Factors Influencing Quality of Life for Individuals Living with Leprosy in Lao PDR

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ABSTRACT

Background: The quality of life (QoL) of people living with leprosy (PLL) is a public health concern in Lao PDR and a globally important neglected disease. Leprosy is caused by infection and causes people to suffer from skin lesions, loss of skin sensation, and deformity of organs. Since evidence of QoL and practical policy for PLL is lacking in Lao PDR, this study aims to assess QoL and determine its factors.

Methods: We conducted a cross-sectional study in six provinces with 274 PLL aged 18-60 years in April 2022, using a structured interview to assess QoL (WHO QOL-BREF, 26 items; scale 1-5) and other characteristics (personal, social and environmental). The whole set of questionnaires was tested for reliability ($\alpha \geq 0.7$). For analysed factors, we used multiple logistic regression to examine adjusted OR, 95% CI, and p-value (<0.05 as significance level).

Results: PLL patients were 59.9% male, and the mean age was 54 years (±7), with the lowest to the highest age as 28 – 60 years. The proportion of good QoL among PLL was 55.4%. The average QoL score was 86.4/130 (±15.4), with a minimum to maximum score of 38/130 – 125/130. Factors supporting QoL were male [AOR = 2.6; 95%CI=1.5-4.7; p=0.001], Lao ethnic [AOR = 4.4; 95%CI=2.1-9.4; p=0.001], firm housing [AOR = 4.7; 95%CI=1.6-13.4; p=0.003], spending time with family [AOR = 2.3; 95%CI=1.1-5.4; p=0.040], no deformity [AOR = 3.3; 95%CI=1.8-6.1; p=0.001], fewer years of being PLL [AOR = 2.1; 95%CI=1.3-4.5; p=0.002] and no comorbidity [AOR = 2.5; 95%CI=1.3-4.5; p=0.002].

Conclusion and recommendation: Plenty of PLLs have low QoL. The public health sector still needs to focus on enhancing the QoL of PLL by supporting female patients, other ethnics, PLL with poverty, comorbidities, and poor housing conditions, and by preventing deformity and enabling early detection and treatment.

Keywords: Quality of life, people living with leprosy, Lao PDR

INTRODUCTION

The quality of life for individuals affected by leprosy is a critical concern that warrants attention at both regional and global levels. Leprosy, known as "khithut" in Lao, is a chronic infectious disease caused by the bacterium Mycobacterium leprae. This disease primarily impacts the skin, peripheral nerves, mucous membranes of the upper respiratory tract, and the eyes. Importantly, leprosy can affect individuals across all demographics, including children and the elderly. Despite being a treatable condition, leprosy is often associated with significant morbidity if treatment is not initiated promptly. According to the World Health Organisation (2022), early intervention is essential to prevent the onset of disabilities that arise from the disease. In 2019 alone, there were 202,185 new cases of leprosy reported globally, translating to an incidence rate of 25.9 cases per one million population. This statistic underscores the ongoing prevalence of the disease and the need for continued public health efforts. Failure to receive timely treatment can lead to severe consequences, including disability and, in extreme cases, death. The ramifications of these outcomes extend beyond physical health, as individuals affected

by leprosy frequently encounter a deterioration in their overall quality of life (Shui, 2021). This decline is attributed to the social stigma surrounding leprosy, which often exacerbates feelings of isolation and discrimination. In conclusion, while leprosy is a curable disease, the importance of timely diagnosis and treatment cannot be overstated. Addressing the quality of life for those affected by leprosy requires a multifaceted approach that encompasses medical intervention, public awareness, and efforts to combat social stigma. Only through comprehensive strategies can we hope to improve the lives of individuals living with this condition (Shui, 2021).

The quality of life for individuals afflicted by leprosy, encompassing physical, psychological, social, and environmental dimensions, is significantly compromised when the disease progresses or results in disability. Those living with leprosy frequently endure discrimination and stigma from society, often leading to hesitance in seeking necessary medical care. Such delays can precipitate further physical deterioration, manifesting in symptoms such as loss of sensation, severe ulceration, secondary health complications, and physical impairment. Additionally, these physical health challenges can adversely affect mental well-being and social relationships. Historically, individuals diagnosed with leprosy faced severe social ostracism, frequently being forced from their homes or confined to segregated living quarters and treatment centres. Without adequate monitoring and management, the quality of life for these individuals deteriorates rapidly, a situation exacerbated for those who have lived with the disease for prolonged periods. The disabilities that arise from leprosy profoundly affect quality of life, irrespective of whether patients are receiving medical treatment. The impact of leprosy extends beyond visible physical manifestations of disability, affecting psychological, economic, and social aspects as well. Impairments of the hands, feet, face, and eyes hinder the ability to perform normal daily activities; some patients may experience severe mobility challenges, while others may lose the capacity to walk. This decline in functional ability restricts their participation in societal norms, leading to decreased income potential, increased physical distress, and heightened anxiety regarding their health. Consequently, withdrawal from social interactions becomes common, further exacerbating feelings of isolation and rejection. Recent statistics from the Dermatology Centre in 2020 indicate 293 new leprosy cases in the Lao PDR, with a prevalence rate of 0.64 per 100,000 people. These figures suggest a concerning trend, as leprosy continues to negatively impact quality of life through disabilities, loss of employment, social discrimination, and disintegration of relationships (Ministry of Health, 2020). In 2018, the country recorded 19 deaths attributed to leprosy, yielding a mortality rate of 0.5 per 100,000 population and placing the Lao PDR 29th in global rankings (World Life Expectancy, 2021). Such statistics underscore a deficiency in addressing the quality of life for those affected by leprosy.

