

# Health-related quality of life of people with American Tegumentary Leishmaniasis

*Qualidade de vida relacionada à saúde de pessoas com Leishmaniose Tegumentar Americana*

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## ABSTRACT

The aim of this study was to analyze the health-related quality of life in people infected with American Tegumentary Leishmaniasis, according to sociodemographic and clinical data. Cross-sectional study, conducted in Paraíba, Brazil, in 2019. Twenty-two patients over the age of 18 years old in hospital treatment for cutaneous leishmaniasis participated. A questionnaire with sociodemographic and clinical variables and the Medical Outcomes Survey Short Form - 36 (SF-36) were used and analyzed by descriptive measures and non-parametric statistical tests. The study was approved by a Research Ethics Committee. Most of the participants were male, between the ages of 20 and 88 years old, farmers, in a marital relationship, and owned dogs. They showed ulcerative lesions on their limbs. All quality of life domains measured by the instrument presented low scores. The findings of this investigation show the need for actions to promote health and prevent infection by American Tegumentary Leishmaniasis.

**Descriptors:** Quality of Life; Leishmaniasis, Cutaneous; Nursing; Health; Neglected Diseases.

## RESUMO

Objetivou-se avaliar a qualidade de vida relacionada à saúde de pessoas acometidas pela Leishmaniose Tegumentar Americana, segundo aspectos sociodemográficos e clínicos. Estudo transversal, realizado na Paraíba, Brasil, em 2019. Participaram 22 pessoas com idade acima de 18 anos, em tratamento hospitalar para leishmaniose cutânea. Utilizou-se um questionário com variáveis sociodemográficas e clínicas e o instrumento *Medical Outcomes Survey Short-Forma-36*, sendo analisados por medidas descritivas e testes estatísticos não paramétricos. O estudo foi aprovado por um Comitê de Ética em Pesquisa. Evidenciou-se maioria dos participantes do sexo masculino, entre 20 e 88 anos, com relação conjugal, agricultores e com cães no domicílio. Apresentaram lesão ulcerativa nos membros. Todos os domínios de qualidade de vida medidos pelo instrumento apresentaram *scores* baixos. Os achados desta investigação denotam a necessidade de ações de promoção da saúde e prevenção da infecção pela Leishmaniose Tegumentar Americana.

**Descritores:** Qualidade de Vida; Leishmaniose Cutânea; Enfermagem; Saúde; Doenças Negligenciadas.

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## INTRODUCTION

Leishmaniasis, an endemic zoonosis, is found within the scope of neglected diseases, especially in the tropics<sup>(1)</sup>. Caused by protozoa of the genus *leishmania*, it affects humans who may develop the visceral or cutaneous form of the disease<sup>(2)</sup>.

Cutaneous Leishmaniasis (CL), is characterized by the active infection of *leishmania* spp. which forms lesions that evolve classically from papules and nodules into plaque and ulcers, causing physical and emotional harm in people. This disease has a low mortality rate when treated. However, scars, which are not yet recognized as part of the spectrum of disease, can occur and affect one's self-image negatively, impacting quality of life<sup>(3)</sup>.

Prevalence of CL, also called American Tegumentary Leishmaniasis (ATL) in America, is expressly high in Latin America. Brazil has the largest number of new cases, with wide geographical distribution in its territory<sup>(4)</sup>.

ATL is currently one of the most neglected diseases in the world. It affects the poorest patients in developing countries and may be associated with poverty-related malnutrition, weak immune systems, geographical relocation to endemic locations, inadequate housing or living in disease occurrence areas, illiteracy, or gender roles exercised by the diseased, affecting the quality of life of these people<sup>(1)</sup>.

Quality of life is defined as the individual's perception of their place in life within the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns. This definition considers an individual's satisfaction with the psychological and physical state, social interactions, environment, and spiritual aspects of their life<sup>(5-6)</sup>.

Therefore, the term Health-Related Quality of Life (HRQoL) emerges as a concept that encompasses the acquaintance of the individual with the influence of health status on their quality of life in an integral way, not being limited to purely physical aspects, but based on the different dimensions that permeate individual and collective daily life<sup>(7)</sup>.

Despite being a subjective phenomenon, HRQoL can be measured employing statistically validated scales, which shows the need to use an appropriate instrument that allows broad analysis of areas that may be affected by certain aggravations<sup>(8)</sup>.

