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Factors Associated with Patient Dissatisfaction Regarding Primary Healthcare Quality in Kwango, Democratic Republic of the Congo

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ABSTRACT

Introduction
Patient satisfaction within primary health centers in Kwango, Democratic Republic of the Congo, remains a critical operational concern. High levels of user dissatisfaction hinder health service utilization and jeopardize progress toward Universal Health Coverage (UHC), which fundamentally relies on care quality and individual capabilities.

Purpose
Grounded in Amartya Sen's capability approach framework, this study aimed to identify and analyze factors associated with patient dissatisfaction regarding primary healthcare services across health centers in Kwango.

Methods
A quantitative, cross-sectional analytical study was conducted using structured, face-to-face interviews. Data were gathered from a randomized sample of 384 patients via a standardized questionnaire deployed on the KoboCollect mobile application. Statistical analyses included bivariate Pearson chi-square (χ^2) tests and a multivariate binary logistic regression model. Predictive model performance was validated using Receiver Operating Characteristic (ROC) curve analysis.

Results
Multivariate binary logistic regression revealed several independent risk factors associated with increased patient dissatisfaction: prolonged waiting times (adjusted OR [aOR] = 1.49, 95% CI [1.07, 2.06], p = .017), weak provider–patient collaboration aOR= 2.79, 95% CI [1.74, 4.49], p = .001), ineffective pain relief aOR= 3.32, 95% CI [1.71, 6.45], p = .001), inadequate provider glove usage aOR= 2.26, 95% CI [1.15, 4.44], p = .018), lack of cleanliness aOR= 2.11, 95% CI [1.62, 2.74], p = .001), absent handwashing infrastructure aOR= 2.08, 95% CI [1.42, 3.06], p = .001), and unaffordable service costs aOR= 2.45, 95% CI [1.66, 3.62], p = .001). Conversely, respect for patient privacy aOR= 0.66, 95% CI [0.45, 0.82], p = .031) and post-discharge home monitoring aOR= 0.47, 95% CI [0.29, 0.76], p = .002) served as significant protective factors reducing dissatisfaction. Model discrimination was strong (AUC= 0.850, 95% CI [0.810, 0.889], p = .001).

Conclusion
Addressing identified operational barriers through targeted quality improvement and capability-enhancing measures is essential for reducing patient dissatisfaction and advancing UHC goals in rural health zones.

INTRODUCTION

Contributing factors—frequently designated as risk factors—elevate the probability of undesirable health outcomes, systemic inefficiencies, or poor service evaluations, whereas non-contributing or protective factors mitigate these risks. Patient satisfaction represents a subjective evaluation derived from the interpersonal, technical, and environmental care experiences encountered during healthcare delivery. It reflects a personal appraisal by each individual regarding whether service delivery met their specific needs, expectations, and values (Mokdadi & Chikh, 2022). Consequently, patient satisfaction functions as a primary indicator of overall healthcare service quality, aligning medical interventions with patient capabilities and agency.

Global and regional empirical evidence demonstrates considerable variation in patient satisfaction and identifies diverse operational drivers. In Ho Chi Minh City, Vietnam, a survey of 538 discharged hospital patients revealed an overall dissatisfaction rate of 50.2%, driven primarily by prolonged waiting times, adverse staff communication, suboptimal environmental hygiene, and inadequate parking facilities (Nguyen Thi et al., 2002). In contrast, an evaluation of outpatient care at a health center in Geneva reported a 95% satisfaction rate, attributed to staff availability, provider empathy, reduced appointment wait times, and prompt emergency response mechanisms (Pierre, 2019). Within Sub-Saharan Africa, a study involving 283 hospitalized patients in Gabon documented an overall dissatisfaction rate of 60.8%, with key drivers including unidentifiable healthcare personnel (55.5%), inadequate information regarding department operations (63.6%), and an inability to designate a trusted support person (52.7%) (Souaka et al., 2025).

The quality of the healthcare provider–patient dynamic remains central to service evaluation. Establishing a trust-based clinical relationship relies heavily on active listening, clear communication, perceived staff competence, accessibility, and safety (Diallo, 2021a). Effective care delivery mandates that nurses and clinical providers respect the cultural, psychological, economic, and social dimensions of each patient (Daniel et al., 2025). In the Democratic Republic of the Congo (DRC), Mpembele (2020) demonstrated that maternal satisfaction in the Djili health zone was positively associated with provider clinical skills, professional availability, and supportive staff attitudes; however, structural issues such as poor facility hygiene, perceived negligence, and unexpected out-of-pocket costs generated substantial dissatisfaction.