In response to this pressing issue, the Ministry of Health is prioritising the rapid detection of new leprosy cases to avert disability and facilitate early treatment. While this initiative aims to enhance quality of life for affected individuals, it currently lacks a robust strategic plan supported by research-based evidence pertaining to the quality of life for those living with leprosy. The overarching objective aligns with the national leprosy control program goals for 2030, which also seeks to eliminate social inequality (Ministry of Health, 2021). Given these circumstances, it is vital to explore the quality of life among individuals afflicted with *Phayad Louang* (lymphatic filariasis) to gain insights into their unique challenges and needs. This exploration is crucial to identifying factors influencing their quality of life, ultimately highlighting areas necessitating further research and intervention. The findings from such studies will contribute to enhanced planning and implementation strategies aimed at improving the overall quality of life for patients affected by *Phayad Louang* in the Lao PDR.*

Despite leprosy being recognised as a treatable infectious disease, its impact on the quality of life for those affected remains a significant public health concern. Previous evidence discussed in this introduction highlights various challenges including physical disabilities, psychological distress, social stigma, discrimination, and economic difficulties associated with leprosy. However, it is still unclear how these factors affect different dimensions of quality of life for individuals in the Lao PDR. Further investigation is necessary to understand the relationships between disability status, sociodemographic characteristics, social support, stigma, access to healthcare, and the overall quality of life for those affected. Additionally, the introduction does not provide sufficient local research evidence to determine whether current leprosy control strategies effectively address the broader psychosocial and socioeconomic needs of these individuals. Therefore, a study focusing on the quality of life and its associated factors among people affected by leprosy in the Lao PDR is essential. The findings

could offer context-specific evidence to inform patient-centred care, rehabilitation services, stigma-reduction interventions, and policies aimed at improving the overall well-being of individuals affected by leprosy.

RESEARCH METHODOLOGY

Study Design

The study utilises a cross-sectional analytical design combined with a quantitative methodology to assess the research objectives effectively. This approach allows for the collection and analysis of data at a single point in time, facilitating the examination of relationships between variables within the specified population. The findings derived from this design will contribute to a deeper understanding of the phenomena under investigation. The study focuses on individuals infected with leprosy, aged 18 to 60 years, living in six designated villages for leprosy patients. The sample size comprises 274 individuals. The investigation was conducted across six communities where individuals affected by leprosy reside. These locations are: 1) Sop Poung Village in Houaphanh Province (13 patients), 2) Houay Chot Village in Bokeo Province (9 patients), 3) Pak Leum Village in Luang Prabang Province (20 patients), 4) Sivilay Village in Khammouane Province (9 patients), 5) Somsanouk Village in Vientiane Province (84 patients), and 6) Lak 30 Village in Champasak Province (190 patients). Overall, there are more than 300 registered leprosy patients within these six villages.

Study Population and Sampling

The target population includes male and female leprosy patients aged 18–60 years residing in the aforementioned communities, all of whom have had the disease for a minimum of five years. A sample size calculation was executed to detect a two-fold difference in odds, based on binary independent variables within a multiple logistic regression model (Hsieh et al., 1998). The assumed proportion of patients associated with the outcome is set at 0.5, with a corresponding value from the standard normal distribution given a Type II error rate (β) of 0.20, resulting in 0.84. The calculation also incorporates the relationships among independent variables using Variance Inflation Factors (VIF).

Purposive sampling was implemented, specifically targeting all individuals infected with leprosy within the six identified villages and within the 18–60 age range. Data collection was performed village by village using existing lists of individuals identified as targets in each location. Additionally, individuals not included on these lists but recognised within the community who meet the inclusion criteria were also eligible for participation; in such instances, the treatment centre was informed. Coordination with the Central Dermatology Hospital facilitated the acquisition of a list of target individuals aged 18–60 for each village. Visits were made to these six villages to arrange interviews specifically focusing on those infected for at least five years. Out of 283 individuals who met the criteria, 9 were unavailable for participation. Interviewers approached each targeted individual to elucidate the study's objectives and secure verbal consent. Evaluating participants' willingness to partake, interviews adhered to a standardised procedure across all villages. Consequently, 274 participants were included, achieving the target sample size with a 100 per cent consent rate.

