

Original Research Article

User satisfaction and priorities for improvement in public health services in rural Laos: a study of Phonthong district residents

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ABSTRACT

Background: Evaluating user satisfaction is essential for improving public health service quality, particularly in rural and resource-limited settings. This study assessed demographic characteristics, service utilization, satisfaction levels, and priority areas for improvement among public health services in Phonthong district, Luang Prabang Province, Lao PDR.

Methods: A cross-sectional survey was conducted among 377 individuals who had used public health services in the district. Information on demographic characteristics, service utilization, and satisfaction across 6 service dimensions were collected. Participants were also requested to rank 8 predefined areas for improvement with lower mean scores indicating higher priority.

Results: Most respondents were female (59.4%), married (84.6%), and employed in agriculture (72.4%). Over half lived within 1 km of a health facility (52.0%), and 54.9% had health insurance. In the previous year, 62.9% had utilized public health services, mainly for acute illness (36.6%) and routine check-ups (31.8%). Overall satisfaction was high (\bar{x} =3.64), with the highest scores for specific health services (\bar{x} =3.94) and financial aspects (\bar{x} =3.93). Moderate satisfaction was reported for administration and communication, accessibility, and facilities. Improving service quality and health education was identified as the top priority, followed by upgrading medical equipment and strengthening infrastructure and basic utilities.

Conclusions: Public health service users in Phonthong district generally reported positive experiences particularly regarding affordability. However, they clearly expressed a need for better service quality, equipment, and facility conditions. Addressing these priorities is essential for strengthening rural health services and improving rural public health services.

Keywords: Lao PDR, Public health services, Rural healthcare

INTRODUCTION

The global pursuit of Universal Health Coverage (UHC) necessitates the development of robust, equitable, and person-centered public health systems, particularly within developing nations such as the Lao People's Democratic Republic (Lao PDR). As established by the World Health

Organization, achieving UHC is fundamentally dependent on improving service quality, a metric intrinsically linked to user satisfaction and community trust.¹ While Lao PDR has achieved significant success in substantially improving key public health indices, such as reducing maternal mortality from 609 to 112 per 100,000 live births, inequalities in access to health services remain a

serious issue, particularly in remote and rural agricultural areas.^{2,3} Although the national health insurance scheme has expanded significantly, reaching near-universal coverage, persistent gaps remain in the perceived quality of care, which directly influences whether residents seek professional medical help or rely on traditional alternatives.^{4,5}

Phonthong District, located in the mountainous Northern province of Luang Prabang, exemplifies these multifaceted challenges. The local population consists predominantly of low-income farmers who must navigate difficult terrain and limited facility resources. Research in the region indicates that while structural infrastructure has improved, there remains a critical shortage of skilled health workers (often falling below the WHO recommended threshold of 2.28 per 1,000 population), which directly impacts service delivery at the district level.^{6,7} Furthermore, rural residents in this region often face "catastrophic health expenditures" despite insurance coverage, due to indirect costs like transportation and lack of specialized local services.^{8,9}

Understanding the unique needs of this rural demographic is essential for effective resource allocation, as general satisfaction levels often mask specific systemic weaknesses such as long wait times or limited communication between providers and patients. Recent literature suggests that factors like facility cleanliness, staff interpersonal skills, and administrative transparency are often more significant predictors of satisfaction than clinical outcomes alone.^{10,11} Phonthong District, established in 2009 and situated 232 kilometers from the provincial capital of Luang Prabang, serves as a vital representative of the remote, mountainous border regions in Northern Lao PDR. Sharing a strategic international border with the Socialist Republic of Vietnam, the district covers 1,378.7 km² and supports a multi-ethnic population of 21,754 residents, including Lao Loum (39%), Khmu (33%), and Hmong (28%) groups.

