

Prevalence of Hypoparathyroidism in the EU: A Systematic Review and Meta-analysis

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BACKGROUND

- Hypoparathyroidism (HP) is a group of rare heterogeneous conditions in which the parathyroid glands fail to produce sufficient amounts of parathyroid hormone
- Due to this heterogeneous nature, information on HP prevalence is highly variable and studies can be difficult to compare
- HP can be divided into 1) primary HP due to intrinsic defects on the parathyroid glands and 2) secondary HP due to several causes, including neck surgery¹

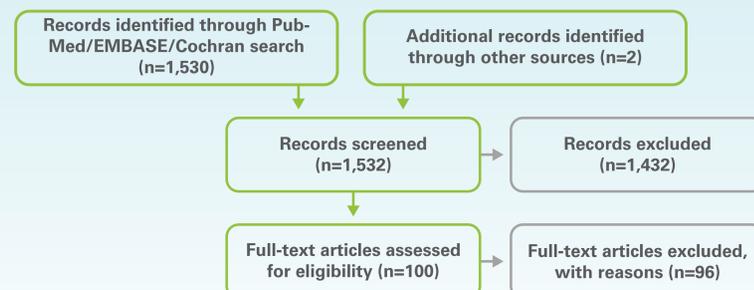
OBJECTIVE

- To estimate the true prevalence of HP within the EU via comparison of available literature and analyses of sub-populations

METHODS

- Comprehensive, targeted search of English language literature available in PubMed, EMBASE, and Cochran was conducted
 - Search terms used were (“Hypoparathyroidism” OR “DiGeorge Syndrome” OR “Hypocalcemia”) AND (“incidence” OR “prevalence” OR “epidemiology”)
 - Flow diagram based on PRISMA guidelines² was generated (Figure 1)
- Abstracts were reviewed for relevance and full-text articles assessed for inclusion based on the following criteria:
 - Study rigor (using the STROBE checklist³)
 - Case ascertainment methodology
- To evaluate temporal trends, use was made of detailed information available in the literature regarding change in rates over time

Figure 1: PRISMA Flow Diagram of PubMed Search Strategy



RESULTS

- All resulting data from the qualifying studies were entered into separate meta-analyses for both non-surgical and post-surgical HP (Figure 2 and Figure 3)
- Based on these analyses the best prevalence estimate for non-surgical HP in the EU was 1.1/10,000 (95% CI: 0.6-1.6 per 10,000) in 2018 and the best prevalence estimate for post-surgical HP in the EU was 2.0/10,000 (95% CI: 1.6-2.3 per 10,000) in 2018
- To evaluate temporal trends, use was made of detailed information available in the literature regarding change in rates over time. Post-surgical HP has been increasing at a faster rate (growth of approximately 0.03 cases per 10,000 annually) than non-surgical HP (growth of approximately 0.01 cases per 10,000 annually)

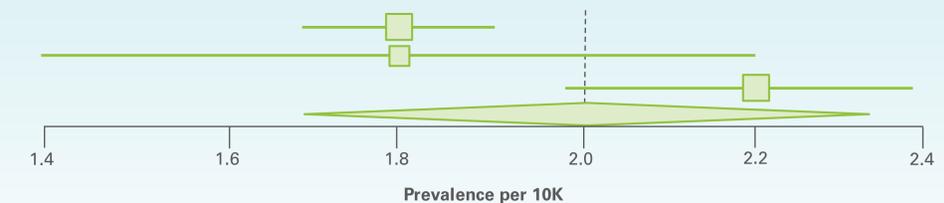
Figure 2: Forest Plot of EU Prevalence Estimates for Non-Surgical HP

Studies	Prevalence Estimate per 10K [95% CI]
Cianferotti 2018	0.9 [0.8-1.0]
Vadiveloo 2018	1.4 [1.0-1.8]
Overall	1.1 [0.6-1.6]



Figure 3: Forest Plot of EU Prevalence Estimates for Post-Surgical HP

Studies	Prevalence Estimate per 10K [95% CI]
Cianferotti 2018	1.8 [1.7-1.9]
Vadiveloo 2018	1.8 [1.4-2.2]
Underbjerg 2015	2.2 [2.1-2.4]
Overall	2.0 [1.6-2.3]



CONCLUSIONS

- The overall prevalence of HP in the EU is estimated to rise to 3.2/10K population in 2020 with a growth rate of ~0.04/10K population annually
- Although study criteria and geographies of the included studies were disparate, once separated into non-surgical and post-surgical, results were more consistent
- The incidence of post-surgical HP appears to be increasing whereas the incidence of non-surgical HP appears to be stable
- These results help inform the epidemiology of both non-surgical and post-surgical HP within the EU

REFERENCES:

¹Bilezikian JP, Khan A, Potts JT Jr, Brandi ML, Clarke BL, Shoback D, et al. Hypoparathyroidism in the adult: epidemiology, diagnosis, pathophysiology, target-organ involvement, treatment, and challenges for future research. *J Bone Miner Res.* 2011;26(10): 2317-2337. PMID:21812031; ²Moher D, et al. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med.* 2009;6(7):e1000097; ³Von Elm. The Strengthening of Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *J Clin Epidemiol.* 2008;61(4):344-9.

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