The reason for this investigation is justified by the lack of knowledge about the theme discussed and the importance of analyzing HRQoL in people with ATL. This was evidenced by an integrative literature review carried out in 2019, which showed few publications related to the impact on HRQoL of people affected by leishmaniasis. According to the results obtained in this review, there is a negative interference of leishmaniasis in all dimensions of HRQoL, especially in general, psychological, and physical health<sup>(9)</sup>.

Therefore, these findings provided the structure for the present investigation, as well as confirm the importance of analyzing the impact of ATL on the HRQoL of sick people and advancing scientific knowledge in the area of neglected tropical diseases. This will allow administrators to make evidence-based decisions for the implementation of public policies for the prevention and treatment of ATL and help healthcare professionals, especially nursing teams, provide comprehensive health care for these individuals considering various facets of HRQoL, seeking to improve social and public health.

In order to confirm the areas of HRQoL most affected by ATL, this study aimed to assess the health-related quality of life of people affected by American Tegumentary Leishmaniasis, according to sociodemographic and clinical aspects.

## METHOD

A descriptive, cross-sectional, and quantitative study conducted between July and October 2019 at a benchmark university hospital in care of people affected by leishmaniasis in Paraíba, Northeast Brazil. Probabilistic samples, obtained through a sampling calculation of 60 ATL cases registered in the Department of Informatics of the Brazilian Unified Health System (DATASUS), with people over the age of 15 years between 2016 and 2017 in the state of Paraíba. With a significance level 10%, 80% power, and the obtained information from the study mentioned, the sample of the present investigation was composed of 22 participants.

Sample composition eligibility criteria: individuals over the age of 18 years old and undergoing in-patient treatment for ATL.

A questionnaire, containing sociodemographic and clinical variables, was used for data collection and the Medical Outcomes Survey Short Form - 36 (SF-36) was applied for evaluation of HRQoL. This form has a generic and multidimensional purpose, is composed of 36 items, and was validated and translated into Portuguese<sup>(10)</sup>. It is an instrument for universal analysis of quality looking at the following fields: functional capacity, physical aspects, emotional aspects, mental health, social aspects, vitality, pain, and general perception of health<sup>(11)</sup>.

SF-36 items are arranged in a Likert-type format and produce scores using a mathematical formula calculated in two phases: weighing data by inserting all the participants' answers in an electronic spreadsheet; Calculating the raw scale, with the transformation of the given values to the answers through pre-established values by the syntax of the referred instrument for each domain. The scores for the eight domains range from 0 to 100. High values indicate better HRQoL, and there is no cut-off score because HRQoL is a subjective phenomenon<sup>(11)</sup>.

For this stage of data collection, the researcher approached people who were undergoing treatment for ATL, explaining the objectives of the study and the importance of analyzing HRQoL. After the participant's expressed consent, the survey and the SF-36 were applied in a private environment, and at the end of the data collection, verbal acknowledgments were made to the interviewee.

Data from participants' responses were inserted in a Microsoft Office Excel 2010 spreadsheet and subsequently transferred to SPSS software, version 20. The *Shapiro-Wilk* test conducted showed that the data did not follow a normal distribution. Thus, for analyzing the sociodemographic and clinical characteristics and HRQoL of people with ATL, descriptive measures (frequency, mean and standard deviation) and inferential measures were used using the non-parametric *Mann-Whitney* and *Kruskal-Wallis* statistical tests.

This study was approved by the Research Ethics Committee of Hospital Universitário Lauro Wanderley, CAAE: nº 11309619.9.0000.5183, according to Decision nº 3.362.887.

## RESULTS

The sociodemographic characterization of the 22 participants in this study (100.0%) is shown in Table 1.

The majority of participants, 59.1%, are male, between the ages of 20 and 88 years old, with a mean of 42.27 years old  $\pm$  18.31 (standard deviation), and average monthly household income of R\$ 1,252.55 ( $\pm$  R\$ 757.43). It is worth mentioning that during the execution period of this study, minimum wage in Brazil was R\$ 1.039.00.

Meanwhile, regarding marital status, 63.7% of participants were in a conjugal relationship. As for occupation, 59.1% had agricultural activity; 40.9% consumed alcohol; and 45.4% used chemical substances (cigarettes, marijuana, or cocaine).