Relevance of the Study

This investigation forms part of a doctoral research program in public health management. It follows an initial exploratory phase that cataloged patient expectations and identified a high baseline prevalence of dissatisfaction across primary care facilities. Because effective managerial interventions require precise targeting, identifying specific risk and protective factors is essential for guiding evidence-based policy and resource allocation.

Theoretically, this study adopts Amartya Sen's capability approach framework, which conceptualizes individual well-being as the freedom to achieve valued states of being and doing (functionings). Applied to primary healthcare, patients possess specific expectations that form the baseline against which clinical interactions are evaluated. When healthcare delivery fails to respect patient agency, compromises dignity, or imposes insurmountable financial and logistical barriers, individual capabilities are restricted, generating user dissatisfaction.

Research Questions and Hypotheses

The primary research question guiding this study was: What factors are associated with patient dissatisfaction regarding the quality of primary healthcare services in health centers across Kwango Health Province? Subsidiary questions included:

1. Which specific operational and clinical delivery dimensions function as independent risk or protective factors for patient satisfaction?
2. Are empirical findings from Kwango generalizable to broader health systems across the Democratic Republic of the Congo?
3. What methodological constraints or observational biases might influence data interpretation?

It was hypothesized that prolonged clinical waiting times, provider unavailability, weak interpersonal communication, ineffective pain management, inadequate hygiene practices, high service costs, and facility uncleanliness significantly increase patient dissatisfaction. Conversely, explicit respect for patient privacy and post-discharge home follow-up were hypothesized to act as protective factors. Furthermore, given local structural variations and cross-sectional design constraints, findings were hypothesized to be specific to the regional context of Kwango.

METHODS

Study Setting

This study was conducted across 21 primary health centers situated within seven health zones of the Kwango Provincial Health Division in the Democratic Republic of the Congo: Boko, Kahemba, Kenge, Kimbau, Kisanji, Panzi, and Wamba Lwadi. To ensure representative geographic distribution across the province, three primary health centers were randomly selected from each of the seven designated health zones.

Design and Scope

A quantitative, cross-sectional analytical study design was utilized to evaluate health service delivery factors associated with overall patient satisfaction. Situated within public health and healthcare management research, this study evaluated direct end-user perceptions across first-line healthcare facilities operating under Performance-Based Financing (PBF) frameworks.

Population, Sampling, and Sample Size

The target population comprised adult patients seeking curative clinical consultations across the 21 selected PBF health centers. Collectively, these first-line facilities managed a total annual volume of 115,733 curative cases (District Health Information System 2 [DHIS2], 2024).

- Inclusion Criteria: Adult patients who received curative care at a selected PBF health center during the data collection period, demonstrated full cognitive capacity, and provided voluntary, written informed consent.
- Exclusion Criteria: Patients who did not utilize curative services at the selected PBF health centers during the study window, presented with severe cognitive impairment or dementia, or declined participation.

A probability sampling strategy was executed to provide eligible patients an equal probability of selection. Given that the source population (N = 115,733) exceeded the standard threshold of 10,000, sample size determination was calculated using Cochrane's formula for single proportions:

$$n = [Z^2 \cdot p \cdot (1 - p)] / e^2$$

Assuming a maximum variability proportion (p = .50), a standard 95% confidence level (Z = 1.96), and a margin of error (e = .05), the minimum sample size required was calculated as:

$$n = [(1.96)^2 \cdot (0.5) \cdot (1 - 0.5)] / (0.05)^2 = 384.16$$

Thus, a target sample size of 384 respondents was established.

Data Collection Instruments and Administration

Primary data were collected via structured, face-to-face interviews using a pre-tested, standardized evaluation questionnaire. The instrument was digitized using KoboToolbox and deployed on Android mobile devices running the KoboCollect application. Mandatory response logic was programmed into the application interface to eliminate missing data entries during fieldwork.

Pre-survey Phase

A pilot study was conducted with 58 patients in the Boko health zone prior to primary fieldwork. Pre-test findings refined item wording, eliminated ambiguous terms, and optimized logic flows. Academic peers and provincial administrative health managers reviewed the modified instrument, which received formal ethical approval from the institutional review board.