Socio-economically, the district faces significant development challenges, with approximately 35% of its 3,215 households classified as living in poverty.¹² This specific landscape characterized by high ethnic diversity, localized poverty, and geographic isolation makes Phonthong a critical priority for evaluating whether national policies like "5 Goods 1 Satisfaction" are effectively reaching vulnerable populations. Consequently, this study addresses a significant gap in local data by examining the demographic characteristics of 377 public health service users and assessing their satisfaction across 6 core dimensions: accessibility, staff and service quality, facilities and resources, specific health services, financial aspects, and administration and communication. By utilizing the Simple Multi-Attribute Rating Technique (SMART), the research ultimately aims to rank the most urgent priorities for improvement to inform evidence-based health sector reform in this unique border district.

METHODS

Study design and setting

This research employed a quantitative, cross-sectional design to evaluate the quality of health services from the perspective of the rural communities that rely on them. The study was situated at Phonthong District Hospital in Luang Prabang Province, Northern Laos. This location was deliberately selected because it encapsulates the complex realities of a representative rural district, characterized by a predominantly agricultural population navigating challenging mountainous terrain. Data collection spanned a six-month period from July to December 2025, encompassing the full cycle from community field surveys to final reporting.

Study population and sampling

The target population comprised individuals aged 15 to 70 years, respectfully encompassing both direct patients and their accompanying family members, who had utilized public health services at Phonthong District Hospital within the 12 months prior to the survey. A total of 377 participants generously shared their experiences. The sample size was calculated using standard statistical formulas to ensure a robust 95% confidence level for population representation. To capture a truly inclusive and broad representation across the district's 40 diverse villages, a multi-stage sampling approach was carefully implemented, engaging active service users directly during their facility visits.

Data collection instrument

A structured questionnaire was thoughtfully designed to capture both quantitative satisfaction metrics and community-driven qualitative priorities. Following translation into the Lao language to ensure cultural resonance, content validity was rigorously verified through an Index of Item-Objective Congruence (IOC) review by three academic supervisors. Linguistic clarity and internal reliability were further validated via a pilot study involving 30 community members. The finalized tool comprised three distinct sections:

Section 1: Socio-demographic and service utilization profile. Baseline data were collected to understand the human context behind health-seeking behaviors. Variables included gender, age, marital status, and education. To authentically reflect the lived economic realities of Phonthong District, socio-economic indicators such as primary agricultural occupation, monthly household income (Lao Kip), and health insurance status were prioritized.

Section 2: User satisfaction measurement. Satisfaction was measured across six core dimensions, thoughtfully adapted from the SERVQUAL model to fit the practical nuances of rural health environments: accessibility, staff

quality, facilities, specific health services, financial aspects, and administration. Community evaluations were recorded using a standard 5-point Likert scale.

Section 3: Institutional priority ranking. To identify actionable and community-centered improvements, the SMART was utilized.¹³ This comparative mechanism empowered participants to distinguish between adequate services and urgent unmet needs by ranking eight predefined service areas from 1 (Highest Priority) to 8 (Lowest Priority). This hierarchy provides administrators with a scientifically grounded, yet profoundly human, roadmap for future resource allocation.

Data analysis

All collected data were rigorously screened for accuracy, coded, and analyzed using specialized statistical software. Descriptive statistics (frequencies and percentages) were employed to summarize the rich socio-demographic profiles and utilization patterns of the 377 participants. Satisfaction across the 6 predefined dimensions was evaluated using mean scores (\bar{x}) and standard deviations (SD), which were then interpreted using a validated 5-level scale: 4.51-5.00 (very high), 3.51-4.50 (high), 2.51-3.50 (moderate), 1.51-2.50 (low), and 1.00-1.50 (very low).¹⁴ Finally, strategic priorities for service improvement were determined by analyzing the SMART rankings. Domains were ordered based on their mean scores, with the lowest mean indicating the community's highest priority for institutional intervention.

RESULTS

Demographics and utilization

The study analyzed a cohort of 377 residents revealing a predominantly female population (59.4%) with a mean age of 37.9 years (SD=14.16). Marital status primarily characterized by marriage (84.6%), while educational levels were largely concentrated at the lower secondary level or below (85.4%). Reflecting the rural setting of Phonthong district, agriculture was identified as the primary occupation for 72.4% of respondents, with 48.3% earning a personal monthly income < 1,000,000 Lao Kip.