Regarding commuting (inside or outside the state) in the last six months, 31.8% said they had commuted. Regarding housing conditions, 95.5% said they lived in a house, 81.8% owned homes, 59.1% lived in the countryside, and 86.4% of homes were built of brick.

Regarding the characteristics of the property's surroundings, 77.3% said they lived close to the woods, 68.2% said that rivers can be found near to their residence, and 77.3% said banana plantations were present near to their home. As for the presence of animals on the property, 68.2% of the participants had pets at the time of the investigation. 13.6% had cats and 68.2% had dogs. Furthermore, 45.5% said that animals in proximity to their properties had dermatological lesions.

Table 2, below, shows the clinical characteristics of the participants in this study.

**Table 1.** Distribution of people with American Tegumentary Leishmaniasis, according to sociodemographic variables. João Pessoa, PB, Brazil, 2019.

Sociodemographic variable	Patients with ATL (n=22)	
	N	%
<b>Gender</b>		
Male	13	59.1
Female	9	40.9
<b>Age range</b>		
Up to 39 years	12	54.5
40 years or older	10	45.5
<b>Marital Status</b>		
Married	8	36.4
Single	7	31.8
Civil Union	6	27.3
Divorced / Separated	1	4.5
<b>Profession</b>		
Agricultural activity	13	59.1
Commercial activity	5	22.7
Social activity	4	18.2
<b>Use of alcohol</b>		
Do not drink	13	59.1
Often (1x/week)	6	27.3
Rare (1x/semester)	2	9.1
Sporadic (1x/month)	1	4.5
<b>Drug use</b>		
No	12	54.5
Cigarette	5	22.7
Marijuana	4	18.2
Cocaine	1	4.5
<b>Commuting in or out of state (last six months)</b>		
Yes	7	31.8
No	15	68.2
<b>Type of housing</b>		
House	21	95.5
Apartment	1	4.5
<b>Property ownership</b>		
Own	18	81.8
Rent	4	18.2
<b>Residence zone</b>		
Rural	13	59.1
Urban	9	40.9

**Table 1.** Continuation.

Sociodemographic variable	Patients with ATL (n=22)	
	N	%
<b>Building Material</b>		
Brick	19	86.4
Taipa (Mud-house)	3	13.6
<b>Property near woods</b>		
Yes	17	77.3
No	5	22.7
<b>Property near river</b>		
Yes	15	68.2
No	7	31.8
<b>Property near banana plantations</b>		
Yes	17	77.3
No	5	22.7
<b>Presence of Pet</b>		
Yes	15	68.2
No	7	31.8
<b>Cat</b>		
Yes	3	13.6
No	19	86.4
<b>Dog</b>		
Yes	15	68.2
No	7	31.8
<b>Sick animal (with dermal lesions)</b>		
Yes	10	45.5
No	12	54.5

Source: Study database, 2019.

**Table 2.** Distribution of people with American Tegumentary Leishmaniasis, according to clinical variables. João Pessoa, PB, Brazil, 2019.

Clinical Variable (n=22)	Patients with ATL	
	N	%
<b>Initial complaint *</b>		
Appearance of lesion	22	100.0
Itching	9	40.9
Fever	3	13.6
Weight loss	3	13.6
Pain	3	13.6
Pallor	2	9.1
Severe malnutrition	1	4.5
Trauma	1	4.5

**Table 2.** Continuation.

Clinical Variable (n=22)	Patients with ATL	
	N	%
<b>Initial complaint *</b>		
Appearance of lesion	22	100.0
Itching	9	40.9
Fever	3	13.6
Weight loss	3	13.6
Pain	3	13.6
Pallor	2	9.1
Severe malnutrition	1	4.5
Trauma	1	4.5
<b>Number of lesion</b>		
1 lesion	13	59.1
2 lesions	5	22.7
3 lesions	2	9.1
More than 3 lesions	2	9.1
<b>Type of lesion</b>		
Ulcerative	21	95
Nodular	1	5
<b>Lesion location</b>		
Upper limb	7	31.8
Lower limb	6	27.3
Face	2	9.1
Lower and Upper limb	2	9.1
Buttock	2	9.1
Back	2	9.1
Popliteal	1	4.5
<b>Comorbidities</b>		
Systemic arterial hypertension	6	27.3
Diabetes	3	13.6
Secondary infection	2	9.1
Rheumatic disease	1	4.5
Hepatitis	1	4.5
Tuberculosis	1	4.5
HIV and AIDS	1	4.5
No comorbidity	7	42
<b>Laboratory diagnosis of leishmaniasis*</b>		
Histopathological	15	68.2
Scraping	8	36.4
Montenegro Test 2 09.1	2	9.1

\* Multiple choice response.  
Source: Study database, 2019.

