An Assessment of Health and Lifestyle among Chamorro from Saipan, Commonwealth of the Northern Mariana Islands

Michael Pietrusewsky1, Michele Toomay Douglas1, Marilyn Swift2, Randy Harper2, & Michael A. Fleming2

1Department of Anthropology, University of Hawai‘i at Manoa, Honolulu, HI 96822
2Swift and Harper Archaeological Resource Consulting, Saipan, MP 96950

Mariana Islands and the Chamorro

The Mariana Islands form an archipelago of fifteen islands, stretching north-south between 13° and 27° latitudes in the western Pacific Ocean. Guam, Rota, Tinian, and Saipan, located in the northern group, are the largest islands in the archipelago. When the first Europeans arrived in 1521, they found the islands inhabited by a single group of people who spoke Chamorro, an Austronesian language. The earliest human settlement of the Mariana Islands may date to 3800 B.P.

Background

A previous investigation of health and disease in the Mariana Islands suggested that the Chamorro, Chamorro on Saipan experienced higher levels of stress as specific and non-specific indicators of stress, indicating a high level of healthcare-seeking behavior (Donovan et al., 1995). Saipan is a larger island (121 km²) with the SSLS series. Evidence of treponemal infection was observed only in the CMG series.

Research Questions

Utilizing general and specific indicators of stress, this paper examines the health and lifestyle of Chamorro:

• During prehistoric (Late Period) and contact periods (post-1521) on Saipan
• Between Saipan and Guam

We hypothesize that physiological stress will be higher in:

• Contact period skeletons that prehistorically died on Saipan
• Skeletal remains from Saipan than skeletons from Guam

Materials and Methods

This study examines skeletons from the Late and Spanish Mission Periods from two sites on Saipan and compares these to previously examined skeletons from Saipan and Guam.

Chichagc Manuagis Guarnas Road Project (CMG) (A.D. 1350 – 1450)

Southern Seawater Line System (SSLS) (A.D. 1420 – 1670)

140 skeletons from 12 sites located on Saipan and Guam (Pietrusewsky et al., 1997)

Non-specific indicators of systemic stress:

• Dental attrition
• Spondylolysis
• Osteopenia (osteoporosis, osteopenia)
• Stature

Specific indicators of stress examined:

• Enamel hypoplasia (EHI)
• Skeletal birth defects
• Alveolar resorption
• AMTL
• Dental caries
• Spondylolysis
• LEH

Statistical tests: Fisher’s exact test and Student’s t-test

Comparisons: SSLS versus CMG

<table>
<thead>
<tr>
<th>Indicator/Trait</th>
<th>SSLS (%)</th>
<th>CMG (%)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caries %</td>
<td>2.9</td>
<td>7.3</td>
<td>0.0481</td>
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<tr>
<td>AMTL %</td>
<td>0.0</td>
<td>0.0</td>
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<tr>
<td>Spondylolysis %</td>
<td>3.3</td>
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<tr>
<td>Limb bone fracture %</td>
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<tr>
<td>Cribra orbitalia %</td>
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<td>0.0</td>
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</tr>
<tr>
<td>LEH %</td>
<td>34.0</td>
<td>31.0</td>
<td>0.5624</td>
</tr>
<tr>
<td>Average Stature (cm) Saipan</td>
<td>160.0</td>
<td>159.1</td>
<td>0.7790</td>
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<tr>
<td>Females</td>
<td>162.8</td>
<td>160.0</td>
<td>0.1392</td>
</tr>
<tr>
<td>Males</td>
<td>175.0</td>
<td>172.4</td>
<td>0.2498</td>
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</tbody>
</table>

Comparisons: Saipan versus Guam

<table>
<thead>
<tr>
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<th>Guam</th>
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<tr>
<td>Caries rate</td>
<td>0.0</td>
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<td>LEH %</td>
<td>34.0</td>
<td>31.0</td>
<td>0.5624</td>
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<tr>
<td>AMTL %</td>
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<tr>
<td>Spondylolysis %</td>
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Discussion/Conclusions

Although preservation and sample size were major issues, the results indicate that the significantly higher frequency of tooth-stained teeth in the Saipan series may explain the significantly higher frequencies of AMTL, alveolar resorption, and dental caries observed in the CMG series. Evidence of treponemal infection was observed only in the CMG series.

Research Questions

• No significant differences are observed for CO, LEH, and adult stature
• Limb bone fractures are similar
• Spondylolysis is slightly more common in the SSLS series
• Treponemal infection rates are similar for the two islands
• No significant differences in absolute deficits
• AMTL, alveolar resorption, and dental caries significantly higher in the Saipan series
• Caries rate is significantly lower in Saipan teeth
• Calculus is significantly higher in Saipan teeth

The significantly higher frequency of healthcare-seeking behavior in the Saipan series may explain the significantly higher frequencies of AMTL, alveolar resorption, and dental caries observed in the CMG series as well as the treponemal infection rate. Centuries of intermittent contact with the Spanish brought about a marked increase in the frequency of these health indicators, which may have been related to the cultural practices of chewing areca nut with or without the use of slaked lime.

Acrea Nut Chewing and Dental Pathology

Areca mucosa causes key chewing, with or without, the use of jaggery leaf (Piper betle) and/or slaked lime, is common throughout SouthEast Asia and the Pacific. The light to dark brown/reddish stain observed in adult dentitions for many archaeological skeletal series from the Mariana Islands, including those examined in this study, has been associated with this cultural practice. There is some evidence that dental caries rates were higher in adult dentitions for many archaeological skeletal series from the Mariana Islands, including those examined in this study, has been associated with this cultural practice. There is some evidence that dental caries rates were higher in adult dentitions for many archaeological skeletal series from the Mariana Islands, including those examined in this study, has been associated with this cultural practice.

References Cited

Acknowledgements
