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Leishmaniasis in Santa Ana, Ecuador: knowledge assessment and control strategies

Leishmaniasis en Santa Ana, Ecuador: evaluación del conocimiento y estrategias de control

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ABSTRACT

Leishmaniasis is a parasitic disease transmitted by the bite of infected sand flies, with a high incidence in tropical areas, such as Santa Ana, Ecuador. This study aimed to analyze the community's level of knowledge and the effectiveness of control strategies implemented in the region. A descriptive cross-sectional study was conducted with 25 residents, who completed surveys that collected sociodemographic data, knowledge about the disease, perceptions of preventive measures, and attitudes toward possible infection. Results showed that 92% of respondents were unaware of the disease, and 100% were unaware of its mode of transmission. Additionally, 68% considered preventive actions insufficient, and 64% perceived awareness campaigns as ineffective. Despite this, 80% expressed a willingness to seek hospital care in the event of suspicious symptoms. The study concludes that the persistence of leishmaniasis in the community is associated with a lack of information and a limited understanding of institutional efforts, highlighting the need to strengthen educational strategies, improve access to healthcare services, and expand community-based prevention campaigns.

Keywords: leishmaniasis, knowledge, public health, prevention, transmission.

RESUMEN

La leishmaniasis es una enfermedad parasitaria transmitida por la picadura de flebótomos infectados, con alta incidencia en zonas tropicales como Santa Ana, Ecuador. Esta investigación tuvo como objetivo analizar el nivel de conocimiento de la comunidad y la efectividad de las estrategias de control aplicadas en dicho cantón. Se realizó un estudio descriptivo y transversal en 25 residentes, a quienes se aplicaron encuestas para recolectar datos sociodemográficos, conocimiento sobre la enfermedad, percepción de medidas preventivas y actitudes ante una posible infección. Los resultados mostraron que el 92 % de los encuestados desconocía la enfermedad y el 100 % ignoraba su forma de transmisión. Además, el 68 % consideró insuficientes las acciones preventivas, y el 64 % percibió como ineficaces las campañas de concienciación. A pesar de ello, el 80 % manifestó disposición para acudir al hospital ante síntomas sospechosos. Se concluye que la persistencia de la leishmaniasis en la comunidad se relaciona con la falta de información y la limitada percepción de las acciones institucionales, lo que resalta la necesidad de fortalecer las estrategias educativas, el acceso a servicios de salud y las campañas de prevención comunitarias.

Palabras clave: leishmaniasis, conocimiento, salud pública, prevención, transmisión.

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INTRODUCTION

Leishmaniasis is a parasitic disease of great importance to global public health. It is caused by protozoa of the genus Leishmania and transmitted through the bite of infected sandflies. This pathology can manifest in three primary clinical forms: cutaneous, mucocutaneous, and visceral, with cutaneous and visceral forms being the most frequent. In Ecuador, leishmaniasis represents a significant epidemiological problem, particularly in tropical and subtropical regions such as the province of Manabí, where recurrent cases have been reported (Marie & Petri, 2022; WHO, 2022).

Worldwide, leishmaniasis affects more than 12 million people and is considered one of the primary neglected tropical diseases NTDs) (PAHO, 2019). Between 2010 and 2016, 21,305 cases were registered in Ecuador, reflecting a progressive increase in the disease (Espin & Procel, 2021). During 2023, 1,040 cases were reported nationwide, and, as of Epidemiological Week 20 of 2024, 366 cases had been confirmed, of which eight corresponded to the province of Manabí (MSP, 2023). In the canton of Santa Ana, 5 cases have been registered, which underscores the importance of evaluating the relationship between the control measures implemented and the incidence of the disease in this region.

Several environmental and socioeconomic factors have been identified as determinants of leishmaniasis transmission in Santa Ana. These include proximity to forested areas, precarious living conditions, and limited access to healthcare services (Jalca et al., 2022). Recent epidemiological studies suggest an increase in peri-urban and urban transmission, which amplifies the risk of infection. Furthermore, the population's lack of knowledge about the disease and its transmission mechanisms contributes to its persistence (Anzulez et al., 2023; Rivera et al., 2023). A growing body of evidence in related public health contexts suggests that strengthening education and promoting healthier lifestyles, including nutritional awareness, can enhance quality of life and reduce disease burden, particularly among vulnerable populations (Angulo et al., 2024). In this context, evaluating control strategies is essential for designing more effective interventions that reduce the impact of leishmaniasis in the region.

The objective of this study was to analyze community knowledge and the effectiveness of leishmaniasis control strategies in Santa Ana, Ecuador, in order to strengthen public health interventions and enhance disease prevention. Since the relationship between implemented control measures and disease incidence in Santa Ana remains incompletely defined, it is essential to

examine the efficacy of current strategies, such as fumigation and health education. This will determine whether these have been effective in reducing transmission or whether new evidence-based actions are required.

METHODOLOGY

A non-experimental, cross-sectional, descriptive study was conducted in the Santa Ana canton, Manabí province, Ecuador, during the period 2023-2024. The sample included 25 residents selected through non-probability convenience sampling. According to data from the Ministry of Public Health (MSP, 2023), the incidence of leishmaniasis in the region has increased in recent years, justifying the need to evaluate the control strategies implemented.

Physical surveys designed by the authors were used to collect data on sociodemographic characteristics (including sex, age, educational level, occupation, and others) and knowledge of leishmaniasis, encompassing transmission mechanisms, preventive measures, and access to medical care. The information was processed using descriptive statistical tools and organized into frequency tables and representative graphs to facilitate the analysis of the results (Hailu et al., 2016).