Concerning clinical data, all participants in this study sought the health service with an initial complaint of the appearance of a lesion, followed by itching (40.9%). Among the patients, 59.1% had at least one lesion, 95.5% of which were ulcerative, and 31.8% were located on upper limbs. Regarding the comorbidities reported, 27.3% of patients undergoing treatment for ATL had systemic arterial hypertension. Regarding laboratory diagnosis of ATL, 68.2% of patients were diagnosed using the histopathological method.

Regarding the HRQoL fields on SF-36 questionnaire, measured in people with ATL (Table 3), low scores are especially observed in role physical domains (28.41), followed by emotional role (28.79), vitality (51.82), social functioning (53.98), and general health (56.32). Bodily pain (72.36) was the domain that presented the best result for the quality of life of these people, considering values closer to 100.

**Table 3.** Distribution of the mean, median, and standard deviation of the domain scores of the Medical Outcomes Survey Short Form-36, assessed in individuals affected by American Tegumentary Leishmaniasis. João Pessoa, PB, Brazil, 2019.

SF-36 Domain	Persons with ATL (n = 22)		
	Average	Median	Standard Deviation
Bodily pain	72.36	77.00	26.25
Mental health	64.95	52.00	31.66
Physical functioning	63.86	62.50	31.24
General health	56.32	60.00	14.90
Social functioning	53.98	50.00	20.91
Vitality	51.82	62.50	34.49
Emotional role	28.79	0.00	42.78
Role Physical	28.41	0.00	43.16

Source: Study database, 2019.

Table 4 shows SF-36 domain scores related to the sociodemographic and clinical data of people with ATL.

Table 4 shows that there was no significant difference between the sociodemographic data and the mean of SF-36 quality of life domains in people with ATL. Concerning clinical data, there is a significant difference in the domains of role physical, social functioning, and emotional role of people affected by ATL that had skin plaque lesions.

Table 5 shows scores for SF-36 domains according to initial complaint and comorbidities of people affected by ATL.

According to the information expressed in Table 5, regarding initial complaints presented by people affected by

ATL, domains of Bodily pain and social functioning showed a statistical difference when the patient had a fever. When reporting pallor, there was a difference between the means of the quality of life scores in the Bodily pain domain. When performing non-parametric tests between the SF-36 domains and the comorbidities presented by people with leishmaniasis, no statistical difference was shown.

## DISCUSSION

The results of this investigation show that there was a predominance of ATL in male individuals, confirming previous studies with the same purpose as this one<sup>(1)</sup>. This characteristic appears to be associated with the patriarchal anthropology established in civilizations, where men are given activities with more exposure to carriers, especially in rural areas, in the outdoors, such as agriculture, or fishing, putting them in contact with endemic areas<sup>(4,12-13)</sup>.

Regarding the age range of individuals with ATL, the present investigation presents information similar to a previous study conducted in Iran, in 2013, that aimed to measure HRQoL in people diagnosed with CL, in which the participants had an average age of  $36.9 \pm 14.9$  years<sup>(14)</sup>. HRQoL in young adults can be negatively affected by the consequences of ATL because the social stigma against the lesions and the hospitalization to treat the infection can affect their work activities, with subsequent reduction in work activities interfering with their incomes and financial autonomy<sup>(15)</sup>.

Woods, rivers, and banana plantations characterized the environment surrounding the residences of the participants in this study and sick animals (with lesions) could be found in their homes. Such characteristics may have led to the patients' infections after being exposed to the vector responsible for transmitting leishmaniasis from the sick animal to the human host. A Master's thesis presented to the Post-Graduate Program of Animal Science at the Veterinary School of the Federal University of Minas Gerais found vectoral abundance of *Phlebotominae* in the places containing banana trees and large numbers of hollow trees and wood in residences with excess vegetation and shade<sup>(16)</sup>. Therefore, the importance of understanding the sociodemographic and epidemiological characteristics associated to people suffering from this ailment must be highlighted in order to comprehend how the environment may interfere with the chain of transmission and infection of ATL.