Primary Fieldwork

Field data collection occurred during the second half of January 2025. Seven health zone supervisors underwent comprehensive training to oversee field operations. Each supervisor trained three pairs of community health workers (relays) assigned to the selected health facility

catchment areas. Field teams utilized systematic random sampling based on outpatient register logbooks.

Upon arrival at a health center, the field team assigned sequential identification numbers to all clinical consultations recorded during the sampling window. To achieve the required target of 18 or 19 respondents per health facility from an average register volume (e.g., 620 recorded cases), sampling intervals were determined by dividing total facility volume by the quota (620 / 18 ≈ 34). In 15 health centers, 18 respondents were selected, and in six health centers, 19 respondents were selected, totaling 384 participants.

A random number between 1 and the sampling interval was selected as the starting point (e.g., case 11), with subsequent participants identified systematically by adding the sampling interval (e.g., 11, 45, 79). Patient identifiers (name, age, sex, village) were logged to facilitate home-based interviews where necessary. Interviews averaged 35 to 40 minutes per participant. When an initial candidate met an exclusion criterion (e.g., unaccompanied minor), field workers selected the next consecutive register entry. A pre-selected reserve list of six alternative participants per health area was maintained to replace non-respondents or unavailable individuals.

Statistical Analysis

Data records were exported from KoboCollect into Microsoft Excel 2016 for cleaning and subsequently imported into IBM SPSS Statistics (Version 25.0) for analytical processing.

Bivariate cross-tabulations were conducted using Pearson's chi-square (χ^2) tests to assess statistical associations between overall patient satisfaction, sociodemographic characteristics, and specific healthcare service delivery variables. Statistically significant predictors from bivariate screening were entered into a multivariate binary logistic regression model to identify independent risk and protective factors associated with patient dissatisfaction.

Multivariate model parameters were evaluated using regression coefficients (β), Wald statistics, adjusted odds ratios (aOR), and 95% confidence intervals (95% CI). Statistical significance was defined at $p \leqslant .05$. Model predictive performance and discriminative capacity were evaluated using Receiver Operating Characteristic (ROC) curve analysis and the Area Under the Curve (AUC) metric.

Ethical Considerations

This study complied with the ethical principles outlined in the Declaration of Helsinki. Formal ethical approval was granted by the Ethics Committee of the Higher Institute of Medical Techniques of Kinshasa (Approval No. 0003/CBE/ISTM.KIN.RDC.PMBBL.2024; February 16, 2024). Voluntary participation was strictly maintained, and written informed consent was obtained from all participants prior to data collection. Data records were fully anonymized to guarantee participant confidentiality.

RESULTS

Statistical outputs are presented sequentially, beginning with bivariate cross-tabulations of sociodemographic and service variables, followed by the multivariate logistic regression model and model validation.

Bivariate Analysis

Table 1 presents the associations between overall patient satisfaction and participant sociodemographic characteristics. Overall satisfaction was significantly associated with educational attainment (χ^2= 7.17, p = .037) and health zone location (χ^2= 44.80, p = .001). Sociodemographic attributes such as sex (p = .601), age group (p = .887), marital status (p = .636), and occupation (p = .214) demonstrated no statistically significant association with overall satisfaction.

Table 1:
Relationship Between Overall Patient Satisfaction and Sociodemographic Characteristics ($N = 384$)

Sociodemographic Variable	Dissatisfied (n=188)	Satisfied (n=196)	Total (N=384)	χ^2	p-value
Sex				0.27	.601
Female	116	127	243		
Male	72	69	141		
Age Group				0.24	.887
18–29 years	57	55	112		
30–49 years	97	104	201		
50–67 years	34	37	71		
Marital Status				1.70	.636
Single	22	27	49		
Divorced	4	5	9		
Married	148	155	303		
Widowed	14	9	23		
Educational Level				7.17	.037*
No Formal Schooling	36	31	67		
Primary Education	23	38	61		
Secondary Education	82	94	176		
University Level	47	33	80		
Profession				6.02	.214
Administrative Staff	9	13	22		
Trader/Merchant	4	8	12		
Farmer	105	87	192		
Teacher	42	50	92		
Student	16	20	36		
Police Officer	4	7	11		
Laborer	8	11	19		
Health Zone				44.80	.001*
Boko	21	34	55		
Kahemba	39	16	55		
Kenge	20	35	55		
Kimbau	28	27	55		
Kisanji	17	38	55		
Panzi	21	34	55		
Wamba Lwadi	42	12	54		