Healthcare accessibility was relatively high with 52.0% of the sample residing within 1 km of a health facility and 54.9% possessing health insurance. Regarding utilization, 35.5% had visited a district health facility 1-2 times within the past year. The primary drivers for seeking care were short-term acute illness (36.6%) and routine health check-ups (31.8%).

User satisfaction levels

Analysis of the accessibility dimension

The accessibility of public health services was evaluated through five specific indicators, yielding an overall mean

score of 3.35 (SD=0.49), which signifies a Moderate level of satisfaction. While the administrative aspects of the service were rated high specifically the operating hours of facilities (\bar{x} =3.91, SD=0.63) and the ease of making appointments (\bar{x} =3.79, SD=0.58) the overall dimension score was tempered by logistical and operational challenges. Geographic factors, including convenience of travel (\bar{x} =3.47) and physical distance to facilities (\bar{x} =3.29), maintained moderate satisfaction levels, reflecting the typical barriers encountered in the rural context of Phonthong District. However, a critical service gap was identified regarding waiting times at health facilities, which received a Low satisfaction rating (\bar{x} =2.43, SD=0.90). This suggests that while facilities are perceived as reachable and available, the efficiency of patient throughput remains a primary concern for the community (Table 1).

Table 1: User satisfaction with accessibility of public health services.

Item	\bar{x}	SD	Satisfaction level
Distance to health facility	3.29	0.62	Moderate
Operating hours of health facilities	3.91	0.63	High
Convenience of travel to health facilities	3.47	0.65	Moderate
Ease of making appointments with health personnel	3.79	0.58	High
Waiting time at health facilities	2.43	0.90	Low
Mean	3.35	0.49	Moderate

Analysis of the staff and service quality dimension

The evaluation of personnel and clinical interaction yielded an overall mean score of 3.79 (SD=0.46), indicating a high level of user satisfaction within this dimension. The data suggest a strong community confidence in the technical capabilities of the workforce, particularly regarding the knowledge and competence of service providers (\bar{x} =3.85, SD=0.55) and the availability of female staff for female patients (\bar{x} =3.80, SD=0.71). These high ratings indicate that the health facilities in Phonthong district are successful in addressing both the clinical and cultural expectations of the population. Furthermore, respondents expressed high satisfaction with the time spent on treatment and service provision (\bar{x} =3.78) and the maintenance of privacy during consultations (\bar{x} =3.66). Despite these strengths, the interpersonal aspects of care, specifically the courtesy and respect shown by health staff (\bar{x} =3.45, SD=0.79) and the explanation of diagnosis and treatment (\bar{x} =3.44,

SD=0.69), were rated as Moderate. This disparity suggests that while the technical and structural components of the service are highly regarded, there

remains a perceived need for improved soft skills and communication transparency during patient interactions (Table 2).

Table 2: User satisfaction with staff and service quality.

Item	\bar{x}	SD	Satisfaction level
Courtesy and respect shown by health staff	3.45	0.79	Moderate
Knowledge and competence of service providers	3.85	0.55	High
Explanation of diagnosis and treatment	3.44	0.69	Moderate
Time spent on treatment and service provision	3.78	0.50	High
Privacy during consultation and examination	3.66	0.56	High
Availability of female staff for female patients	3.80	0.71	High
Mean	3.79	0.46	High

Analysis of facilities and resources

The physical environment of the health facilities was evaluated across seven indicators, resulting in an overall Moderate satisfaction level (\bar{x} =3.34, SD=0.48). High levels of satisfaction were noted for the cleanliness of facilities and ventilation (\bar{x} =3.81, SD=0.50) and the adequacy of waiting areas (\bar{x} =3.89, SD=0.64). Furthermore, the quality of medical equipment was

viewed positively by respondents (\bar{x} =3.68). Conversely, the infrastructure faced critical scrutiny regarding the availability of clean water and toilets, which yielded the lowest rating in this dimension (\bar{x} =2.38, SD=0.93). Other basic utilities, such as lighting and electricity supply (\bar{x} =3.42) and essential medicine availability (\bar{x} =3.37), maintained moderate ratings, suggesting that while the facilities are functional, fundamental resource gaps remain visible to the community (Table 3).