Study Instrument

The principal instrument was a face-to-face structured questionnaire, designed based on a review of previous studies on the quality of life of individuals with leprosy. The questionnaire is divided into four sections: 1) personal information, 2) health-related information, 3) social support, and 4) quality of life for individuals living with the disease. The personal information section captures sociodemographic data, knowledge, access to information, self-care, and health-risk behaviours. The health-related information section features questions about disease history and comorbidities. The social support section explores familial and peer support, experiences of discrimination, and internalised stigma. Lastly, the quality of life section consists of questions adapted from the 26-item WHO-QoL short form.

Validation

The questionnaire, adapted from an English-language version, underwent scrutiny and evaluation by three expert specialists in language and research, as well as the academic supervisor. The Item-Objective Congruence (IOC)

process was utilised to ensure content alignment with research objectives through expert feedback and ratings. The instrument subsequently secured approval for field testing. Statistical reliability testing was conducted for sections addressing knowledge about leprosy, patient self-care, social support, perceived discrimination, stigma, and quality of life. The results of these reliability tests are summarised as follows: knowledge regarding leprosy (KR20: 0.881), patient self-care (Cronbach's α: 0.806), social support (Cronbach's α: 0.859), perceived discrimination (Cronbach's α: 0.741), felt stigma (Cronbach's α: 0.821), and quality of life (Cronbach's α: 0.877). The reliability levels achieved are considered both good and acceptable (details of the specific questions can be consulted in the appendix).

Data Analysis

Data collection and compilation: interview forms will be meticulously verified for accuracy and completeness. Following this verification, the data will be coded and systematically entered into the analysis system. A comprehensive review of the dataset will ensue to ascertain its completeness, accuracy, and plausibility; any inconsistencies in coding will be diligently identified and rectified. Once the dataset is confirmed to be accurate, it will be analysed in alignment with the research objectives of the study.

Statistical analyses will be conducted utilising STATA vs 15 software, using various statistical methods as follows:

- Descriptive Statistics: Categorical data will be reported as frequencies and percentages, while continuous data will be categorised and presented in terms of mean, standard deviation, median, minimum, and maximum values.

- Inferential Statistics: To explore the relationships between independent and dependent variables, Multiple Logistic Regression Analysis will be utilised. This process will facilitate the examination of the study's research questions, objectives, and hypotheses through the following methodological steps

- Univariate Analysis: Initially, a univariate analysis will be performed using Logistic Regression to evaluate the relationship between each independent variable and the dependent variable. The analysis will report the Odds Ratio (OR), 95% Confidence Interval (95% CI), and associated p-values.

- Multivariate Analysis: Subsequently, a multivariate analysis will take place through Multiple Logistic Regression. Independent variables demonstrating a p-value of less than 0.25 in the univariate analysis will be incorporated into the model. Each variable will be assessed for significance, with those exceeding a p-value of 0.05 being systematically excluded. The conclusive results will be presented as Adjusted Odds Ratios (Adjusted OR), accompanied by their respective 95% Confidence Intervals (95% CI) and p-values.

Ethics

This research study has received ethical approval from the Research Ethics Committee of the University of Health Sciences (Reference No. 309/REC, Vientiane Capital, dated April 7, 2022). Data collection has been sanctioned by the Provincial Department of Health, and participation in the study is entirely voluntary for all individuals diagnosed with the condition under investigation. The data utilised in this study are devoid of any identifiable information pertaining to participants, thereby safeguarding sensitive personal privacy. All information will be maintained in a confidential manner and will solely be employed for aggregate analysis and interpretation, ensuring that no individual participant can be specifically identified.

Research Results

Table 1 illustrates the demographic characteristics of the 274 participants involved in this study. The findings reveal that slightly over half of the participants are male, constituting 59.9% of the sample. The mean age of participants is 53.9 years, with a standard deviation of 7.6 years, and ages range from a minimum of 28 to a maximum of 60 years. The majority of participants, approximately 75.9%, fall within the 50–60 age group, and a significant portion, 75.2%, are married.

In terms of educational attainment, 48.2% of participants completed primary education, while 4.4% completed lower secondary education; notably, 46.0% of participants reported having no formal education. The ethnic composition is predominantly characterised by the Lao-Tai ethnic group, which comprises 80.7% of the participants, with other groups, primarily from the Mon-Khmer linguistic family, representing only 19.3%.

Occupationally, the largest proportion of participants, 46.0%, are unemployed, whereas 43.8% are engaged in farming activities. The average monthly household income recorded in this study is 646,968.5 Kip, with reported values ranging from 10,000 Kip to 5,000,000 Kip. Notably, 72.2% of households earn an income of 1,000,000 Kip or less, while 21.5% report an income exceeding this threshold; the remaining 7.3% of households have no reported income. Detailed demographic statistics are presented in Table 1.

