

Prevalence of Congenital Hypothyroidism in India: Mapping and Critical Appraisal

Sir,

The prevalence of congenital hypothyroidism in India (1:1000) is higher than the other countries (1:3000–4000).^[1] A recent meta-analysis reported an overall CH prevalence of 0.97 per thousand (1:1031) that ranged from <1:4057 to 1:23.^[1] India is a diverse country with varying genetic and environmental influences. Hence, understanding the prevalence across different states or geographical regions is essential. Here, we map the prevalence of CH in various cities/regions of India [Figure 1].

The prevalence of CH is influenced by the sample size. The prevalence rates were comparable among studies with sample size ≥ 9500 (1:722 to 1:2835) except a study from Gujarat (1:130) in which the criteria to diagnose CH were unclear.^[1,2] In contrast, the prevalence rates were markedly higher in studies with sample size < 9500 with an overall prevalence of 1:310. Hence, we used data only from studies with a sample size ≥ 9500 in whom the criteria to diagnose CH were clear and appropriate.^[3–16]

In these studies, the regional prevalence varied from 1:727 in Chennai to 1:2804 in Mumbai. Indeed, the study with the lowest prevalence (Mumbai) used the primary free T4 method for screening.^[3] Another study from Mumbai with a relatively lower prevalence (1:2481) is one of the oldest (the year 1984) studies, where cord blood TSH cut-off of 30 $\mu\text{IU/ml}$ was used to define screen positivity.^[4] However, recent data from the Indian Council of Medical Research suggests a comparable CH prevalence in Mumbai (1:1528) as the rest of the country.^[5] A study from a medical institution of the government sector in Bengaluru also reported a relatively lower prevalence (1:2735).^[6] However, another study from a tertiary health care center of the private sector in Bengaluru that used a lower TSH cut-off (12 $\mu\text{IU/ml}$) to define screen positivity reported a relatively higher prevalence (1: 852).^[7]

The prevalence rates in two cities of Tamil Nadu, Chennai (1:727) and Coimbatore (1:775), were higher despite using different TSH cut-offs (20 and 10 $\mu\text{IU/ml}$, respectively) to define screen positivity. Observations from these two studies suggest a higher prevalence of CH in Tamil Nadu, which may be attributed to the high prevalence of consanguinity and inbreeding in the state. A study from Vellore, another city in Tamil Nadu, reported a prevalence (1:1334) comparable to the rest of the country.^[5,8,9] The latter study used cord blood TSH with a relatively higher cut-off (25 $\mu\text{IU/ml}$) to define screen positivity but reported no increase in the sensitivity to detect CH with the use of lower cut-offs (20 $\mu\text{IU/ml}$) in a subset.^[9] Another large study

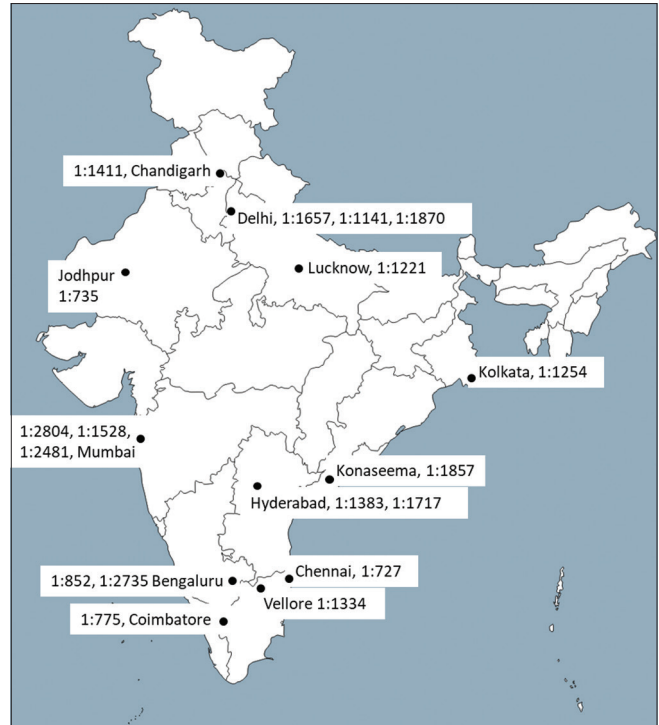


Figure 1: Prevalence of congenital hypothyroidism in various regions of India

from Delhi reported only a marginal increase (from 1:1706 to 1:1657) in the prevalence of CH when the TSH cut-off for screen positivity was lowered from 20 to 10 $\mu\text{IU/ml}$.^[10] These observations indicate no/minimal effect of varied TSH cut-offs to define screen positivity on the prevalence rates of CH. Another region with a relatively higher CH prevalence (1:735) is from western Rajasthan and needs validation in further studies.^[11]

To conclude, we map the CH prevalence in India using large, good-quality studies. There is a modest variation in the regional CH prevalence in India but is higher in all regions of India than in Western countries. The TSH cut-offs used to define screen positivity are unlikely to affect the CH prevalence rate. Large studies on CH prevalence are warranted from the endemic areas for iodine deficiency and also from the northeastern part of India to further the understanding of CH prevalence in these regions.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Submitted: 17-Feb-2023

Revised: 06-Jun-2023

Accepted: 09-Aug-2023

Published: 26-Feb-2024

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DOI:

10.4103/ijem.ijem_73_23

How to cite this article: Sarathi V, Nikith S. Prevalence of congenital hypothyroidism in India: Mapping and critical appraisal. *Indian J Endocr Metab* 2024;28:98-9.

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