Table 3: User satisfaction with facilities and resources.

Item	\bar{x}	SD	Satisfaction level
Cleanliness of facilities and ventilation	3.81	0.50	High
Availability of essential medicines	3.37	0.66	Moderate
Quality of medical equipment	3.68	0.50	High
Adequacy of waiting areas	3.89	0.64	High
Availability of clean water and toilets	2.38	0.93	Low
Adequate lighting and electricity supply	3.42	0.72	Moderate
Availability of exercise and rehabilitation areas	3.39	0.70	Moderate
Mean	3.34	0.48	Moderate

Table 4: User satisfaction with specific health services.

Item	\bar{x}	SD	Satisfaction level
Maternal and child health services	3.39	0.72	Moderate
Immunization services	4.06	0.64	High
Emergency services	3.92	0.67	High
General medical treatment	3.93	0.43	High
Chronic disease management	3.82	0.59	High
Health education and prevention programs	3.66	0.54	High
Mean	3.94	0.42	High

Analysis of specific health services

Clinical service provision received a high overall satisfaction rating (\bar{x} =3.94, SD=0.42), representing one of the strongest performing dimensions in the study. This positive sentiment was driven primarily by immunization services (\bar{x} =4.06, SD=0.64), general medical treatment (\bar{x} =3.93, SD=0.43), and emergency services (\bar{x} =3.92, SD=0.67). Satisfaction remained high for chronic disease management (\bar{x} =3.82) and health education programs (\bar{x} =

3.66). However, maternal and child health services were rated relatively lower, falling into the moderate category (\bar{x} =3.39, SD=0.72), indicating a potential area for targeted clinical improvement (Table 4).

Analysis of financial aspects

Financial considerations yielded the highest overall satisfaction score among all dimensions (\bar{x} =3.93, SD=0.44). A high degree of transparency was observed,

with the clarity of service fees receiving the highest individual score in the entire survey (\bar{x} =4.01, SD=0.63). Respondents also felt the cost of health services was appropriate (\bar{x} =3.85) and that they received good value for money (\bar{x} =3.84, SD=0.51). The availability of

financial support or subsidies was also viewed favorably (\bar{x} =3.56), suggesting that the current financial structure of the health system in Phonthong district is well-aligned with the economic realities of its predominantly low-income agricultural population (Table 5).

Table 5: User satisfaction with financial aspects.

Item	\bar{x}	SD	Satisfaction level
Cost of health services	3.85	0.52	High
Transparency of service fees	4.01	0.63	High
Value for money of services received	3.84	0.51	High
Availability of financial support or subsidies	3.56	0.67	High
Mean	3.93	0.44	High

Analysis of administration and communication

The administrative dimension was characterized by a Moderate overall satisfaction level (\bar{x} =3.48, SD=0.52). Positive ratings were achieved for the efficiency of administrative procedures (\bar{x} =3.85) and the quality of medical record keeping (\bar{x} =3.82, SD=0.42). However,

systemic issues were identified in interpersonal and organizational linkages; coordination among healthcare providers was rated Low (\bar{x} =2.41, SD=0.94), and the communication of health information to the community was viewed as only Moderate (\bar{x} =3.34, SD=0.66). These results emphasize that while internal paperwork is handled effectively, the external flow of information and internal teamwork require strategic attention (Table 6).

Table 6: User satisfaction with administration and communication.

