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Morbimortality in American Cutaneous Leishmaniasis in the Xingú region – Pará: Elaboration of a digital booklet for health professionals

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***Keywords*— Morbimortality. Tegumentary Leishmaniasis. Americana. Digital Booklet.**

***Abstract*—** *Objective: To carry out a survey of the morbidity and mortality of American Tegumentary Leishmaniasis (ATL) in the Xingú / PA region. Method: Study with a quantitative and qualitative approach of an exploratory nature and descriptive characterization, starting from the analysis of morbidity and mortality data to the construction of a technology in Health, in the format of a digital booklet, to assist health professionals in the surveillance and assistance to patients with ATL. Results: Professionals oriented on the use of protocols, the need for assisted treatment and patient follow-up until cure, in addition to the need to pay attention to adverse events and the presence of coinfections, thus reducing complications and deaths during treatment. Conclusion: The use of a health technology proves to be of fundamental importance to help the health professional in the care of ACL patients, as it allows quick and easy access to clarify doubts about protocols, flows, references in the state, available medications. The pilot study took place in the Xingú - Pa health region, due to its epidemiological importance, being one of the most important notifiers of ACL in the state, according to SINAN - PA, and with the particularity of being the region with the largest territorial extension of the country, having many patients in remote areas of care. Thus, it is believed that a digital booklet will help professionals by minimizing the risks of complications, aggravation and death of patients undergoing ATL treatment.*

I. INTRODUCTION

American Tegumentary Leishmaniasis (ATL) is characterized by being an infectious, non-contagious disease, characterized by lesions on the skin and/or mucosa, caused by protozoa of the genus Leishmania. It is considered a zoonotic infection, as it primarily affects animals (wild and domestic) and secondarily humans.[1]

ATL is included among the neglected tropical diseases (NTDs) whose transmission occurs through the bite of infected female sandflies (vector insects), belonging to the genus Lutzomyia, which, according to the geographic region, can be popularly called straw mosquitoes. tatuquira, birigui, cangalhinha, among others. [2]

The form of ATL transmission was first described by Lindenberg, who diagnosed the mucosal Leishmania in the 1909s in workers who performed their work in deforested areas and under construction of highways in the interior of São Paulo. The ATL was identified as a form of bud endemic to countries with a warm climate called “Bahia bud” or “Biskra bud”. However, Gaspar Viana named the parasite Leishmania brazilienses. However, in recent decades the transmission of this disease has been part of several Federative Units (FUs). In addition, in

epidemiological analyses, changes in the transmission pattern were observed that initially pass through as a zoonosis of wild animals (areas of primary vegetation); occupational or leisure (deforestation) and occurrence of migration (rural exodus). [3]

Brazil, since 2017 has been occupying the first place in cases notified by ACL among 17 countries, has reached 19 Federative Units (FUs). Therefore, the states of the northern region of the country and states such as Mato Grosso should be highlighted because it is located in areas with an immense region of forest or wilderness. [4]

According to Brasil (2018) emphasizes that ATL corresponds to a disease that has been included in the list of compulsory diseases and illnesses under Consolidation Ordinance No. 4 of September 28, 2017, Annex V - Chapter 1 of the Health Information System Grievances and Notifications - SINAN. [5] The diagnosis of ATL Leishmaniasis follows the standards of the Ministry of Health (MH) based on epidemiological, clinical and laboratory information. In compliance with MH criteria, the direct research laboratory diagnosis method is adopted. [6]

The author describes that, leishmania is considered a major public health problem whose vectors are sandflies, with 900 species worldwide existing, and more than 400 species are found in America, and within these species, 20 are proven vectors of cases of leishmaniasis. [6]

Data related to the issue of ATL highlight that the highest prevalence of the disease is concentrated in the northern region of the country. In the State of Pará, from 2008 to 2017, 34,609 cases of ATL were reported, an average of 3,461 cases per year and an incidence of 43.89 cases per 100,000 inhabitants. [4] It appears that the State of Pará is classified as an area of high intensity of ATL occurrences.

II. METHOD

Kind of study

Study with a quantitative and qualitative approach of an exploratory nature and descriptive characterization, focusing on the construction of an educational booklet in Health, in order to assist in the surveillance and assistance to patients with ATL.

Sample selection

Samples of patients from the Xingú region diagnosed with ATL who died during treatment were analyzed, such as: death certificates, clinical conditions of these patients, presence of comorbidities, performance of pre-treatment tests, therapeutic schemes used, age, gender, follow-up of treatment and adverse events recorded in the Mortality Information System (SIM) and SINAN systems, from 2010 to 2019.