During its evolutionary cycle, *leishmania*, the parasite responsible for the infection, presents essentially two evolutionary forms: promastigote, found in the vector, and amastigote, an intracellular form that is present in phagocytic cells of the vertebrate host. Several species of wild animals, such as rodents, marsupials, edentates, and wild canids,

**Table 4.** Scores for the Medical Outcomes Survey Short Form- 36 domains, according to sociodemographic and clinical data of people with American Tegumentary Leishmaniasis. João Pessoa, PB, Brazil, 2019.

Sociodemographic Data	Domain of Quality of Life of a Person with ATL (n = 22)							
	Physical functioning	Role physical	Bodily pain	General health	Vitality	Social functioning	Emotional role	Mental health
<b>Gender<sup>(a)</sup></b>								
Male (n = 13)	10.69	10.65	12.62	11.04	10.81	10.88	10.65	10.88
Female (n = 9)	12.67	12.72	9.89	12.17	12.50	12.39	12.72	12.39
P value	0.498	0.441	0.344	0.705	0.566	0.601	0.441	0.610
<b>Age<sup>(a)</sup></b>								
Up to 39 years (n = 12)	11.54	11.04	12.96	11.42	10.88	9.96	11.04	9.79
40 years or older (n = 10)	11.45	12.05	9.75	11.60	12.25	13.35	12.05	13.55
P value	0.988	0.784	0.256	0.961	0.637	0.220	0.784	0.184
<b>Housing zone<sup>(a)</sup></b>								
Urban (n = 9)	10.94	12.06	12.28	10.72	10.06	8.94	11.17	8.67
rural (n = 13)	11.88	11.12	10.96	12.04	12.50	13.27	11.73	13.46
P value	0.755	0.738	0.655	0.656	0.400	0.118	0.859	0.090
<b>Profession<sup>(b)</sup></b>								
Agricultural activity (n = 13) <sup>(1)</sup>	11.73	11.12	12.58	11.50	11.69	13.54	11.73	11.65
Social activity (n = 4) <sup>(2)</sup>	9.50	9.50	5.50	9.75	10.00	9.13	9.50	11.88
Commercial activity (n = 5) <sup>(3)</sup>	12.50	14.10	13.50	12.90	12.20	8.10	12.50	10.80
P value	0.771	0.432	0.114	0.767	0.867	0.181	0.703	0.961
<b>Ulcerative Lesion<sup>(a)</sup></b>								
Yes (n = 21)	11.24	11.10	11.36	11.71	11.26	11.10	11.10	11.19
No (n = 1)	17.00	20.00	14.50	7.00	16.50	20.00	20.00	18.00
P value	0.545	0.227	0.773	0.591	0.636	0.273	0.227	0.455
<b>Plaque Lesion<sup>(a)</sup></b>								
Yes (n = 2)	18.50	20.00	14.50	10.50	18.00	20.75	20.00	19.00
No (n = 20)	10.80	10.65	11.20	11.60	10.85	10.58	10.65	10.75
P value	0.134	<b>0.043 (*)</b>	0.576	0.853	0.182	<b>0.022 (*)</b>	<b>0.043 (*)</b>	0.095
<b>Number of injuries<sup>(b)</sup></b>								
One (n = 13)	10.23	11.62	11.58	9.73	10.15	12.73	11.00	10.15
Two (n = 5)	14.10	11.90	11.30	11.50	10.20	9.90	13.50	11.00
Three (n = 2)	12.50	13.75	12.00	19.00	17.00	9.50	13.75	13.00
More than three (n = 2)	12.25	7.50	11.00	15.50	18.00	9.50	7.50	20.00
P value	0.708	0.706	0.999	0.216	0.238	0.745	0.548	0.244

Significant results: (\*) p-value < 0.05; (a) Mann-Whitney test; (b) Kruskal-Wallis test; (1) Farmer and fisherman; (2) Retired, welder, sanitation agent, agent to combat endemic diseases, student, social worker, bricklayer and guard; (3) Trader and entrepreneur.