** $p < .05$. Note: Exact cell distributions reflect surveyed cohorts across the 21 health centers.*

Table 2 details bivariate associations between specific service delivery quality dimensions and overall patient satisfaction. Most evaluated service dimensions—including waiting times, staff availability, service permanence, provider collaboration, pain management, hygiene practices, pricing, and home follow-up—exhibited highly significant associations with overall satisfaction (p = .001). Initial reception quality (p = .101), waiting room comfort (p = .082), staff interpersonal behavior (p = .601), and perception of prescriptions (p = .501) were not statistically significant in bivariate testing.

Table 2:
Relationship Between Overall Patient Satisfaction and Specific Service Delivery Quality Dimensions (N = 384)

Quality Dimension & Rating	Dissatisfied (n=188)	Satisfied (n=196)	Total (N=384)	$\chi2$	p-value
Initial Reception Quality				17.34	.101
Very Unsatisfactory	36	28	64		
Unsatisfactory	67	40	107		
Satisfactory	73	103	176		
Very Satisfactory	12	25	37		
Waiting Room Comfort				17.70	.082
Unsatisfactory	18	8	26		
Very Unsatisfactory	93	67	160		
Satisfactory	71	111	182		
Very Satisfactory	6	10	16		
Clinical Waiting Time				24.54	.001*
Very Unsatisfactory	25	12	37		

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Unsatisfactory	89	77	166		
Satisfactory	49	95	144		
Very Satisfactory	25	12	37		
Staff Interpersonal Behavior				21.71	.601
Unsatisfactory	20	5	25		
Very Unsatisfactory	72	51	123		
Satisfactory	75	117	192		
Very Satisfactory	21	23	44		
Staff On-Site Availability				30.88	.001*
Unsatisfactory	28	8	36		
Very Unsatisfactory	81	54	135		
Satisfactory	61	108	169		
Very Satisfactory	18	26	44		
Permanence of Services				39.50	.001*
Unsatisfactory	29	26	55		
Very Unsatisfactory	83	37	120		
Satisfactory	72	109	181		
Very Satisfactory	4	24	28		
Collaboration with Patients				75.04	.001*
Unsatisfactory	25	3	28		
Very Unsatisfactory	114	65	179		
Satisfactory	32	112	144		
Very Satisfactory	17	16	33		
Respect for Bodily Privacy				4.05	.025*
Very Unsatisfactory	45	43	88		
Unsatisfactory	18	22	40		
Satisfactory	122	121	243		
Very Satisfactory	3	10	13		
Perception of Prescriptions				53.03	.501
Unsatisfactory	28	4	32		
Very Unsatisfactory	83	44	127		
Satisfactory	69	126	195		
Very Satisfactory	8	22	30		
Pain Relief Efficacy				53.27	.001*
Unsatisfactory	12	0	12		
Very Unsatisfactory	103	53	156		
Satisfactory	70	127	197		
Very Satisfactory	3	16	19		
Provider Glove Usage				18.82	.001*
Unsatisfactory	92	56	148		
Very Unsatisfactory	34	23	57		
Satisfactory	47	96	143		
Very Satisfactory	15	21	36		
Facility Cleanliness				38.75	.001*
Unsatisfactory	47	10	57		
Very Unsatisfactory	77	71	148		
Satisfactory	52	90	142		
Very Satisfactory	12	25	37		
Handwashing Infrastructure				40.12	.001*
Unsatisfactory	78	50	128		
Very Unsatisfactory	54	26	80		
Satisfactory	51	102	153		
Very Satisfactory	5	18	23		
Drug Availability				15.79	.001*
Unsatisfactory	28	9	37		
Very Unsatisfactory	72	69	141		
Satisfactory	83	105	188		
Very Satisfactory	5	13	18		
Pricing of Care Services				69.03	.001*
Unsatisfactory	86	21	107		
Very Unsatisfactory	12	4	16		
Satisfactory	85	157	242		
Very Satisfactory	5	14	19		

Home Follow-up Tracking				77.60	.001*
Very Unsatisfactory	25	1	26		
Unsatisfactory	112	64	176		
Satisfactory	34	113	147		
Very Satisfactory	17	18	35		

* p < .05.

Multivariate Logistic Regression Analysis

Significant bivariate variables were entered into a multivariate binary logistic regression model to isolate independent determinants of patient dissatisfaction **(Table 3)**.