Table 1**: Demographic characteristics of study participants**

Demographic characteristics	**n=274 (%)**
Gender	
Girl	110 (40.1)
Male	164 (59.9)
Age	
28 – 49 years old	66 (24.1)
50 – 60 years	208 (75.9)
Mean (SD) = 53 . 9 (7 . 638) Min= 28 Max= 60	
Marital status *	
Single	68 (24.8)
Married	206 (75.2)
Education level *	
Didn't study	126 (46.0)
Studied	148 (54.0)
Occupation *	
Unemployed	126 (46.0)
Have a job	148(54.0)
Ethnic group *	
Lao - Tai	221 (80.7)
Other ethnic groups	53 (1 9.3)
Monthly family income	
No income	20 (7.3)
< 1,000,000 Kip	195 (71.2)
≥ 1,000,000 Kip	59 (21.5)
Mean (SD)= 646,968. 5 (7.425) Min= 10,000 kip Max= 5,000,000 kip	
Housing characteristics *	
Stable housing conditions	243 (88.7)
Dilapidated/unfinished house condition	31 (11.3)

Residential house *	
Own house	265 (96.7)
Other	9 (3.3)
Living space in the house	
Narrow	36 (13.1)
It's fine.	202 (73.8)
Wide	36 (13.1)
People are living together.	
1-2 people	50 (18.3)
3-5 people	160 (58.3)
>5 people	64 (23.4)
Mean (SD)= 4.4(2.101) Min = 1 Max= 13	
Living together * (You can answer as many as you want) **n=296**	
Parents/siblings/brothers/siblings	36 (12.2)
Family	248 (83.8)
Alone	12 (4.0)
There is someone to take care of *	
No	1 61 (58.7)
Yes	1 13 (41.3)
There is a person who is the main focus of special care *	
No	86 (31.4)
Yes	188 (86.6)
Person you spend most of your time with *	
Husband or wife; parents	168 (61.3)
Another person	106 (38.7)

The demographic and socio-economic data presented offer a comprehensive overview of a specific population's characteristics, revealing important insights regarding marital status, education levels, employment types, and living conditions.

Marital Status: The population exhibits varied marital statuses, with the majority identifying as widowed (17.5%), followed by single individuals at 4.4%. A small fraction of the population is recorded as divorced (2.2%) and separated (0.7%), indicating that marital stability may be a significant issue within this demographic.

Educational Attainment: Education levels are predominantly low, with 48.1% of the population having completed primary education. The proportions of those attaining higher levels of education are minimal, with only 4.4% achieving junior secondary, and even fewer reaching senior secondary (0.4%). These statistics highlight a critical area for potential educational interventions aimed at improving overall educational outcomes.

Employment Status: In terms of employment, the majority of individuals are engaged in farming (43.9%), which suggests a reliance on agricultural livelihoods. Government employees constitute a mere 2.1%, while 5.1% are involved in trade and 1.5% in various forms of labour. This distribution emphasises the need for economic diversification to enhance job opportunities beyond the agricultural sector.

Ethnic Diversity: The population comprises several ethnic groups, with Mon-Khmer representing 9.5% and Hmong Miem at 9.8%. Diverse ethnicities may shape cultural dynamics and social interactions within the community.

Housing Conditions: Regarding housing, 6.6% of dwellings are categorised as dilapidated, and 4.7% are deemed unfinished, indicating a concerning state of housing infrastructure. The housing situation is compounded by the relatively low percentages of individuals living in rented accommodations (0.7%) or with parents or relatives (2.6%).

Living Arrangements: Living arrangements reveal that a significant portion of the population cohabitates with various family members, including parents (6.5%), relatives (2.1%), and siblings (4.3%). Notably, 24.5% live with their children, underscoring the importance of familial support structures, particularly for single parents, who constitute a considerable segment of the population.

Caregiving Dynamics: The role of primary caregivers is predominantly filled by spouses (53.3%), with a notable percentage of caregiving roles allocated to siblings or relatives (6.9%) and non-family individuals (8.4%). These figures suggest an interdependence within family structures for caregiving responsibilities.

In summary, the data underscores significant socio-economic challenges and reveals the intricacies of family dynamics within this population. Addressing these issues through targeted policies and programs aimed at education, employment, and housing is essential for fostering improved outcomes in these communities.

Self-Care Factors for Patients with Chronic Diseases

The management of chronic diseases necessitates effective self-care practices, particularly in patients with conditions such as leprosy. According to findings presented in Table 2, the overall performance in self-care among the sampled population is concerning. Specifically, nearly half of the participants (49.7%) demonstrated adequate skills in wound care, as indicated by a median score cutoff of 6 out of 24. The scoring range reflected a minimum of 0 and a maximum of 18, underscoring the variability in self-care efficacy within this demographic.