Source: Study database, 2019.

**Table 5.** Scores of the *Medical Outcomes Survey Short Form-36* domains, according to initial complaint and comorbidities of people with American Tegumentary Leishmaniasis. João Pessoa, Paraíba, Brazil, 2019.

Variable	First Symptom Presented by People with ATL (n = 22)							
	Physical functioning	Role physical	Bodily pain	General health	Vitality	Social functioning	Emotional role	Mental health
<b>Fever<sup>(a)</sup></b>								
Yes (n = 3)	5.50	7.50	4.00	10.33	7.17	4.33	7.50	9.50
No (n = 19)	12.45	12.13	12.68	11.68	12.18	12.63	12.13	11.82
P value	0.097	0.364	0.026 (*)	0.782	0.232	0.029 (*)	0.364	0.592
<b>Weight loss<sup>(a)</sup></b>								
Yes (n = 3)	6.17	7.50	10.17	11.33	7.83	9.00	7.50	7.67
No (n = 19)	12.34	12.13	11.71	11.53	12.08	11.89	12.13	12.11
P value	0.142	0.364	0.745	0.964	0.323	0.499	0.364	0.293
<b>Pallor<sup>(a)</sup></b>								
Yes (n = 2)	3.00	7.50	2.50	11.25	6.75	5.25	7.50	10.50
No (n = 20)	12.35	11.90	12.40	11.53	11.98	12.13	11.90	11.60
P value	0.069	0.515	<b>0.017 (*)</b>	0.996	0.316	0.169	0.515	0.848
<b>Itching<sup>(a)</sup></b>								
Yes (n = 9)	11.28	11.17	12.06	13.28	11.94	11.44	10.28	10.33
No (n = 13)	11.65	11.73	11.12	10.27	11.19	11.54	12.35	12.31
P value	0.908	0.859	0.752	0.296	0.807	0.991	0.441	0.500
Valor de p	0,771	0,432	0,114	0,767	0,867	0,181	0,703	0,961
<b>Pain<sup>(a)</sup></b>								
Yes (n = 3)	8.83	7.50	9.67	12.00	12.33	11.83	7.50	13.00
No (n = 19)	11.92	12.13	11.79	11.42	11.37	11.45	12.13	11.26
P value	0.472	0.364	0.627	0.919	0.849	0.980	0.364	0.707
<b>Severe malnutrition<sup>(a)</sup></b>								
Yes (n = 1)	5.00	7.50	4.00	19.00	12.50	9.50	7.50	10.50
No (n = 21)	11.81	11.69	11.86	11.14	11.45	11.60	11.69	11.55
P value	0.455	1.000	0.409	0.455	0.955	1.000	1.000	1.000
<b>Trauma<sup>(a)</sup></b>								
Yes (n = 1)	5.00	7.50	4.00	19.00	12.50	9.50	7.50	10.50
No (n = 21)	11.81	11.69	11.86	11.14	11.45	11.60	11.69	11.55
P value	0.455	1.000	0.409	0.455	0.955	1.000	1.000	1.000
<b>Diabetes<sup>(a)</sup></b>								
Yes (n = 3)	10.00	11.67	17.33	9.83	7.50	14.17	11.67	7.83
No (n = 19)	11.74	11.47	10.58	11.76	12.13	11.08	11.47	12.08
P value	0.697	1.000	0.094	0.679	0.273	0.462	1.000	0.323
<b>Rheumatic disease<sup>(a)</sup></b>								
Yes (n = 1)	6.00	7.50	9.50	1.00	3.00	9.50	7.50	1.00
No (n = 21)	11.76	11.69	11.60	12.00	11.90	11.60	11.69	12.00
P value	0.545	1.000	0.955	0.091	0.273	1.000	1.000	0.091