Place of study

The Saúde Xingu region is located in the center west of the state of Pará. It comprises nine municipalities: Altamira, Anapu, Brasil Novo, Medicilândia, Pacajá, Porto de Moz, Senador José Porfírio, Uruará and Vitória do Xingú. It has an estimated population of 353,943 inhabitants, according to the 2018 census.

Target population of the epidemiological study.

Patients from the Xingu - PA health region notified in the SIM and SINAN ATL systems in the proposed period; analyzing clinical conditions, diagnostic methods used, presence of comorbidities, pre-treatment exams, treatment follow-up, presence of adverse events, drugs used.

Target population of the health technology to be built

Health professionals who work in the care of patients diagnosed with ATL in the Xingu-PA health region.

Ethical aspects

The Research Project does not need to be submitted and evaluated by the Research Ethics Committee nor does it need the CAEE/consubstantiated opinion of the Santa Casa de Misericórdia do Pará Foundation (FSCMP), however, it will comply with national and international guidelines and standards. International Ethics in Research. The research does not directly involve human beings, as the data collected is through notification forms and SINAN and SIM systems.

The proposed objectives will be met regarding the importance of participation, risks, benefits and stages of the research. Ethical research procedures must ensure the privacy and protection of the identity of those notified in the SIM and SINAN - ATL. In this way, this identity will be preserved with the organization of the data, respecting the secrecy and privacy of the information obtained.

According to Brasil (2018) highlights that it is extremely important to protect professionals ethically and legally to the legal defense, Law 13.7871 of December 2018, which provides for the digitization and use of computerized systems for the custody, storage and handling of patient records, especially that contained in paragraph 3 of article 6, is highlighted in the disposal of this document, which must protect the privacy of patients, secrecy and confidentiality of information. [5]

In this way, the cataloged identity of the data obtained from those notified will be protected under absolute secrecy and the disposal after use of the information referring to the profile, contained in the analyzed systems,

will be dealt with in accordance with the law, Law 13.7871/2018.

Research risks

SIM and SINAN: Expose the image and identity of those notified in the systems. In order to avoid such occurrences, the research will be carried out with adequate security and secrecy, and in the event of any unforeseen occurrence, the problem will be resolved immediately;

Researcher: obtaining negative results that make it impossible to build the tool or product - To avoid this fact, a literature search will be carried out on the main evaluations of Health Technologies (HT) that are being adopted in order to minimize these risks;

Scientific community and society in general: if the research data are untrue - To avoid this fact, the data collected will be presented in table format, containing all the information considered relevant to be analyzed and from there, verify the feasibility of the construction and validation of a health technology, aiming to minimize this risk.

Benefits of research

SIM and SINAN - patients notified in the systems: According to what was observed, the need to build a health technology was perceived, at first, in the form of a booklet, aiming to assist in the surveillance and management of patients.

Researcher: technical and scientific improvement on the topic addressed, comprehensive learning on Health Technology Assessment (HTA).

Scientific community and society in general: production of knowledge and data related to improving surveillance and assistance to patients so that they do not evolve to death during the treatment of ATL.

Inclusion criteria

The main inclusion criterion: covers the intersection of data in the SINAN and SIM systems.

Death certificates of patients diagnosed with ATL will be analyzed, conditions, clinics of these patients, presence of comorbidities, performance of pre-treatment exams, therapeutic schemes used, treatment follow-up and adverse events (in the period from 2010 to 2019) of the health region Xingu.

Exclusion criteria

All data that are not part of the SINAN and SIM systems are excluded, as well as all declarations of patients diagnosed with ATL who died, clinical conditions of the patients , presence of comorbidities, performance of pre-treatment exams, therapeutic schemes used, treatment follow-up and adverse events that do not meet the period studied and that do not belong to the Xingu health region.

Data collect

The bibliographical research was carried out through online access, during the months of October 2020 to July 2022. The selection of articles was carried out in the ScIELO (Scientific Electronic Library Online), LILACS (Latin American and Caribbean Literature in Sciences) databases. da Saúde), PubMed, Fiocruz, Unicamp, USP, ASTMH, with articles published between 2015 and 2022 being selected.

The research and data collection was carried out using the SINAN and SIM systems. Death certificates were analyzed regarding the clinical conditions of the patients, presence of comorbidities, performance of pre-treatment exams, therapeutic schemes used, treatment follow-up and adverse events.

Descriptors were used for data collection: American Cutaneous Leishmaniasis; health technology; educational booklets and mortality. They were used jointly and/or separately in order to cover the integrative review.

