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Out of hand: prevalence and joint patterning of hand and wrist osteoarthritis in medieval Dutch populations

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Hand & wrist osteoarthritis and joint-specific patterning in medieval Dutch populations

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Figure 1. Alkmaar (Urban)

1448 – 1572 CE

N = 122, OA-N = 15: Prevalence = 12%

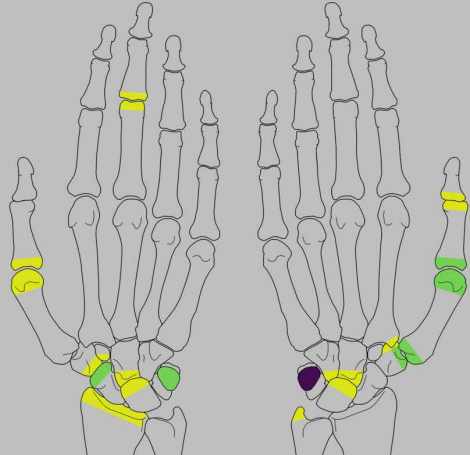


Figure 2. Klaaskinderkerke (Rural)

1286 – 1573 CE

N = 37, OA-N = 2: Prevalence = 5%

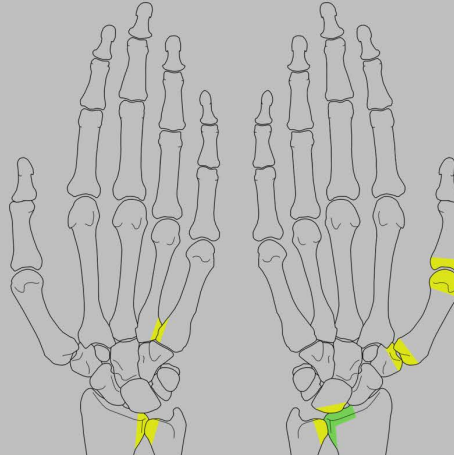
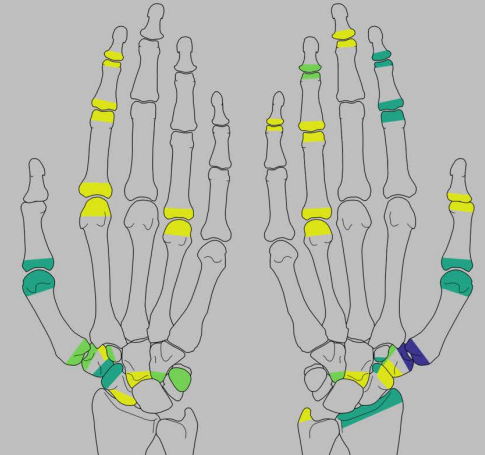


Figure 3. Kampen (Urban-Hospital)

1300 – 1600 CE

N = 65, OA-N = 21: Prevalence = 33%



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2

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INTRODUCTION

Osteoarthritis (OA) is a commonly found musculoskeletal disease which affects synovial joints^[1,2,3]. In modern populations, it is often seen in the hand and wrist^[4,5,6], yet there have been few dedicated studies in past populations. This research aims to investigate if the living environment impacts the occurrence and patterning of hand and wrist OA in the medieval Netherlands.

MATERIALS & METHODS

- 224 individuals with present hand and/or wrist bones were analysed from three medieval Dutch sites (Fig. 4 + QR, Materials).
- OA was assessed using the operational definition of Waldron 2020 (see QR), analysing all joint surfaces with a loupe.

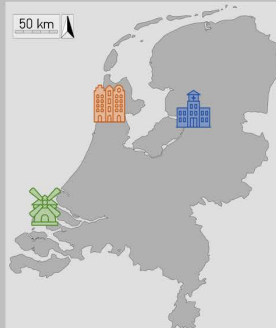


Figure 4. Locations of analysed sites in the Netherlands

RESULTS

- OA prevalence and patterning is visualised per hand, per site (Figs. 1-3). The colour scale indicates exact count of observed joints affected by OA.
- A clear interpopulation difference was observed in overall hand-wrist OA prevalence: with Kampen being the most affected (33%), followed by Alkmaar (12%) then Klaaskinderkerke (5%). The relationship between OA and context was found to be significant, $\chi^2 (2, N = 224) = 17.31, p < .001$.
- Age significantly influenced OA prevalence, with no impact from skewed age demographics (see QR, Results, Figs. 7-8). Osteological sex was not found to be significant (see QR, Results, Figs. 9-10).
- Patterning differed per site (Figs. 1-3) yet showed wrist OA predominance.
- Kampen exhibited the highest prevalence of CMC-1, triscaphoid (STT), and PIP/DIP joint OA (Fig. 3). Contrastingly, Alkmaar presented more pisotriquetral joint OA prevalence (Fig. 1). Klaaskinderkerke showed the least prevalence of OA (Fig. 2), however of interest is the distal radioulnar and intermetacarpal joint OA, which were unique to this site (see QR for outlined joint acronyms and locations).

DISCUSSION & CONCLUSION

The most affected joints in this research were consistent with clinical observations^[7,8], except for low rates of interphalangeal joint OA^[4,5,6]. Poor preservation of small joints was considered in this research and may be a factor in overall OA diagnosis and the lower OA prevalence in Klaaskinderkerke, which this project aims to further explore. This study showed that wrist OA was common in the medieval Netherlands, with hand-wrist OA prevalence and patterning varying depending on site context. This may suggest that interpopulation genetics, daily activities or environmental risk factors can influence the locations of affected joints, which needs to be investigated further and on a larger scale.

QR CODE



Follow QR code for citations and supplementary information