**Table 5.** Continuation.

Variable	First Symptom Presented by People with ATL (n = 22)							
	Physical functioning	Role physical	Bodily pain	General health	Vitality	Social functioning	Emotional role	Mental health
<b>Systemic arterial hypertension<sup>(a)</sup></b>								
Yes (n = 6)	11.75	11,67	12.50	9.17	10.17	12.75	13.00	12.75
No (n = 16)	11.41	11.44	11.13	12.38	12.00	11.03	10.94	11.03
P value	0.929	1.000	0.684	0.315	0.579	0.571	0.546	0.601
<b>HIV and AIDS<sup>(a)</sup></b>								
Yes (n = 1)	8.00	15.50	14.50	12.00	9.00	2.50	7.50	7.50
No (n = 21)	11.67	11,31	11.36	11.48	11.62	11.93	11.69	11.69
P value	0.727	1.000	0.773	1.000	0.818	0.227	1.000	0.727
<b>Hepatitis<sup>(a)</sup></b>								
Yes (n = 1)	10.50	7,50	7.00	8.50	8.00	2.50	7.50	7.50
No (n = 21)	11.55	11,69	11.71	11.64	11,67	11.93	11.69	11.69
P value	1.000	1.000	0.591	0.773	0,682	0.227	1,000	0.727
<b>Tuberculosis<sup>(a)</sup></b>								
Yes (n = 1)	12.50	7,50	14.50	12.00	6,00	9.50	7.50	3.50
No (n = 21)	11.45	11,69	11.36	11.48	11,76	11.60	11.69	11.88
P value	1.000	1.000	0.773	1.000	0,545	1.000	1,000	0.318
<b>Secondary infection<sup>(a)</sup></b>								
Yes (n = 2)	16.25	13,75	12.50	12.00	15,75	13.00	13.75	13.00
No (n = 20)	11.03	11,28	11.40	11.45	11.08	11.35	11.28	11.35
P value	0.346	0.818	0.818	0.935	0.368	0.900	0.818	0.749

Significant results: (\*) p-value <0.05; (a) Mann-Whitney test. Source: Study database, 2019.

are considered natural reservoirs of *leishmania* and are, therefore, prevalent in rural or peri-urban areas where intense deforestation occurs<sup>(2)</sup>. The parasite has also been recorded in domestic animals, such as dogs, cats, and equids, which are considered accidental hosts and may further vector transmission<sup>(17)</sup>.

Most of the participants in this study are from rural areas, which possibly makes them vulnerable to health inequities and, consequently, to greater exposure to the risk of infection with ATL. A study in the state of Acre, with data from the Disease Notification System between 2001 and 2010, analyzed the correlation between sanitation conditions and ATL and suggested that inadequate sanitation conditions increase the population's exposure to ATL vectors<sup>(18)</sup>, reaffirming the importance of characterizing the place where individuals at risk of exposure are inserted, in order to decrease the infection rate and, consequently, the illness resulting from ATL.

It is up to the health team that assists people affected by ATL to know the sociodemographic characteristics of their patients, with the perspective of promoting complete health care regarding the orientation for preventive measures against

ATL considering the existing conditions of the environment and, therefore, preventing the recurrence of the disease.

To this end, prevention and control of ATL depend on individual practices, such as the use of repellents and avoiding exposure times to vectors (dusk), as well as the use of mosquito nets and tiling, and collective practices, like chemical control, which consists of the application of insecticides. Public management services responsible for periodical urban waste collection are also considered responsible for promoting the removal and correct gathering of waste. These actions enable the reduction of stray animals that are possibly reservoirs for leishmanias and that feed on organic remains close to homes. It is worth highlighting that euthanasia of domestic and stray animals should only be performed if the lesions result in intense suffering for the animal<sup>(2)</sup>.

The most-reported comorbidity among the interviewees was systemic arterial hypertension. Yet, there were also cases of ATL combined with other comorbidities, such as diabetes, HIV, and AIDS. The immunosuppression caused by HIV aggravates ATL symptoms, significantly impacting the individual both physically and emotionally. The patient

becomes prone to developing secondary infections to the ATL lesions, as well as carrying and spreading parasites on the body. The patient is also affected emotionally, since the disease is still followed by the stigma and prejudice of society<sup>(19-20)</sup>.

Diabetes, a systemic metabolic disease responsible for altering glycemic levels, is related to several skin diseases, possibly influencing the result found by this investigation showing the referred comorbidity associated with ATL. Balanced glycemic control and primary prevention of specific damage to internal organs must be promoted and reinforced by healthcare specialists to prevent the worsening of the clinical condition of individuals at risk of exposure to ATL<sup>(21)</sup>.