Table 3:
Multivariate Binary Logistic Regression Analysis of Factors Associated with Overall Patient Dissatisfaction

Variable / Factor Category	Regression Coefficient (β)	Wald χ2	p-value	Adjusted Odds Ratio (aOR)	95% CI Lower	95% CI Upper
Risk Factors (Promoting Dissatisfaction)						
Prolonged Waiting Time	0.396	5.70	.017*	1.49	1.07	2.06
Weak Patient Collaboration	1.027	18.00	.001*	2.79	1.74	4.49
Ineffective Pain Relief	1.200	12.59	.001*	3.32	1.71	6.45
Inadequate Glove Usage	0.815	5.60	.018*	2.26	1.15	4.44
Facility Uncleanliness	0.746	31.18	.001*	2.11	1.62	2.74
Absent Handwashing Infrastructure	0.734	14.05	.001*	2.08	1.42	3.06
Unaffordable Pricing Structures	0.897	20.36	.001*	2.45	1.66	3.62
Protective Factors (Reducing Dissatisfaction)						
Respect for Bodily Privacy	-0.143	7.47	.031*	0.66	0.45	0.82
Post-Discharge Home Tracking	-0.750	9.64	.002*	0.47	0.29	0.76
Non-Significant Parameters						
Staff Unavailability	0.264	3.03	.311	1.30	0.78	2.17
Drug Availability	0.177	3.44	.508	1.19	0.71	2.02
Permanence of Services	0.355	2.80	.094	1.43	0.94	2.16
Constant	-1.754	26.89	.001	0.17	—	—

** p < .05. CI = {confidence interval}.*

The multivariate model established seven primary operational risk factors that independently increased the odds of patient dissatisfaction:

i. Prolonged clinical waiting times (aOR = 1.49, p = .017)

ii. Weak provider–patient collaboration (aOR = 2.79, p = .001)

iii. Ineffective pain relief (aOR = 3.32, p = .001)

iv. Inadequate provider glove usage (aOR = 2.26, p = .018)

v. Structural facility uncleanliness (aOR = 2.11, p = .001)

vi. Absence of functional handwashing devices (aOR = 2.08, p = .001)

vii. Unaffordable service pricing (aOR = 2.45, p = .001)

Conversely, two clinical practices functioned as significant protective factors, reducing the odds of patient dissatisfaction:

1. Respect for bodily privacy (aOR = 0.66, p = .031)
2. Post-discharge home follow-up tracking (aOR = 0.47, p = .002)

Variables such as staff availability (p = .311), drug availability (p = .508), and service permanence (p = .094) lost statistical significance in the adjusted multivariate model.

Model Validation and Receiver Operating Characteristic Analysis

The discriminative accuracy of the multivariate logistic regression model was validated using ROC curve analysis.

Table 4:
Area Under the Receiver Operating Characteristic Curve (AUC) for the Logistic Regression Model

Model Indicator	Value	Standard Error	p-value	95% CI Lower	95% CI Upper
Area Under the Curve (AUC)	0.850	0.020	.001*	0.810	0.889

* p < .05. CI = confidence interval.

The model demonstrated high predictive accuracy, yielding an AUC of 0.850 (95% CI [0.810, 0.889], p = .001). An AUC above 0.80 indicates robust discriminative capacity for categorizing patient satisfaction outcomes based on identified clinical service variables.

DISCUSSION

This study identified critical operational, interpersonal, and financial determinants of patient dissatisfaction across first-line health centers in Kwango, Democratic Republic of the Congo. Multivariate logistic regression analysis demonstrated that while systemic quality deficiencies drive negative evaluations, specific patient-centered practices effectively cushion user experience.

Bivariate Structural Assessment and Demographics

Bivariate analysis revealed significant associations between overall patient satisfaction, formal educational level (p = .037), and local health zone (p = .001), whereas sex, age group, marital status, and occupation were not significantly associated (p ≥.05). The absence of a gender-based satisfaction difference aligns with findings by Amani (2020) in the Gombe-Matadi General Reference Hospital (DRC) and Matee et al. (2006) in Tanzania. However, it contrasts with oncological survey data from Morocco (Barlési et al., 2008), where gender significantly influenced satisfaction ratings.