In terms of wound prevention, a cutoff evaluation of the new wound prevention scores revealed that 55.4% of participants successfully engaged in preventative measures. The mean score for overall injuries in leprosy patients was noted to be significantly low (Mean = 6.81, ±1.59 out of 16), with participants' scores ranging from a minimum of 2 to a maximum of 12. These statistics illustrate a troubling trend in physical self-management, where more than 50% of individuals with leprosy are not receiving adequate treatment.

Furthermore, the assessment of physical management levels yielded an average performance score of 56.2% among participants. The overall treatment plan score also fell below expectations, with a mean score of 7.35 out of 20, and individual scores ranging between a minimum of 3 and a maximum of 13. These findings highlight significant gaps in the self-care abilities of patients with chronic diseases, emphasising the urgent need for targeted interventions to enhance self-management strategies and improve health outcomes in this vulnerable population.

Table 2: **Self-care factors for patients with chronic disease.**

Self-care		**n=274 (%)**
Wound care		
Poor self - care (<6)		138 (50.3)
care of yourself. (≥6)		136 (49.7)
Wound prevention		
Poor wound protection (<7)		152 (55.4)
Good wound protection (≥ **7**)		122 (44.6)

Body management and Treatment	
Body management and treatment were not good. (<7)	154 (56.2)
Body management and high-quality treatment (≥ 7)	120 (43.8)

Getting Help from Friends.

Table 3 shows that when the cut-off score is set at the average frequency of receiving help from friends, 45.7% of participants fell into the relatively low range of receiving help from friends, indicating below-average support. The mean score for this group was 11.43 (±4.25) out of 25. The lowest reported frequency of receiving help from friends was 5 out of 25, while the highest mean score reached 23 out of 25. Overall, the average score for receiving assistance from friends in the study was 16.81 (±4.69) out of 25. Participants were then divided into two groups based on the average score for receiving help from family. It was found that 53.7% of participants received more help from their families than the average. The lowest score for the frequency of receiving help from family members was 5 out of 25, and the highest score was 25 out of 25.

Table 3: **Proportion of frequency of receiving help from friends and family**

Getting help		**n=274(%)**
From friends		
Low support (< 12)		125 (45.7)
High support (≥12)		149 (54.3)
From family		
Low support (< 12)		12 7 (46.3)
High support (≥12)		147 (53.7)

Overall Quality of Life of Leprosy Patients.

The assessment of the overall quality of life (QoL) among leprosy patients reveals significant findings concerning their well-being. In a recent study, it was noted that 55.4% of participants exhibited a good overall quality of life, while 44.6% reported a poor overall quality of life. This dichotomy underscores the diverse experiences of individuals affected by this condition. Quantitatively, the average quality of life score among the participants was calculated to be 86.47 out of a possible 130, with a standard deviation of ±15.4. This data indicates variability in the QoL scores among leprosy patients, ranging from a minimum score of 38 to a maximum of 125 out of 130, as detailed in Table 4.

These findings reveal critical insights into the lived experiences of leprosy patients and the factors that contribute to their quality of life. Continued research is essential to better understand the underlying reasons for the disparities observed in QoL scores and to inform interventions aimed at improving the overall well-being of individuals affected by leprosy.

Table 4 Overall quality of life of leprosy patients

Quality of life QOL	**n=274 (%)**
Good overall quality of life ≤ 86.47	12 2 (44.6)
Overall quality of life is good. ≥ 86.47	152 (55.4)

Factors Affecting the Quality of Life of Leprosy Patients of Chinese and Laotient: Results from Correlation Analysis Using Multiple Logistic Regression.

The table presents findings related to the quality of life of individuals infected with leprosy in the Lao PDR. The study identified several factors (p-value < 0.05) associated with the quality of life of these patients, including gender, ethnicity, living conditions, the persons they spend most of their time with, the level of disability, the duration of leprosy, and the presence of other comorbidities.

Gender: Males have a quality of life that is 2.6 times better than that of females (AOR=2.6; 95% CI: 1.5-4.7; p=0.001).

Ethnicity: Patients from the Lao-Tai ethnic group experience a quality of life that is 4.4 times better than those from other ethnic groups (AOR=4.4; 95% CI: 2.1-9.4; p=0.001).

Living Conditions: Individuals living in permanent housing have a quality of life that is 4.7 times better than those residing in dilapidated conditions (AOR=4.7; 95% CI: 1.6-13.4; p=0.003).

Social Interaction: Leprosy patients who spend most of their time with their spouse or children have a quality of life 2.3 times better than those who spend their time with others (AOR=2.3; 95% CI: 1.0-5.4; p=0.040).

Level of Disability: Patients who do not experience disfigurement have a quality of life that is 3.3 times better than those who have lost a limb due to leprosy (AOR=3.3; 95% CI: 1.8-6.1; p=0.001).

Duration of Illness: Individuals who have been ill for 10 years or less have a quality of life that is 2.1 times better than those who have been living with the disease for more than 10 years (AOR=2.1; 95% CI: 1.3-4.5; p=0.002).