Product elaboration

The health technology built was an educational booklet in digital format, being a practical tool for health professionals in order to assist in the surveillance and care of patients with ATL, facilitating the targeting of information starting in the Xingu health region, central west of the For.

The product was created to assist health professionals by following the steps below:

1st STAGE – BIBLIOGRAPHIC SURVEY - Through an educational script with information directed to the LTA theme;

2nd STAGE - DATA COLLECTION: Destined for the collection, elaboration and textual development, construction of illustrations or layout and diagramming of the booklet;

3rd STAGE - CONTENT LEGIBILITY: It will use the Flesch ILF Readability assessment (tool that verifies the ease of textual reading) and content elaboration;

4th STAGE - PILOT DEVELOPMENT: It will demarcate the language of the program that will aim to highlight the central idea of the text, observing the quality and high definition for the development of the booklet.

5th STAGE - DISSEMINATION AND DISTRIBUTION: The digital booklet will be made available through an internet access link with the option to download it in PFD format using QR CODE.

III. RESULTS

The relevance of the theme was observed through analyzes in the state notifiable diseases information system (SINAN), where it was observed that some patients undergoing ATL treatment evolved to death from other causes (Table 1), however, there was no adequate investigation of this death. Knowing that ATL is not a disease whose factors can lead patients to death, and checking the records of the Mortality Information System - (SIM), it was noticed that of the various causes of death, there was no relationship to possibilities of adverse events the medication or the presence of comorbidities, since complementary exams were not performed before starting the treatment or after finishing it.

Table 1 - Deaths from other causes during ACL treatment during the study period.

REG.RES	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
PARÁ	10	2	6	8	10	10	7	2	11	4
XINGÚ	0	0	3	2	1	1	1	0	1	1

Source: SINAN (2022)

At first, the choice was made to start the study in the Xingú region, since it plays an important role in the notifications of ATL cases in the state (Table 2). It is located in the center west of the state of Pará. Comprising nine municipalities: Altamira, Anapu, Brasil Novo, Medicilândia, Pacajá, Porto de Moz, Senador José Porfírio, Uruará and Vitória do Xingú. It has an estimated population of 353,943 inhabitants, according to the 2018 census. It has the Belo Monte Hydroelectric Power Plant and the largest municipality in Brazil, which is Altamira, with a territorial area of 159,533.255 km².[7]

Table 2 - Average ACL Cases in the period from 2010 to 2019 by health region.

Reg Sau Resid	Average cases
Metropolitana I	16,7
Metropolitana II	118,2
Metropolitana III	335,1
Marajó	159
Baixo Amazonas	569,4
Rio Caetés	150,2
Tapajós	296
Tocantins	119,2
Xingu	581
Logo de Tucuruí	386,3
Carajás	445,7
Araguaia	215,2

Source: SINAN (2022).

IV. DISCUSSION

Faced with the difficulties of this context, it enabled the feasibility of a tool regarding the construction of an educational booklet on Health in digital format, in order to assist in the surveillance and assistance to patients with ATL, which facilitates the directing of information to health professionals. health, in a clear and objective way, starting in the Xingu health region.

Faced with this, it is necessary to present the use of educational material in the field of health that aim at the conceptual and theoretical point for the production of knowledge in relation to ATL. It was found in the studies that, " [...] the construction of protocols, manuals, booklets, algorithms, guides and guidelines contemplate the best scientific evidence". [8]

The literature describes that health education materials (educational booklet) or health education process technologies that address care to be performed make it possible to understand the guidelines of everyone involved in the process (health professionals and patients). They also argue that, when using educational technologies in health, they have as strategies the participation, approval of specialists in the area. [9]

It also considers that the booklet can favor the provision of assistance based on clinical practices, in addition to the incorporation of this educational instrument in the health area, in addition to that, it can promote the improvement of health. Therefore, in order to be used as an educational tool, the booklet has to go through the validation process, in order to provide analytical measures of the information that will be inserted appropriately according to the context. [8]

V. CONCLUSION

It appears that the location of ATL transmission focuses on similar epidemiological characteristics in different states and can be reproduced in regions with different dynamics, which made the Xingú region fundamentally important for the study, as it has the largest municipality territory of the country, it is a large region that most notifies cases of ATL in the state of Pará, Brazil, according to SINAN-PA and has many patients in areas of difficult access.

Thus, alternative approaches to safety in the intervention are necessary, given the feasibility of building an educational tool in health, in the format of a digital booklet, clear and objective, containing protocols, patient segment, references in the state, so that reduce health costs, being a digital and easily accessible product.

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