On Human Behaviour and Storytelling: Gender, Sex, Age and Muscular Stress Markers

Francisca Alves Cardoso
Portrait gender in two Portuguese populations of the 19th and early to mid 20th Century.
Media of known *Markers of Occupational Stress* (MOS) to portrait Gender …

…using known occupation as a gender proxy …

…MOS = Occupation = Gender
Hypotheses:

► Test whether males exhibit more activity-related osseous changes than females (♂/♀)

► Test whether there are osseous changes, or patterns of osseous changes, more particular to men or women, or related to a specific occupation
► Do the activity-related osseous changes reflect the sexual division of labour in the skeletal sample?

► Can the **social construct of gender** be inferred and/or studied through the use of human skeletal remains, specifically MOS?
Achieve these objectives:

- Focus on Identified Skeletal Collections
- Focus on the analysis of MOS
Skeletal Identified Collections:

- Known Socio-cultural context of the sample
- Know biography of the individuals, such as sex, age at death, occupation, date of birth and death.
The Identified Skeletal Collections:

- 300 individuals from the Coimbra Identified Skeletal Collection
- 303 individuals from the Luis Lopes Skeletal Collection
The sample represents individuals that were born between 1822 and 1935, and who died between 1891 and 1965.
the late 19th - mid 20th Portuguese century

- Political:
  - French Invasions
  - Exile of the Royal family in Brazil
  - Civil wars
  - Regicide in 1908
  - 1st Republic
  - Coup d’etat (1936)
the late 19th - mid 20th Portuguese century

- Socio - economically
  - Poorly and slowly developing
  - High social instability
  - High rates of immigration
    - Rural exodus / internationally
  - High rates of illiteracy
  - Population was mostly Rural
the late 19th - mid 20th Portuguese century

- Socio-economically
- High rates of illiteracy
  - Popular Press ...
  - Popular episodes of contestation
- Well divided Male and Female social domains
the late 19th - mid 20th Portuguese century

- Socio - economically
- High rates of illiteracy
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The occupational groups

GROUP 1
Army / Navy
Farmers / Servants
Skilled workers / Artisans
Unskilled workers
Commerce / Transport

GROUP 2
Government administration / Services
Housewives

Presence of significant differences between age at death by occupational group (H=35.120, p<0.001).
Achieve these objectives:

- Focus on Identified Skeletal Collections
- Focus on the analysis of MOS
Analysis of *Markers of Occupational Stress* (MOS)

- The differential markers of occupational stress would be related to male/female task performance differentiation.

- The underlying assumption was that the MOS would reflect the sexual division of labour, present in society, and that this would mirror gender constructs.
Musculoskeletal stress markers (MSM)

*Biceps brachii* (top) and for the *Soleus muscle* (bottom) insertion sites

Each category was given four grades of lesion expression: absence (0), faint (1), moderate (2) and strong (3) (Hawkey and Merbs, 1995)

Method of assessment of the changes:

- **Lesions** were grouped per joint: final results = the sum of the total value of lesions observed

- **Analysis was conducted according to joint**
Skeletons exhibiting abnormal bone growth or remodeling were excluded from the original sample:

- thoracic anterior vertebral body fusion, with a clear appearance of “dripping candle wax” type new bone formation;
- sacro-iliac fusion, where a clear sacro-iliac osseous bridge was macroscopically identified.
Results comparison:

- Historical data & Biological
Age was a significant predictor in all joint (p<0.001)  
Occupation was not (p>0.05), with exception:

<table>
<thead>
<tr>
<th>SumMSM_Left</th>
<th>df</th>
<th>F-value</th>
<th>Sig.</th>
<th>SumMSM_Right</th>
<th>df</th>
<th>F-value</th>
<th>Sig.</th>
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<tbody>
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<td>360.839</td>
<td>&lt;0.001</td>
<td>Shoulder Age</td>
<td>(1,595)</td>
<td>341.203</td>
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<td>Occupation</td>
<td>(6,594)</td>
<td>2.558</td>
<td>0.019</td>
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<td>Occupation</td>
<td>(6,594)</td>
<td>2.558</td>
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<td>(6,595)</td>
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<td>0.001</td>
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<td>Ankle Age</td>
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<td>(6,591)</td>
<td>0.620</td>
<td>0.714</td>
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</table>

Analysis of covariance (ANCOVA): occupational groups as a fixed factor; age as a covariant
Government administration/Services
Commerce/Transport
Skilled workers/Artisans
Farmers/Servants
Unskilled workers
Army/Navy
Housewives
Discussion results

- Occupations which historically are associated with strong/strenuous activity had in some cases lower values of lesions, when compared to historically less strenuous ones.

- Age at death is a major confounding variable in the analysis of degenerative bony lesions.
Methods and assumptions …

Control of confounding variables:
- genetics, diet, joint /entheses morphology, and others

Scoring, analysis and interpretation

Lesions and occupation association
Discussion material

- Identified Skeletal collection, *per se* may lack in-depth information to portray the past:
  - partial information of the individuals life history
  - impossible to evaluate the impact of the sum of years of activity, or lack of it
  - Ambiguous description of male occupations, and occupational classes
Discussion material

- Dynamic behavior *versus* static bones / lesions
Male and female social spheres:

“Women as women, and men as men. For the women the house, for the men the factory [cottage industry]” (Dias, 2000: 73)

Final Remarks …

► Use of *Marker of Occupational Stress* as gender proxy in 19th and 20th century Portugal:

► multifactorial nature of MSM

► historical framework of the social construction of male/female categories
Social constructions are not biologically identifiable traits in skeletal material.
Acknowledgments:

- Department of Zoology and Anthropology of the Museum of Natural History, Lisbon, Portugal
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- Fundação para a Ciência e a Tecnologia, Portugal
- Photographic Archive of the Lisbon Municipality, Portugal.

Film credits**:

O Pátio das Cantigas (1942). Francisco Ribeiro
A Aldeia da Roupa Branca (1939). Chianca de Garcia
Cais do Sodré (1946) Alejandro Perla
Sua migestade el Rei de Portugal,D. Manuel II em Inglaterra numa partida de ténnis

**All film extracts dowloaded from youtube.