Comorbidities: Patients who do not have any other comorbidities report a quality of life 2.5 times better than those who currently have other health issues (AOR=2.5; 95% CI: 1.3-4.5; p=0.002).

These findings highlight the various factors that significantly influence the quality of life of individuals living with leprosy in Laos.

Table 5: Multiple variables and quality of life of people infected with leprosy, People's for Laotient (Multiple logistic regression)

Variable *	**Good quality of life n = 152 (%)**	**COR(95%CI)**	**AOR(95% CI)**	**P-value**
Gender				
Girl	44(28.9)	1	1	
Male	108(71.1)	2.8(1.7-4.7)	2.6(1.5-4.7)	0.001*
Ethnic group				
Other ethnic groups	19(12.5)	1	1	
Lao - Tai	133(87.5)	2.7(1.4-5.0)	4.4(2.1-9.4)	0.001*
Living character				
Dilapidated condition/construction incomplete	6(3.9)	1	1	
Permanent housing situation	146(96.1)	6.2(2.4-15.8)	4.7(1.6-13.4)	0.003*
The person you spend most of your time with				
Other	14(9.2)	1	1	
Husband / Wife / Child	138(90.8)	2.5(1.2-5.1)	2.3(1.0-5.4)	0.040*
Degree of disability				

Any organ	72(47.4)	1	1	
No shape change or disfigurement	80(52.6)	2.7(1.6-4.5)	3.3(1.8-6.1)	0.001*
Period of plague				
> 10 years	115(75.6)	1	1	
≤ 10 years	37(24.4)	2.1(1.1-4.0)	2.1(1.3-4.5)	0.002
Co-existing medical conditions				
Yes	50(32.9)	1	1	
No	102(67.1)	1.8(1.1-3.0)	2.5(1.3-4.5)	0.002

****** All variables included in the analysis had a statistical relationship. There were **7** variables. Any variables that did not have a statistical risk were not shown in this table, such as age, marital status, education level, occupation, income, house, living area in the house, number of people in the family, having someone to care for, **and** having someone who is the main caregiver.*

DISCUSSION

The quality of life of individuals infected with leprosy is a significant concern in monitoring health outcomes. Treatment for leprosy takes place within the health service system, yet it is often categorised as a neglected disease. This condition impacts not only the physical health of affected individuals but also their mental well-being and social relationships, leading to their separation from the general public. The aim of this study is to assess the quality of life of people living with leprosy within the community and to identify factors that may influence their quality of life through community surveys. Those infected with leprosy reside exclusively in six distinct villages. Utilising a structured questionnaire, we can evaluate their quality of life and identify relevant influencing factors. We will employ analytical methods and statistical techniques in alignment with our educational objectives.

Quality of Life of People Infected with Leprosy in Laos.

The results of this study indicate that the quality of life for individuals infected with leprosy in Laos is generally good, consistent with previous research conducted in northeastern Thailand. Most participants in the study reported a good quality of life (Thaiwong & Vaeteewootacharm, 2017). However, there are diverse findings in other regions. For instance, a study in western India found that the quality of life for leprosy patients was categorised as low (Govindharaj, Srinivasan & Darlong, 2018). Similarly, a study conducted in Laos indicated that the quality of life for leprosy patients was considered low to moderate across all aspects (Xiong et al., 2019). Additionally, research in eastern India reported that individuals with leprosy suffer significantly, negatively affecting their quality of life (Das et al., 2020). The assessment results from this study reveal that while individuals with leprosy in Laos have a moderately good quality of life, nearly half of them still experience poor quality of life overall. The average score recorded was 86.5 out of 130, which equates to approximately 66.5%. A breakdown of the assessment highlights areas of concern: the lowest quality of life score related to physical health stems from pain experienced by many leprosy patients, low energy levels affecting daily activities, and dissatisfaction with their current health. Psychological quality of life scores were similarly low, largely due to difficulties with concentration and a lack of hope among those infected. Social quality of life was negatively impacted by economic hardships, leading to challenges in forming friendships and maintaining social interactions, which differs significantly from their past experiences. Lastly, environmental quality of life was rated poorly, largely due to limited access to daily information and living conditions that do not promote rest or stress relief.

Factors Affecting the Quality of Life of People Infected with Leprosy in Laos.

This study utilised multiple logistic regression to analyse the relationship between various factors and the quality of life of individuals infected with leprosy in Laos. Seven primary variables were identified as significant factors: gender, ethnicity, residential characteristics, time spent in certain activities, level of disability, duration of illness,

and current comorbidities. All these factors were confirmed to be statistically significant, with a p-value of less than 0.05. In discussing these factors, comparisons were made to previous studies, revealing some distinct findings.