The study included participants of all ages and genders from the Santa Ana community and excluded those who were not part of it. The authors ensured that informed consent, participant anonymity, and the absence of conflicts of interest were guaranteed. Furthermore, the study complied with the ethical principles outlined in the Declaration of Helsinki.

RESULTS AND DISCUSSION

The study's findings reveal a widespread lack of knowledge about leishmaniasis and its transmission mechanisms, which could contribute to its persistence due to the lack of adequate preventive measures.

Table 1 shows that 92% of respondents had not heard of the disease, and 100% were unaware of its transmission mechanism. Only 40% reported knowing any prevention methods. These data reveal a lack of information dissemination about the disease within the community, suggesting the need to strengthen public health education strategies. Compared to previous studies in other endemic regions of Latin America, these results are alarming, as greater knowledge about

the disease is directly related to improved prevention and early detection capacity (PAHO, 2021). Likewise, other studies have shown that a lack of knowledge about vector-borne diseases is associated with increased population exposure to risk factors.

Table 1. Knowledge about leishmaniasis

Aspect evaluated	Yes (%)	No (%)
Knowledge of the disease	8	92
Knowledge of transmission	0	100
Knowledge about preventive measures	40	60

Regarding the perception of control measures, the data in Table 2 indicate that 68% of respondents consider the authorities' preventive actions insufficient, while 56% perceive that treatment availability is limited. Furthermore, 64% believe that awareness campaigns have not been effective. Social perception and misinformation have been recognized as key elements that diminish the impact of public health campaigns, particularly when the population's trust and understanding are limited (Gallardo & García, 2024). This suggests that current control strategies have had little to no impact on the population. Studies conducted by PAHO (2019) indicate that the lack of health education and medical infrastructure contributes to the ineffectiveness of the implemented measures, a finding consistent with the results of this study. In countries with high rates of tropical diseases, well-structured and sustained long-term community interventions have been shown to improve the perception and adoption of preventive measures significantly (Urmeneta, 2019).

Table 2. Perception of leishmaniasis control measures

Perception	Enough (%)	Insufficient (%)	He does not know (%)
Preventive actions by authorities	12	68	20
Treatment availability in the area	24	56	20
Effectiveness of awareness campaigns	16	64	20

Regarding the response to a possible infection, the data in Table 3 show that 80% of respondents would go to the hospital if they suspected leishmaniasis. However, 20% indicated they did not know what to do if they presented symptoms, reflecting a lack of guidance and access to adequate information. Previous studies in rural communities have identified similar behavior, where the lack of access to health services and the absence of information campaigns negatively impact the population's response to tropical diseases. Health education is key to promoting early detection and improving the prognosis of the disease in endemic areas. Health literacy, including awareness of dietary antioxidant properties, is efficacious in improving preventive behaviors and reducing disease susceptibility (Forbes-Hernández et al., 2020; Forbes-Hernández et al., 2021). In this regard, the WHO recommends strengthening community health systems and promoting the training of local health promoters, which could significantly improve the management of suspected cases.

Table 3. Attitudes towards suspected leishmaniasis

Action in case of suspected infection	Percentage
Go to the hospital	80
Expect spontaneous improvement	0
Consult a healer	0
He does not know what to do	20

These results underscore the need to enhance health education and strengthen prevention strategies in Santa Ana. Implementing awareness campaigns, providing timely access to medical care, and promoting community participation can significantly contribute to reducing the incidence of leishmaniasis. Among the study's main limitations is its small sample size, which may affect the generalizability of the findings. However, this initial diagnostic approximation can serve as a basis for future research with more representative samples and methodological designs that incorporate longitudinal analyses.

CONCLUSIONS

The study revealed widespread ignorance about leishmaniasis among the population of Santa Ana, Manabí. It was highlighted that 92% of respondents had never heard of the disease, and 100% were unaware of its transmission mechanism. Despite this, 80% were willing to seek

medical attention if they suspected an infection, reflecting a positive attitude toward seeking care. Furthermore, 68% considered the control measures implemented by the authorities to be insufficient, underscoring the need to improve prevention and control strategies. It is recommended that the study coverage be expanded to obtain more representative results and that longitudinal research be conducted to evaluate the effectiveness of public health interventions. This study highlights the importance of raising awareness about leishmaniasis and other neglected tropical diseases, laying the groundwork for developing public policies centered on education, early detection, and treatment in vulnerable communities.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

AUTHOR CONTRIBUTIONS

Conceptualization: Lady M. Guerrero, Gabriela M. Briones, Boris A. Briones, José M. Merino, Raúl A. Cordero, Carlos R. Alejandro. **Data curation:** Lady M. Guerrero. **Formal analysis:** Lady M. Guerrero, Gabriela M. Briones, Boris A. Briones, José M. Merino. **Investigation:** Lady M. Guerrero, Gabriela M. Briones, Boris A. Briones, and José M. Merino. **Methodology:** Lady M. Guerrero and José M. Merino. **Software:** Gabriela M. Briones and Boris A. Briones. **Supervision:** Raúl A. Cordero and Carlos R. Alejandro. **Validation:** Raúl A. Cordero and Carlos R. Alejandro. **Visualization:** Lady M. Guerrero. **Writing – original draft:** Lady M. Guerrero, Gabriela M. Briones, Boris A. Briones, José M. Merino, Raúl A. Cordero, Carlos R. Alejandro. **Writing – review & editing:** Lady M. Guerrero, Gabriela M. Briones, Boris A. Briones, José M. Merino, Raúl A. Cordero, Carlos R. Alejandro.

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