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Linking dental and medical hospital records to investigate oral-systemic health relationships

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Objectives

Traditionally, dental and medical records are collected and stored separately within the healthcare system, limiting opportunities for integrated research. This study explores the feasibility of integrating routinely collected administrative secondary care dental and hospital inpatient records to create a scalable research infrastructure for investigating associations between oral health and systemic disease.

approach provides a scalable framework for future multimorbidity research, supporting the development of integrated healthcare strategies and informing evidence-based policy in oral and general health.

Methods

We established a data linkage framework using routinely collected dental and hospital EHR from Leeds Teaching Hospitals NHS Trust. Patient records (2014–2023) were linked via NHS numbers, integrating dental treatment data with systemic disease diagnoses (ICD-10). Linkage success rates and data completeness were assessed. We examined systemic disease prevalence and multimorbidity patterns across dental specialties to validate the utility of administrative data for oral-systemic research.

Results

The linkage framework successfully integrated 32,675 dental patient records with hospital EHR, with over 90% achieving complete linkage. One in five patients (19.7%) had at least one systemic disease, with the highest burden in periodontal/restorative patients (50.9%). Cardiovascular and musculoskeletal conditions were significantly more prevalent in these patients, reinforcing established oral-systemic health associations. Data completeness analysis identified opportunities for further linkage with primary care records to enhance multimorbidity profiling.

Conclusion

By integrating routinely collected dental and hospital records, this study demonstrates the potential of administrative health data for investigating oral-systemic health relationships. This