Gender

Gender is associated with the quality of life of individuals affected by leprosy. The study found that male leprosy-infected individuals are more likely than females to report a good quality of life. In other words, among a sample of people infected with leprosy, males had higher quality of life scores compared to females. This indicates that males generally experience a better quality of life than women. These findings align with a study conducted in India in 2020, which found that a majority of those infected with leprosy were male (Das et al., 2020). Similarly, a 2021 study in Brazil revealed that quality of life, encompassing physical, social, and environmental dimensions, was lower among the female sample group. This study also highlighted a significant male representation in the sample (Pinto et al., 2021).

However, the influence of gender on quality of life may not always be consistent, as some studies present contrasting results. For example, a study in Laos focused on the educational experiences of people with leprosy found that men's physical quality of life was impacted more negatively than that of women, indicating that men had lower physical quality of life scores than women (Xiong et al., 2019). This suggests that a deeper analysis of various aspects of quality of life may reveal shifting relationships or reversals between genders. Nevertheless, the current study did not specifically analyse how different factors relate to each aspect of quality of life.

Ethnic group

Ethnicity is a significant factor influencing the quality of life of patients with leprosy. The study found that individuals from the Lao-Tai ethnic group have a better quality of life compared to other ethnic groups, including the Mon, Khmer, and Hmong-Mien, which together comprise 35.9% of the total sample. This finding aligns with previous research conducted in countries such as India, Bangladesh, Nepal, and Nigeria. These studies have consistently shown that people with leprosy from ethnic minority groups tend to experience a lower quality of life than those from larger or more dominant ethnic groups (Tsutsumi et al., 2007; Brouwers, Brakel & Cornielje, 2011; Attama, 2013; Singh R, Singh B & Mahato, 2019). Consequently, improving the quality of life for this ethnic minority population remains a public health challenge in many countries, particularly among those affected by leprosy (Tsutsumi et al., 2007; Brouwers et al., 2011; Attama, 2013; Singh et al., 2019).

Residential characteristics

This study also found that Housing conditions are a factor related to the quality of life of addicts. Leprosy. Statistical analysis found that people infected with leprosy who had stable housing had a better quality of life than people infected with leprosy who had dilapidated housing. Construction is not yet complete. Here, it may be related to the economic status of the participants themselves; although the results of the income variable analysis showed no correlation with quality of life, it is understandable that in a community of people with leprosy, there may not be much difference in terms of economic level identifying income is already difficult. People with no income may be able to rely on each other in the family. The community. Therefore, the characteristics of the dwelling are a variable that indicates a clearer difference in quality of life than income. In this study. The evidence is consistent with previous studies. Regarding the characteristics of the residence, those who are ready for housing have a better quality of life than those who lack access to housing. (Gobbens & van Assen, 2018; Wong et al., 2018; Zebardast & Nooraie, 2018; Stephen et al., 2019; Spector et al., 2020; Williams et al., 2020).

Spending time with family

Spending most of the time with family may improve quality of life for people with leprosy. This study found that it is also a factor related to the quality of life of people infected with HIV. Statistically significant. The study found that those who spent the most time with their spouse and child will have a better quality of life than those who spent most of their time with people other than family, such as Friends or Work, etc. The results of this

analysis are consistent with evidence from previous research, particularly in China. and India (Govindharaj, Srinivasan & Darlong, 2018; Xiong et al., 2019; Van'T Noordende et al., 2021).

Previous studies have all found that promoting family communication can help upgrade Quality of life for people with leprosy, with statistically significant results, whether the study experimental model (Van'T Noordende et al., 2021) or an observational study (Govindharaj et al., 2018; Xiong et al., 2019). Therefore, this study provides important observations. One for future public health interventions. What needs to be taken into account is attention to detail. Spend time each day with someone who has leprosy. Let's promote communication. Spend time with family, their families, and promote the institution of the family. It is to promote the quality of life of this marginalised group.

Disability

The level of disability of those infected with leprosy is also a factor. The study found that people with leprosy who did not have any deformities or disabilities had a better quality of life than people with leprosy who did have some disabilities. The results of the analysis were consistent with evidence from previous studies. Particularly notable is education in India. Found that, in India, the more severe the level of disability, the more severe the disability. Multiple organs are affected. How much? It only results in a reduced quality of life (Govindharaj et al., 2018; Das et al., 2020).

Therefore, the level of disability affecting various organs is considered a major challenge to the quality of life of people infected with leprosy. Attention to prevention, detection and treatment, first of all, in conjunction with monitoring and periodic reassessment, is important. and is very necessary for this population group (Brandsma, 2011; WHO, 2018 & 2021; Darlong, 2021; Ebenezer & Scollard, 2021; Van'T Noordende et al., 2021).

During the pandemic.

Duration of illness since diagnosis is also a factor related to the quality of life of people infected with leprosy. The study found that People infected with leprosy with a shorter incubation period 10 Year There will be a better quality of life for people infected with leprosy who have had the disease for a longer period of time have a better quality of life. 10 years. The results are consistent with previous studies indicating that the longer it lasts, the lower the quality of life (Govindharaj et al., 2018; Barakat & Zaki, 2019; Das et al., 2020).