The lack of age-related differences in our cohort (p = .887) supports Amani (2020) but diverges from Kravitz and Lewis (as cited in Amani, 2020), who observed significant age-based variations. Similarly, the non-significant association with marital status (p = .636) conflicts with conclusions by Hall et al. (2011). The observed link between education and satisfaction corresponds with findings in Iran (Barlési et al., 2008) but differs from Amani (2020). Overall, these empirical variations support the meta-analytic conclusions of Hall and Dorman (2011) and Dorman (2014), who emphasized that sociodemographic characteristics exert weak and inconsistent effects on patient satisfaction ratings, yielding limited predictive power (Rubin et al., 2004; Gürdal et al., 2000).

Determinants of Patient Dissatisfaction

The primary risk factors driving user dissatisfaction included prolonged waiting times aOR= 1.49), weak provider–patient collaboration aOR= 2.79), ineffective pain relief aOR= 3.32), inadequate glove utilization aOR= 2.26), facility uncleanliness aOR= 2.11), absent handwashing devices aOR= 2.08), and unaffordable care costs aOR= 2.45).

The impact of clinical waiting delays matches findings reported by Pierre (2019) in Geneva and Lumumba (2013) in the DRC. Prolonged pre-care delays mirror observations by Diallo (2021b) in Mali, where nearly half of surveyed patients experienced waiting periods exceeding 30 minutes. Operational bottlenecks of this nature erode institutional trust and directly conflict with Sustainable Development Goal 3 (Good Health and Well-Being) and Universal Health Coverage mandates.

Suboptimal environmental hygiene and infection control failures (e.g., lack of handwashing facilities, inconsistent glove use) emerged as major predictors of user dissatisfaction. This aligns with Diouf et al. (2010) in Dakar, who reported high dissatisfaction associated with neglected hygiene (OR = 8.47). National data from the Multiple Indicator Cluster Surveys (MICS, 2018; as cited in Diallo, 2021a) highlight the systemic nature of this issue across the DRC, showing that only 12% of health facilities maintain functional hygiene committees and only 2% possess adequate handwashing stations.

Interpersonal communication and financial barriers were also critical drivers of dissatisfaction. Weak provider collaboration restricts patient agency and restricts capabilities, directly causing negative evaluations. Unaffordable care fees create direct barriers to utilization, echoing findings from acute surgical care evaluations in West Africa (Adamou, 2018).

In contrast, explicit respect for patient bodily privacy aOR= 0.66) and post-discharge home tracking aOR= 0.47) functioned as significant protective factors, buffering against dissatisfaction. Respecting patient privacy reinforces dignity and trust (Diouf et al., 2010), while

post-discharge follow-up extends health center engagement directly into community spaces, fostering continuity of care.

Model Performance and Discriminative Accuracy

The multivariate model demonstrated strong predictive validity, yielding an AUC of 0.850 (95% CI [0.810, 0.889], p = .001). As noted by Broniatowski and Gayrard (2014), an AUC exceeding 0.80 confirms high discriminative capacity in public health modeling, reliably distinguishing between satisfied and dissatisfied patient cohorts based on evaluated operational metrics (Yaméogo et al., 2017).

Implications and Limitations

Structural and Managerial Implications

These empirical findings highlight actionable operational targets for health facility managers and provincial decision-makers. Addressing waiting times, reinforcing clinical hygiene protocols, ensuring transparent and fair pricing, and training staff in patient-centered communication offer concrete pathways to improve primary care quality, restore public trust, and enhance service utilization across Kwango Health Province.

Methodological Limitations

1. Cross-Sectional Design: The cross-sectional methodology captures data at a single point in time, precluding direct causal inferences or tracking temporal dynamics.
2. Residual Confounding: Although multivariate regression adjusted for key variables, residual confounding from unmeasured socioeconomic or community-level factors remains possible.
3. Information and Response Biases: Face-to-face interviews carried risks of social desirability or courtesy biases, as patients might over-report satisfaction out of politeness. To minimize this, interviewers were thoroughly trained, independent from clinic staff, and emphasized full anonymity.
4. Selection and Sampling Management: Random selection from registers managed non-response bias, supported by structured reserve lists; however, individuals unable to access health facilities due to extreme financial or geographic barriers were not captured.