Item	\bar{x}	SD	Satisfaction level
Administrative procedures efficiency	3.85	0.48	High
Medical record keeping and data management	3.82	0.42	High
Coordination among healthcare providers	2.41	0.94	Low
Communication of health information to the community	3.34	0.66	Moderate
Mean	3.48	0.52	Moderate

Analysis of overall satisfaction

The systematic evaluation of public health services revealed an overall mean satisfaction score of 3.64 (SD=0.47), which represents a high level of general satisfaction among the community. When analyzing the dimensions individually, the highest degree of contentment was observed in specific health services (\bar{x} =3.94, SD=0.42), characterized by exceptional performance in immunization programs (\bar{x} =4.06) and general medical treatment (\bar{x} =3.93). This was closely followed by the financial aspects of care (\bar{x} =3.93, SD=0.44), where transparency regarding service fees achieved the highest individual indicator score of 4.01. Furthermore, staff and service quality achieved a high rating (\bar{x} =3.79, SD=0.46), largely due to the perceived competence of providers and the culturally appropriate availability of female staff for female patients.

Despite these positive outcomes, the dimensions of administration and communication (\bar{x} =3.48, SD=0.52), accessibility (\bar{x} =3.35, SD=0.49), and facilities and resources (\bar{x} =3.34, SD=0.48) were categorized as moderate, primarily due to localized service bottlenecks. Critical deficiencies were identified regarding the availability of clean water and toilets (\bar{x} =2.38) and the

length of waiting times at health facilities (\bar{x} =2.43), both of which received low satisfaction ratings from respondents. Similarly, a significant systemic weakness was identified in the coordination among healthcare providers (\bar{x} =2.41) (Table 7).

Table 7: Mean satisfaction scores and interpretation by dimension.

Dimension	\bar{x}	SD	Satisfaction level
Accessibility	3.35	0.49	Moderate
Staff and service quality	3.79	0.46	High
Facilities and resources	3.34	0.48	Moderate
Specific health services	3.94	0.42	High
Financial aspects	3.93	0.44	High
Administration and communication	3.48	0.52	Moderate
Mean	3.64	0.47	High

Ranking of priorities for improvement

The SMART was utilized to translate user sentiment into a structured hierarchy of institutional needs. This analytical approach moved beyond general satisfaction levels to identify the most pressing demands for systemic

reform in Phonthong District. The comparative analysis revealed that the paramount priority for residents is the provision of high quality and comprehensive service and health education ($\bar{x}=2.27$, $SD=1.5$), suggesting that the community places the highest value on clinical excellence and the empowerment provided by medical knowledge. Closely following this was the demand for upgraded medical equipment and tools ($\bar{x}=2.46$, $SD=2$), further reinforcing the desire for a technically robust healthcare environment. Infrastructure-related needs, specifically buildings, water, and electricity were positioned as a moderate priority ($\bar{x}=4.53$, $SD=1.8$), along with the maintenance of a clean and healthy environment ($\bar{x}=4.95$, $SD=2.26$).

Interestingly, operational and interpersonal factors, while still important, were ranked lower in the hierarchy of urgency. waiting time ($\bar{x}=5.12$), staff hygiene ($\bar{x}=5.2$), and service attitude/discipline ($\bar{x}=5.56$) were identified as secondary concerns relative to the quality of clinical care and equipment. Finally, the continuity of care and modernization of services was designated as the lowest priority ($\bar{x}=5.89$, $SD=1.99$) indicating that for this rural population, the immediate effectiveness of health interventions and the availability of tangible medical resources are far more critical than long-term administrative modernization (Table 8).

Table 8: Priority ranking of service improvement areas.

Rank	Priority area	\bar{x}	SD
1	High quality and comprehensive service and health education	2.27	1.5
2	Medical equipment and tools	2.46	2.00
3	Infrastructure and facilities (buildings, water, electricity)	4.53	1.8
4	Cleanliness and health environment	4.95	2.26
5	Waiting time (waiting, appointment)	5.12	1.68
6	Staff hygiene and facility cleanliness	5.20	1.67
7	Service attitude and efficiency (staff duty/discipline)	5.56	2.10
8	Continuity of care and modernization of services	5.89	1.99

DISCUSSION

The study reveals an overall satisfaction score of 3.64 ($SD = 0.47$), indicating that the public health system in Phonthong District is viewed with high confidence by its rural users. This sentiment is consistent with the Ministry of Health's (2024) "5 Goods 1 Satisfaction" policy, which has successfully improved community trust in district-level facilities.¹⁵ However, the data unveils a distinct paradox where high clinical trust exists alongside significant infrastructure and administrative bottlenecks.