A person who has a plague, especially over a long period of time. Whether the infection is long-term without showing Symptoms, has been showing symptoms of the disease for a long time, or takes a long time to heal, which does not work well under any circumstances, or delayed treatment initiation and discontinuous care are touched. On health outcomes and treatment outcomes, it has a negative impact on the quality of life. Therefore, early attention aims to improve treatment outcomes and enhance monitoring and promotion. In many ways, their quality of life will be affected the least. Even though it has been a long illness (Barakat & Zaki, 2019; Das et al., 2020; Makhakhe, 2021).

Co-morbidity

Current co-morbidities of people infected with leprosy People with leprosy who do not have other co-morbidities currently have a better quality of life than people with leprosy who do have other co-morbidities, which is consistent with a previous study from 2017 that also indicated that having chronic co-morbidities, such as non-communicable diseases, increases the chances that people with leprosy will have a poor quality of life (Thaiwong & Vaeteewootacharm, 2017; Upputuri, Srikantam & Mamidi, 2020; Oliveira et al., 2019; Ali et al., 2020; Kumsa, Tadesse & Woldu, 2021).

Comorbidity: Having other health disorders, whether it's a physical health problem or a mental health problem. All of these harm the quality of life of people with leprosy. Therefore, taking care of those with leprosy is important. Along with other diseases, this is more necessary for both the results of treatment and their quality of life (Barakat & Zaki, 2019; Upputuri et al., 2020; Kumsa et al., 2021). Especially in the elderly with leprosy, it is even more challenging for Quality of life, because there will be problems and diseases. Various NCDs and depression are also present. (Oliveira et al., 2019; Ali et al., 2020).

Educational limitations

This study is a point-in-time study. It is the first study on the quality of life of those who have leprosy. So it is inevitable that many limitations exist. These can be summarised as follows.

The study used a point-in-time analysis model. Therefore, the points obtained from the analysis were unable to tell the cause of the problem, the causes of loss or promote the quality of life of a leprosy patient. It only indicates consistent characteristics. By comparing two groups (QoL High and low). It is an estimate of the possibility of changing the quality of life. Only differences. Interpretation of factors: It can only be said that it is a characteristic that may be a challenge to treatment services, monitoring and promoting the quality of life of leprosy patients in the future.

The study area covers 6 villages, but it has not yet reached villages in remote areas and does not cover all districts in the study area; hospitalised leprosy patients are not included -19 pandemic, making it difficult to collect data from interviews. A large number of participants are unemployed, lacking income, and there may be lifestyle changes that are different from what you used to live. These things may affect the data. Things were different during the previous period and after the COVID outbreak. However, the team did try to take all preventive measures. In reaching the target group of people infected with the disease and being well-trained in questioning to get information that is as close to reality as possible. Social support factors, discrimination and self-blame: yes/no. The relationship with the quality of life of leprosy patients. This may be because all participants lived in a specific community, not in a general city. Therefore, it may not be possible to find what is different about this factor.

CONCLUSION

Factors associated with the quality of life of people infected with leprosy in the PDR. It is at a good level, but still has a few issues. This study is the first of its kind in Lao PDR. Factors associated with the quality of life of people infected with leprosy in Lao PDR include: Gender, ethnicity, housing characteristics, spending most of their time with others, level of disability, duration of leprosy, and presence of other current comorbidities are factors that are related to the quality of life of people infected with leprosy in the PDR. Laos.

Relevant organisations should focus on leprosy control, promote the tracking and tracing of new cases of leprosy as soon as possible, in order to provide early and correct treatment or to prevent possible disability, and prevent transmission or spread of the disease to the community and surrounding society. Leprosy patients should be educated on how to actively restore physical health to prevent wounds by taking care of themselves, providing advice on proper wound care, performing surgery, and undergoing physical therapy to guide leprosy patients to have knowledge about prevention and self-care, and to promote the health of leprosy patients in the future. It is necessary to increase the provision of health education and information about leprosy to people of remote ethnic groups throughout the country so that they can recognise and understand the effects of leprosy through various forms such as posters, television, radio, etc. Among those recommendations, special attention should be paid to patients who are female, disabled, or have no opportunity to be close to their family and to people with comorbidities, preventing disability in patients with chronic diseases, providing knowledge on health care, and preventing comorbidities.

Further studies are needed. Regarding social determinants in many areas such as economic level, risk behaviour, and Appropriate intervention. It is also worth looking into leprosy patients who use hospital services. Distinguish between Leprosy patients with comorbidities: NCDs (diabetes, hypertension, etc.) and Leprosy patients with comorbidities from other infections (HIV/AIDS, TB, and Others). More studies should be done on quality. To see lifestyle, access to services and Adaptation of leprosy patients after experiencing the effects of the disease.

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Conflict

This study found no conflict of interest.

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