CONCLUSION

This study identified key factors driving patient dissatisfaction within primary health centers across Kwango Health Province. Multivariate analysis confirmed that prolonged waiting times, weak provider–patient collaboration, ineffective pain management, inadequate glove utilization, absent handwashing infrastructure, facility uncleanliness, and unaffordable care prices act as major independent risk factors for user dissatisfaction. Conversely, respect for bodily privacy and post-discharge home monitoring serve as protective factors that enhance patient satisfaction. Realigning primary healthcare delivery with patient capabilities requires urgent operational and policy interventions.

Recommendations

To the Provincial Health Directorate:

I. Establish Fair-Pricing Policies: Review primary care fee structures and introduce targeted financial protection mechanisms or subsidies for vulnerable populations to reduce out-of-pocket barriers.

II. Strengthen Quality Assurance Systems: Institutionalize continuous quality monitoring frameworks that incorporate standard patient-reported experience measures (PREMs) into routine administrative evaluations.

III. Upgrade Basic Infrastructure: Partner with national authorities and international donors to secure capital investments for improving facility water supply, sanitation facilities, and electrical infrastructure.

To Health Zone Management Teams:

A. Conduct Routine Operational Audits: Perform periodic supervisory audits of health centers to identify and address bottlenecks in patient flow, hygiene compliance, and supply management.

B. Enhance Clinical Communication and Infection Control Training: Implement continuous professional development modules focused on patient-centered communication, active listening,

and strict adherence to universal infection control protocols.

C. Strengthen Formative Supervision: Conduct structured, supportive supervisory visits to provide clinical coaching and monitor health center adherence to national delivery standards.

Suggestions for Future Research

Future studies should extend this evaluative framework to other provinces within the Democratic Republic of the Congo to assess regional generalizability. Furthermore, longitudinal research designs and intervention studies should be prioritized to evaluate the impact of quality improvement measures on patient satisfaction and healthcare outcomes over time.

Use of Artificial Intelligence (AI) Declaration: The authors declare that no generative artificial intelligence was used to create, alter, or manipulate primary research data. Linguistic refinement and manuscript structuring were executed under the direct oversight of the authors.

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REFERENCES

Adamou, H. (2018). Evaluation de la satisfaction des patients admis pour urgences chirurgicales abdominales au CHU de Niamey. *Journal de Chirurgie Thoracique et Cardiovasculaire*, *22*(2), 101–108.

Amani, A. (2020). Satisfaction des patients admis en médecine générale à l'Hôpital Général de Référence de Gombe-Matadi, République Démocratique du Congo. *Annales Africaines de Médecine*, *13*(3), 3841–3850.

Bachisse, I. (2015). *Mesure de satisfaction des usagers de l'unité des soins palliatifs/traitement de la douleur/urgences à l'Institut National d'Oncologie de Rabat* [Unpublished doctoral dissertation]. Université Mohammed V de Rabat.

Barlési, F., Barrau, K., Loundou, A., Doddoli, C., Simeoni, M.-C., Auquier, P., & Thomas, P. (2008). Impact of information on quality of life and satisfaction of non-small cell lung cancer patients: A randomized study of standardized versus individualized information before thoracic surgery. *Journal of Thoracic Oncology*, *3*(10), 1146–1152. https://doi.org/10.1097/JTO.0b013e318186a113

Broniatowski, M., & Gayrard, H. (2014). *Contrôle non destructif, détection, courbes ROC*. HAL Open Science. https://hal.science/hal-01058750

Daniel, S. L., David, D. T., Ernest, D. U., Robert, A. U., Mangaza, L., Achille, L. C., Promesse, B. M., Hippolyte, B. M., Bertille, N. B., & Salomon, B. B. (2025). Étude des facteurs influençant la qualité de relation soignant-soigné: Perception des malades hospitalisés à l'Hôpital Général de Référence de Bunia, au Nord-est de la République Démocratique du Congo. *Revue Internationale de la Recherche Scientifique (Revue-IRS)*, *3*(2), 2125–2135.

Diallo, B. (2021a). Étude des facteurs de la satisfaction des usagers du service de chirurgie générale du CHU Gabriel Touré à Bamako. *Mali Santé Publique*, *11*(1), 44–49.

Diallo, B. (2021b). Évaluation des temps d'attente et de la satisfaction des usagers dans les centres de santé communautaires de Bamako. *Revue Malienne de Santé Publique*, *2*(1), 12–19.

