

HTLV-1 and HTLV-2 Seroprevalence among Milk Donors in Shiraz, Southern Iran: A Letter to the Editor

Dear Editor

The safety of donated human milk is paramount for vulnerable neonates. We reported a reassuring finding from southern Iran: the complete absence of human T-lymphotropic virus types 1 and 2 (HTLV-1/2) antibodies in a cohort of milk donors in Shiraz. HTLV, particularly type 1, is a significant global public health concern, with an estimated 15-20 million people infected worldwide. While most carriers remain asymptomatic, HTLV-1 is causally linked to serious conditions, including adult T-cell leukemia/lymphoma (ATL) and HTLV-1-associated myelopathy/tropical spastic paraparesis (HAM/TSP).^{1,2}

HTLV-1 is transmitted primarily through parenteral exposure, sexual contact, and vertical transmission from mother to child. Breastfeeding—mediated by infected lymphocytes in breast milk—is the most critical route for sustaining the virus across generations. As donated human milk is a vital resource for vulnerable neonates, its safety is a paramount public health priority. Although HTLV-1 is endemic in northeastern Iran, particularly in the Khorasan provinces,³ there has been a lack of data on its prevalence in the South. The present study aimed to address this gap by determining the HTLV-1/2 prevalence among milk donors in Shiraz, Iran.

This study was approved by the Ethics Committee of Shiraz University of Medical Sciences (IR.SUMS.MED.REC.1402.257) and conducted at the Zainabiyyeh Maternity Hospital milk bank (Shiraz, Iran). The study included 73 milk donors aged 18-43 years. All participants provided written informed consent. Each milk sample was tested for HTLV-1 and HTLV-2 antibodies using the Abbott i1000SR chemiluminescence immunoassay (CLIA; Abbott Co., USA), a fully automated system with high sensitivity and specificity.

In 2022, the hospital recorded 52,754 childbirths, of which 18,230 (34.55%) were natural vaginal deliveries, and 34,524 (65.45%) were cesarean deliveries. Among the postpartum mothers, 77 volunteered to donate milk, and 73 completed the study. The donor pool included 20 (27.4%) women with natural vaginal delivery and 53 (72.60%) with cesarean delivery. The distribution closely mirrored the overall delivery proportions in the hospital. This suggested that the mode of delivery had no influence on the milk donation rates in this cohort.

The key findings of the present study were a zero seroprevalence rate for both HTLV-1 and HTLV-2 antibodies in all 73 samples. The donors had a mean age of 30.67 ± 0.61 years, distributed as follows: 10 (13.70%) were aged 18-25 years, 47 (64.38%) were 25-35 years, and 16 (21.92%) were 35-43 years. Regarding education, 36 (49.32%) held academic degrees, 22 (30.14%) had completed 9-12 years of schooling, and 15 (20.55%) had 1-8 years of education. Most mothers (58, 79.45%) had fewer than three children, while 15 (20.55%) had three or more.

Regarding medical and behavioral risk factors, 5 (6.85%) donors reported a history of hospitalization, 9 (12.33%) had a history of previous surgery, 2 (2.74%) reported prior vaccination, and 2 (2.74%) had a history of tattooing. Past medical illnesses were reported by 13 (17.81%) participants. Importantly, none reported risk factors strongly associated with HTLV transmission, such as blood transfusion, sexually transmitted infections, HIV infection, high-risk sexual behaviors, hepatitis, or jaundice. This low-risk profile of the cohort both supported and limited the generalizability of the zero seroprevalence finding.

Several important limitations must be acknowledged, despite the encouraging findings. Although the sample represented a full census of donors over one year, its small size might not reflect the broader community prevalence. Furthermore, volunteer milk donors likely represented a more health-conscious, low-risk population, potentially introducing selection bias and leading to an underestimation

of the true prevalence.

In conclusion, this study provided a valuable baseline for future research and public health planning in southern Iran. The absence of HTLV in this cohort suggested that routine universal screening of milk donors might not be cost-effective in low-endemic areas. However, given the severe implications of vertical transmission, continued vigilance is warranted. Larger, multi-center studies are necessary to confirm our findings and establish more robust prevalence estimates. In the meantime, targeted screening of donors from high-risk backgrounds or known endemic regions might offer a balanced approach to ensure both safety and efficiency in milk bank practices.

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Authors' Contribution

N.O: Study design, data interpretation, and reviewing the manuscript; K.BL: Study design, project supervision, and reviewing the manuscript; M.E: Data gathering, drafting, and reviewing the manuscript; M.Sh: Data analysis, data interpretation, and reviewing the manuscript; A.Sh: Data analysis, drafting, and reviewing the manuscript; N.A: Data gathering, data analysis, and reviewing the manuscript; B.N: Data gathering, data analysis, and reviewing the manuscript; H.A: Data gathering, data analysis, and reviewing the manuscript; Y.N: Study design, project supervision, and reviewing the manuscript; All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Declaration of AI

The authors declare that no AI tools were used in the preparation of this manuscript.

Conflict of Interest

Naeimehossadat Asmari, serving as an Editorial Board Member of the Journal, played no role in the handling of this manuscript at any stage. To ensure impartiality, the Editorial Board convened a team of independent experts to review the manuscript without her involvement or awareness.

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References

- 1 Rosadas C, Taylor GP. Mother-to-Child HTLV-1 Transmission: Unmet Research Needs. *Front Microbiol*. 2019;10:999. doi: 10.3389/fmicb.2019.00999. PubMed PMID: 31134031; PubMed Central PMCID: PMCPMC6517543.
- 2 Kataoka K, Nagata Y, Kitanaka A, Shiraishi Y, Shimamura T, Yasunaga J, et al. Integrated molecular analysis of adult T cell leukemia/lymphoma. *Nat Genet*. 2015;47:1304-15. doi: 10.1038/ng.3415. PubMed PMID: 26437031.
- 3 Karimi G, Zadsar M, Pourfathollah AA. Seroprevalence and geographical distribution of human T-lymphotropic virus type 1 among volunteer blood donors in endemic areas of Iran. *Virol J*. 2017;14:14. doi: 10.1186/s12985-017-0693-9. PubMed PMID: 28137274; PubMed Central PMCID: PMCPMC5282699.