational scaffolding, professional guidance and structural support that is needed to translate positive beliefs into dietary practice.

This finding is consistent with attitudinal and KAP studies done in India [33], Ghana [17] and Uganda [31], which report positive attitudes co-existing with poor adherence to diet. The present study offers a qualitative explanation for this recurrent discrepancy: the discrepancy is not based on attitudes but on operations, on institutional silence rather than individual apathy. The implication is that education-only interventions to target patient knowledge will not be sufficient where the infrastructure for education is absent.

Intersecting barriers and limitations of individual level models

The analysis of barriers shows the presence of a cumulative architecture in which health-system, economic, caregiver-mediated and clinical constraints interact and reinforce each other. Food insecurity, which has been described in Ugandan and Ethiopian literature as a major structural factor that hinders adherence to nutrition among PLHIV [19, 34, 35] was worsened by lack of institutional feeding support and financial burden created by hospitalisation. Caregiver distrust and lack of knowledge in line with the findings from Dunkley et al. [36] and Kafulafula et al. [37] further hindered access to information. Clinical instability accompanied by increased perceived susceptibility resulted in an incongruous reduction in the practical ability to actually implement the behaviour, a tension that was earlier described by Rodrigues et al. [38].

These intersecting constraints highlight a shortcoming of the standard HBM as an explanatory framework in this context. The model, with its focus on individual cognitive appraisal, neglects structural and relational determinants of health behaviour. The current results indicate that Contento's [39] ecological approach to nutritional education, which incorporates environmental and institutional determinants in addition to individual motivational factors, provides a higher level of explanatory adequacy for structurally constrained in-hospital settings. The empirically adapted HBM developed in this study, which incorporates facility-level silence, economic hardship, caregiver mediation, and clinical instability in addition to traditional constructs may prove a more useful theoretical scaffold for intervention design in similar settings.

The fact that inpatient nutrition is caregiver-mediated also underlines a need to broaden the unit of analysis beyond the patient. Caregiver attitudes and previous experiences within the institution were indirect determinants of patient's signs to action and thus family-inclusive models of nutritional counselling are suggested not only to be beneficial but structurally required in contexts where caregivers are routinely present and serve as the primary route of accessing food. These intersecting constraints are synthesised in the adapted model in Fig. 1 which includes structural silence, economic hardship, caregiver mediation and clinical instability in addition to traditional HBM constructs.

Implications for policy and practice

The findings have immediate practical implications for MNRH, and similar tertiary HIV facilities in sub-Saharan Africa. At the ward level, the designation of at least one ward-based dedicated nutritionist for

the HIV inpatient unit is the single most critical intervention. This professional should include nutritional assessments, structured counselling to patients and caregivers, and work with clinicians to incorporate nutrition into inpatients care plans from admission onwards. The simple integration of standardised nutrition messaging into routine clinical measurements of particular weight and height is a cost-neutral, immediately feasible intervention which addresses the procedural-educational disjunction seen in this study.

Caregivers should be systematically included as co-recipients of nutrition counselling. The documentation for admission should identify the primary caregiver and visiting hour schedules must be arranged for counselling. Given the economic barriers identified, MNRH and implementing partners should set up nutritional support mechanisms for food-insecure patients, associated with the results of nutritional assessment, and focusing on malnourished or economically vulnerable individuals.

At the policy level, the Ministry of Health should update NACS monitoring indicators to reflect measures of the quality and delivery of education, and not merely assessment rates. Such indicators should include whether dietary counselling took place, whether caregivers were included, whether results of assessment were explained to patients, whether patient-reported confidence in dietary practice was improved between admission and discharge. These revisions would enhance the accountability mechanisms needed to fill the persistent gap between national nutrition mandates and ward-level implementation.

Strengths and Limitations

This study is strengthened by its theoretically grounded design, by adhering to Braun and Clarke's reflexive thematic analysis in the application of the trustworthiness criteria outlined by Lincoln and Guba. The use of NVivo helped to manage data in a systematic and transparent manner. The research addresses a large gap in the evidence base in that it presents original qualitative data from a large national referral hospital, a context that has been largely missing from the body of qualitative research on HIV nutrition education. The simultaneous collection of field notes and caregiver accounts improved triangulation and contextual depth.