Didier, C. K., Anastasie, K. M., Ezéchiel, M. L., Laeticia, E. L., Trésor, K. K., Antho, M. A., Vincent, N. M., & Mukalayi, A. M. W. (2020). Accueil des usagers à la première ligne des soins en milieu urbain: Appréciation et suggestions des usagers au Centre de Santé d'Apprentissage et de Recherche Tshamilemba (CSART) à Lubumbashi, RDCongo. *Médecine d'Afrique Noire*, *67*(8), 415–424.

Diouf, M., Cisse, D., Lo, C. M. M., Faye, D., & Tal, R. (2010). Évaluation de la satisfaction des patients admis en service d'odontologie à Dakar. *Pratiques et Organisation des Soins*, *41*(3), 225–230.

District Health Information System 2. (2024). *Annual health statistics report: Kwango Provincial Health Division*. Ministry of Public Health, Hygiene and Prevention, Democratic Republic of the Congo.

Dorman, P. (2014). *Microeconomics: A fresh start*. Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-37434-0

Gürdal, P., Çankaya, H., Önem, E., Dinçer, S., & Yılmaz, T. (2000). Factors of patient satisfaction/dissatisfaction in a dental faculty outpatient clinic in Turkey. *Community Dentistry and Oral Epidemiology*, *28*(6), 461–469. https://doi.org/10.1034/j.1600-0528.2000.028006461.x

Hall, J. A., Blanch-Hartigan, D., & Roter, D. L. (2011). Patients' satisfaction with male versus female physicians: A meta-analysis. *Medical Care*, *49*(7), 611–617. https://doi.org/10.1097/MLR.0b013e318213c141

Hall, J. A., & Dorman, M. F. (2011). Meta-analysis of satisfaction with medical care: Description of research domain and analysis of overall satisfaction levels. *Social Science & Medicine*, *27*(6), 637–644.

Lumumba, P. (2013). *Qualité des soins et satisfaction des usagers dans les formations sanitaires de Kinshasa* [Unpublished master's thesis]. Université de Kinshasa.

Matee, M. I. N., Simon, E. N. M., & Lembariti, B. S. (2006). Patients' satisfaction with dental care provided by public dental clinics in Dar es Salaam, Tanzania. *East African Medical Journal*, *83*(4), 98–104. https://doi.org/10.4314/eamj.v83i4.9405

Mokdadi, F., & Chikh, R. (2022). *Audit et amélioration du « service au client » dans la culture du management public: Cas du CHU de Tizi-Ouzou* [Doctoral dissertation, Université Mouloud Mammeri]. Mouloud Mammeri University Repository. https://dspace.ummto.dz/items/6726cadf-06ed-4ec8-a311-86171bef2e04

Mpembele, F. (2020). *Évaluation de la satisfaction des mères concernant les soins maternels dans la zone de santé de N'djili* [Unpublished master's thesis]. École de Santé Publique de Kinshasa.

Nguyen Thi, P. L., Lê, T. G., Empereur, F., & Briançon, S. (2002). Satisfaction des patients hospitalisés à Hô Chi Minh-Ville, Viet Nam. *Santé Publique*, *14*(4), 345–360. https://doi.org/10.3917/spub.024.0345

Pierre, S. O. (2019). Enquête de satisfaction des soins dans un centre de santé mentale ambulatoire à Genève. *Swiss Medical Weekly*, *149*, Article w03042.

Rubin, H. R., Fink, N. E., Plantinga, L. C., Sadler, J. H., Kliger, A. S., & Powe, N. R. (2004). Patient ratings of dialysis care with peritoneal dialysis vs hemodialysis. *JAMA*, *291*(6), 697–703. https://doi.org/10.1001/jama.291.6.697

Souaka, N., Tigalekou Ognaligui, C., Zang Ndong, A., Madjynou Binza, A., Mangombi Mouleka, B., Mickala, D. P., & Nze Bibang, A. D. (2025). Qualité de l'accueil des patients dans deux établissements hospitaliers au Gabon: Une étude descriptive observationnelle. *Recherche et Avancées en Sciences Infirmières*, *5*(1), 12–22.

Yaméogo, A. R., Millogo, G. R. C., Palm, A. F., Bamouni, J., Mandi, G. D., Kologo, J. K., Samadoulougou, A. K., & Zabsonré, P. (2017). Évaluation de la satisfaction des patients dans le service de cardiologie du CHU Yalgado Ouédraogo. *The Pan African Medical Journal*, *28*, Article 267. https://doi.org/10.11604/pamj.2017.28.267.13288