Spanish Journal of Legal Medicine
Revista Española de Medicina Legal

ORIGINAL ARTICLE

Diversity in dental clinical characteristics in Portuguese and Spanish military populations☆

Maria Inês Guimarães [a,b,*], Jesús Martínez Chicón [c], Joaquim Gonçalves [d], Maria José Carneiro Sousa [a,e], Ana Belén Márquez Ruiz [c], Aurora Valenzuela Garach [c]

[a] Instituto de Ciencias Biomédicas Abel Salazar, Universidad de Oporto, Porto, Portugal
[b] Facultad de Ciencias de la Salud, Universidad Fernando Pessoa, Porto, Portugal
[c] Departamento de Medicina Legal, Facultad de Medicina, Universidad de Granada, Granada, Spain
[d] Instituto Politécnico de Cávado y Ave, Campus do IPCA Vila Frescaínha S. Martinho, Barcelos, Portugal
[e] Instituto Nacional de Medicina Legal y Ciencias Forenses, Porto, Portugal

Abstract

Introduction: Dental characteristics were compared in population samples of Spanish and Portuguese military personnel. The main aim of this study was to identify those dental characteristics that could potentially serve to differentiate between these populations in a forensic analysis.

Material and methods: A sample of 5136 individuals belonging to the professional military staff of the Portuguese and Spanish armed forces was studied. Dental data were recorded with the Forensic Dental Symbols® for the Dental Encoder® database. The population sample analysed in this study consisted of 68.1% Spanish and 31.9% Portuguese individuals.

Results: The population was mostly male, with 86.6% men (88.1% in the Spanish sample versus 83.4% in the Portuguese sample), and 13.4% women (11.9% Spanish and 16.6% Portuguese). The frequency of unrestored teeth was lowest for first molars in all quadrants, and the highest frequency of unrestored teeth (>90%) was for the upper and lower anterior teeth and lower first premolars. The highest frequencies of restorative treatment were found for the first and second molars in all quadrants, and the highest frequencies of missing teeth were found for the third molars (always >28%). Concordance analysis showed that correlations between contralateral teeth were significantly higher than between antagonist teeth in both samples.

Conclusions: Our findings provide potentially useful information on the importance of dental record databases and their value for identification purposes.

Estudio comparativo de la diversidad de las características clínicas dentales en poblaciones militares de Portugal y España

Resumen
Introducción: Se ha realizado una comparación de las características dentales de 2 poblaciones militares de Portugal y España. El objetivo principal de esta investigación fue identificar aquellas características dentales que podrían ser de utilidad para diferenciar estas poblaciones en un análisis forense.
Material y métodos: El estudio se realizó en una muestra compuesta por 5.136 militares profesionales de las fuerzas armadas, el 31.9% eran militares portugueses y el 68,1% del total de la muestra pertenecían a las fuerzas armadas españolas. Los datos dentales se registraron empleando los símbolos dentales descritos en Forensic Dental Symbols®, gestionados con la base de datos Dental Encoder®.
Resultados: La población de estudio estaba constituida por un 86,6% de hombres (88,1% en la muestra española y 83,4% en la muestra portuguesa) y un 13,4% de mujeres (11,9% en la muestra española y 16,6% en la muestra portuguesa). La frecuencia de dientes no restaurados fue menor para los primeros molares en todos los cuadrantes, mientras que la mayor frecuencia de esta característica (>90%) se observó en los dientes anteriores, superiores e inferiores, y en los primeros premolares inferiores. Las frecuencias más altas de tratamientos restauradores fueron encontradas para los primeros y segundos molares en todos los cuadrantes, y las mayores frecuencias de ausencias dentarias se observaron en los terceros molares (superior al 28% en todos los cuadrantes). El análisis de concordancia mostró que las correlaciones entre los dientes contralaterales fueron significativamente mayores que entre los dientes antagonistas, para ambas muestras poblacionales de estudio.
Conclusiones: Nuestros resultados proporcionan información potencialmente útil sobre la importancia de las bases de datos de registros dentales y el análisis de las características dentales con fines de identificación.

Introduction

Human identification requires determination of the particular characteristics or set of qualities that distinguish one person from all others and make them unique. All individuals are born with an identity and have the right to die with it. Establishing identity also raises a series of legal issues (inheritance, custody or life insurance) and issues of a psychological nature for families and friends of the deceased (the agony of waiting and prolonged unsuccessful attempts at identification), without also forgetting the social and political implications.[1,2]

Dental examination is one of the most important identification methods available. The enormous variety of individualising characteristics that the human teeth and jaws provide us with is of inestimable value for establishing a subject's identity as, starting from a closed population of individuals, just one of these characteristics can confirm the identity of an individual or allow them to be excluded.[3]

Dental identification is successfully achieved when the comparison between ante-mortem and post-mortem dental records reveals a significant match and the absence of absolute discrepancies, which ensures a considerable degree of certainty with regard to the identity of the subject based on available dental records.[4] If complete clinical data are provided, forensic dentists can conclude the dental identification in a short period of time and with a high degree of certainty, due to the inherent variability and uniqueness of the human dentition.[5] Despite this, forensic dentists are often required to establish the probability of identification in the courts, as is done in forensic genetics, where estimating the probability of identification or likelihood ratio is possible due to the fact that we know the frequencies of the various gene markers in specific populations.[6]