For the laboratory diagnosis of ATL, the histopathological method, the “gold-standard”, was the most prevalent used to elucidate the disease in evidence. Currently, direct analysis of protozoa in lesion samples is the method of choice to check for the presence of leishmania because it is the fastest, easy to perform, and monetarily viable, in addition to promoting the differential diagnosis of other dermal lesions, especially Hansen’s disease<sup>(22)</sup>.

Scientific research that assesses the impact of leishmaniasis on patients’ quality of life indicates that, when they are affected by the disease, patients experience a decrease in HRQoL, especially in general health, psychological, and physical dimensions<sup>(23)</sup>.

In this investigation, the results indicate that the HRQoL domains based on the SF-36 of people with ATL were affected, with lower scores in role physical, emotional role, and vitality domains. A study conducted in India using the SF-36 instrument also showed low HRQoL in people with CL, particularly in mental health, social functioning, bodily pain, and general health dimensions<sup>(1)</sup>.

When it comes to analyzing the HRQoL of the participants in this study concerning sociodemographic data, there was no significant difference between the HRQoL domains. From a clinical perspective, there was a difference between the means of role physical and emotional role domains when the patient had a plaque lesion. A similar result was found in a study carried out in Iran seeking to investigate the HRQoL of 124 individuals affected by CL through the Dermatology Life Quality Index, which showed a negative impact on quality of life associated with CL concerning appearance and type of lesion, whether nodular or plaque<sup>(14)</sup>.

The fact that only three Brazilian studies of assessment of HRQoL in people with ATL were found, made it challenging to compare national works to the results found by this investigation<sup>(9)</sup>.

Pathophysiological characteristics of ATL are possibly related to the low HRQoL found in this study, affecting the participants’ well-being. A 2017 survey conducted in India revealed that people with long-term lesions experienced a greater negative impact on their HRQoL, concluding that

the more severe CL symptoms are, the more they negatively influence the individual’s HRQoL<sup>(1)</sup>.

ATL manifests in two forms: cutaneous or mucous; and may display different clinical signs. Inapparent infection in individuals without lesions is based on positive results from serological and Montenegro’s intradermal tests. ATL differs from Lymph node leishmaniasis, which is the lymphadenopathy located in the absence of cutaneous lesion, characterized by a typical and painless ulcer, with an erythematous base, infiltrated, and firm consistency. The sides are well defined and elevated with a reddish background and unrefined textures. It should be noted that untreated lesions can heal spontaneously in a few months or years, leaving atrophic or hypertrophic scars<sup>(2)</sup>.

Scores for SF-36 Bodily pain and social functioning domains showed a statistical difference when the patient had fever and pallor. ATL interferes with the HRQoL of the affected people, possibly because, despite not having an imminent risk of death, it causes stigma and social abandonment, especially during the hospitalization period, which may explain the low score values of the SF-36 among the participants investigated<sup>(1)</sup>.

The study is limited since no specific instrument was used to measure the HRQoL in people with ATL and the impossibility of collecting qualitative data to understand the detailed subjectivity of HRQoL in infected people due to a short research period. Thus, new approaches of mixed research methods with the application of a specific instrument for the disease are suggested to deepen the knowledge related to the impact of ATL on people’s HRQoL, leading to more effective health care, especially nursing, in the context of neglected tropical diseases.

## CONCLUSIONS

The present investigation has relevance in nursing care in Public Health and in addressing neglected tropical diseases, as it points out that ATL affects mostly males, adults with marital relationships, performing an agricultural activity, and with low family income. All patients sought health services with initial complaints of lesions. In the assessment of HRQoL, low scores were evidenced in all domains measured by the SF-36, with lower values in role physical, emotional role, and vitality, depending on the sociodemographic and clinical variables of patients with ATL. These characteristics show the need for urgent action to prevent ATL infection through investment based on the characteristics of the exposed population, such as health education and guidelines that decrease the risk of contamination.

Thus, the findings presented expose low HRQoL among the sample of people affected by ATL and its relationship

with sociodemographic and clinical factors. Therefore, the objective of study was reached.

Consequently, continuing education actions for health professionals, especially the Family Health Strategy, concerning preventive and training measures for the establishment of early diagnosis of ATL, must be instantly and urgently enhanced. In association with the government, repellents and mosquito nets must be distributed to inhibit exposure to the vector, especially in endemic areas, decreasing the negative effects caused by this currently neglected disease.

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