The study is not without limitations and these should be noted. The qualitative nature of the design and the purposive single-site sample does not allow for statistical generalisability. Although seven participants reached the point of thematic saturation for this particular inpatient population, the findings cannot be assumed to apply to other population subgroups or facilities. Healthcare provider perspectives were not included; provider account incorporation in future studies will make future research more complete in terms of institutional constraints in counselling delivery. Social desirability bias cannot be ruled out but triangulation through field observation and caregiver accounts lessened this hazard to some extent. The cross-sectional design makes it difficult to understand how perceptions change over the course of care. Transferability of findings to similar high-volume, resource-constrained tertiary HIV care facilities in sub-Saharan Africa is plausible given the similarities of context, but should be evaluated by those applying the findings.

Conclusions

This study concludes that structured nutrition education is systemically absent from the HIV inpatient ward at MNRH, a tertiary facility that nevertheless serves as a policy model for HIV care nationally and sub-regionally. This structural silence reflects an institutional failure to translate national NACS policy mandates into ward-level practice, with direct consequences for patients' nutritional self-efficacy and dietary behaviour during admission. Patients' broadly positive attitudes toward nutrition represent a critical motivational asset that is being structurally squandered by the absence of professional guidance, consistent institutional reinforcement, and practical food support.

The intersecting and cumulative barriers identified health-system deficiencies, food insecurity, caregiver knowledge gaps, and clinical instability cannot be addressed by informational interventions alone. Multi-component strategies integrating ward-based nutritionist appointment, caregiver-inclusive counselling, institutionalised feeding support, and revised performance monitoring are required. These recommendations are specific, evidence-traceable, and consistent with Uganda's existing legal and policy frameworks; they represent achievable programmatic priorities within the next planning cycle.

The empirically adapted HBM developed from this study incorporating structural silence, caregiver mediation, economic constraint, and clinical instability alongside traditional constructs offers a theoretically grounded and practically useful framework for designing and evaluating nutrition education interventions in high-volume tertiary HIV care settings across sub-Saharan Africa. Future multi-site, longitudinal, and provider-inclusive research is needed to confirm and extend these findings.

Abbreviations

ART
Antiretroviral Therapy
ARV
Antiretroviral
HBM
Health Belief Model
HIV
Human Immunodeficiency Virus
KAP
Knowledge, Attitudes, and Practices
LMIC
Low- and Middle-Income Country
MNRH
Mulago National Referral Hospital
MOH
Ministry of Health (Uganda)

NACS
Nutrition Assessment, Counselling and Support
NVivo
Qualitative Data Analysis Software
PLHIV
People Living with HIV
SCT
Social Cognitive Theory
UNAIDS
Joint United Nations Programme on HIV/AIDS
WHO
World Health Organization

Declarations

Ethics approval and consent to participate

Ethical approval for this study was given by the Clarke International University Research Ethics Committee (CIU-REC). All procedures were done according to the principles of the Declaration of Helsinki and the guidelines of the Uganda National Council for Science and Technology. Written informed consent was obtained from all participants before the commencement of the interview. A consent form in Luganda was made available to participants who had limited proficiency in English; where necessary, the consent form was read aloud and verbal consent was audio-recorded. Participation was completely voluntary and participants were made aware of their right to withdraw at any time without consequence to their continued clinical care at MNRH.

Consent for publication

Not applicable. No individual person's identifying data, images, or videos are included in this manuscript. All participant data have been fully anonymised utilizing participants codes.

Availability of data materials

The datasets generated and analysed during the current study are not publicly available because of the sensitive nature of clinical and personal data relating to HIV and participant confidentiality requirements. Data is available from the corresponding author upon reasonable request, based on attached ethical and institutional conditions.

Competing interests

The author has no competing interests.

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Authors' contributions

KS conceptualised and designed the study, developed the interview guide, developed all data and fieldwork, thematic analysis and drafted the manuscript.