Financial protection and subsistence economic resilience

The high satisfaction with financial aspects ($\bar{x}=3.93$) and fee transparency ($\bar{x}=4.01$) highlights the effectiveness of the National Health Insurance (NHI) in protecting low-income agricultural workers. Although 48.3% of respondents reported a monthly cash income below 1,000,000 Kip, this figure likely underrepresents their actual economic resilience. In rural Laos, wealth is traditionally held in non-monetary assets such as livestock and crop reserves, which act as a form of non-monetary capital or savings.¹⁶ The predictability of healthcare costs prevents families from being forced to liquidate these essential assets during illness. This alignment between fee structures and the subsistence economy supports the findings of Akkhavong et al, suggesting that financial transparency is the strongest

driver of rural healthcare utilization during periods of national currency depreciation.^{9,17}

Disparity between clinical quality and environmental standards

A notable gap was observed between specific health services ($\bar{x}=3.94$) and facilities and resources ($\bar{x}=3.34$). The community expressed strong trust in immunization ($\bar{x}=4.06$) and general medicine, mirroring national successes in reducing under-five mortality to 28 per 1,000 live births.¹⁷ Conversely, the low satisfaction regarding water and toilet facilities ($\bar{x}=2.38$) underscores a persistent infrastructure deficit. As identified in the WASH FIT Global Report (2025), many rural facilities in Laos still lack the "climate-resilient" utilities required to meet 5GIS quality standards, demonstrating that clinical excellence often outpaces the physical environment in resource-limited settings.^{18,1}

Operational bottlenecks and seasonal accessibility

Operational efficiency was identified as a critical weakness, with waiting times ($\bar{x}=2.43$) and provider coordination ($\bar{x}=2.41$) receiving the lowest scores. These delays suggest that the surge in utilization driven by NHI expansion has outpaced the administrative and staffing capacity of the district. Furthermore, the "Moderate" rating for travel convenience ($\bar{x}=3.47$) reflects the severe geographic barriers of the mountainous North. In Phonthong, accessibility is highly seasonal; during the

monsoon season, the deterioration of unpaved road networks makes travel both hazardous and time-consuming. As established by Douangvichit et al (2012) and updated in the MOH Climate-Resilient Health Report (2025), these logistical hurdles act as a "seasonal barrier" to care, often forcing the rural poor to delay medical consultations until their condition becomes emergent.^{19,20}

Decoding community priorities (SMART analysis)

The SMART priority ranking provides a strategic roadmap for reform, placing Health Education ($\bar{x}=2.27$) and Medical Equipment ($\bar{x}=2.46$) at the top of the hierarchy. This prioritization indicates a profound community desire for medical empowerment and modernized diagnostics over administrative "modernization." This aligns with 2025 global trends toward "patient-centered care," where rural populations increasingly prioritize tangible resources like advanced tools and medical knowledge to avoid the high costs and risks associated with traveling to urban centers for specialized treatment.^{20,21}

CONCLUSION

The assessment of public health services in Phonthong District confirms that the community maintains a high level of trust in the healthcare system, particularly regarding financial transparency and the effectiveness of clinical programs like immunizations. These findings indicate that the district has successfully established a service model that is both affordable and technically reliable for its multi-ethnic, rural population. However, a clear disparity exists between clinical quality and the physical environment. While medical care is well-regarded, the patient experience is significantly hindered by inadequate sanitation and water facilities, as well as operational bottlenecks like prolonged waiting times and poor provider coordination.

The priority analysis reveals that the community's most urgent demands are for health education and modernized medical equipment. Consequently, the study concludes that while the foundation of clinical trust is strong, the next phase of development must focus on upgrading facility infrastructure and diagnostic tools to bridge the gap between technical success and the physical reality of rural healthcare delivery.

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