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Figures

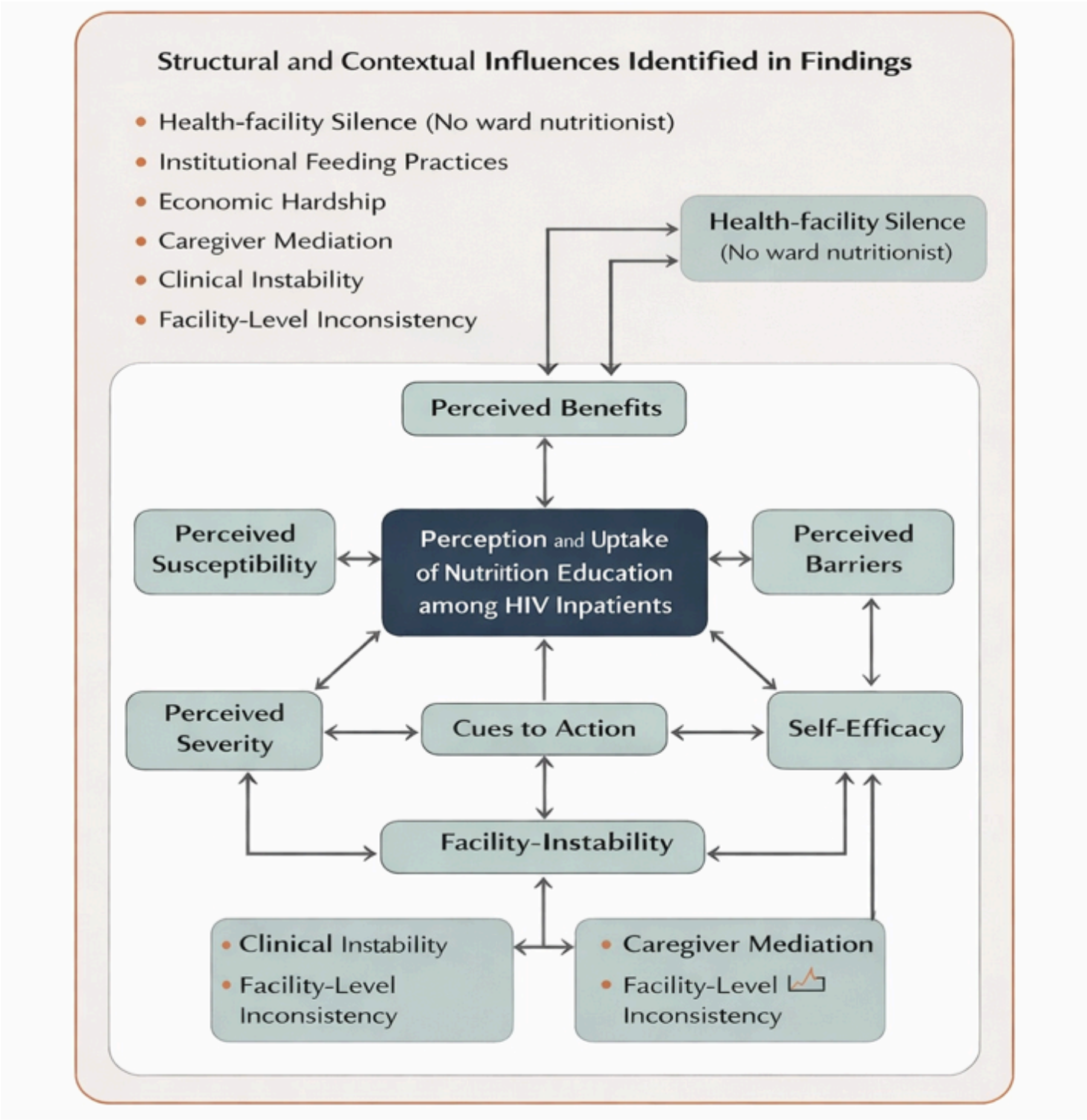


Figure 1

presents an empirically adapted Health Belief Model synthesising how structural and contextual influences shaped perceptions and uptake of nutrition education among HIV inpatients at MNRH.