



Comparison of Pediatric Stainless Steel Crown Sizes Among Patient Ethnicities and Gender

Liberman D, Kerins CA
Texas A&M School of Dentistry & Children’s Health, Dallas, TX
U.S. Army Dental Corps



BACKGROUND

Regardless of provider experience, choosing the correct preformed stainless steel crown (SSC) size for a primary molar can be daunting, and at times humbling. Dentists must choose from various preformed sizes ranging from 2 to 7 for some manufacturers or 1-6 and even half sizes with decimals for others. At this moment, there is no instrument or method to accurately predict a size for a prepared primary molar. Dentists must then rely solely on their expertise to predict the correct SSC size. When a crown is chosen incorrectly and does not fit the tooth, the provider must either choose a new crown size or re-prepare the tooth, thereby having to discard the previous crown due to contamination. In the operating room under general anesthesia, that could include up to 8 treated primary molars, leading to many misjudgments of crown sizes. This results in loss of time and product reserve. It would benefit the provider, the operating room team, and most importantly the patient to have a better understanding if there is an association between ethnicity and gender and potential SSC sizes.

OBJECTIVE

To determine if pediatric stainless steel crown sizes for patients reliably and significantly vary based on ethnicities and gender.



MATERIALS AND METHODS

A retrospective chart review was conducted on all patients treated under general anesthesia for full mouth dental rehabilitation at Children’s Medical Center in Dallas, TX between 01/01/2018 to 08/01/2024. All treatment was completed by the same operator.

Information collected on these patients included: patient age at treatment, gender, and ethnicity to include Caucasian, African-American, Hispanic, and Asian.

Additionally, SSC sizes were obtained for each primary molar that was completed at this visit.

Inclusion criteria: ASA 1 and 2 patients, non-syndromic patients, patients treated for SSCs on primary molars

Exclusion criteria: ASA 3 and 4 patients, syndromic patients with potential for dental tooth defects, cleft lip and/or palate patients, patients receiving anterior full coverage restorations only

RESULTS

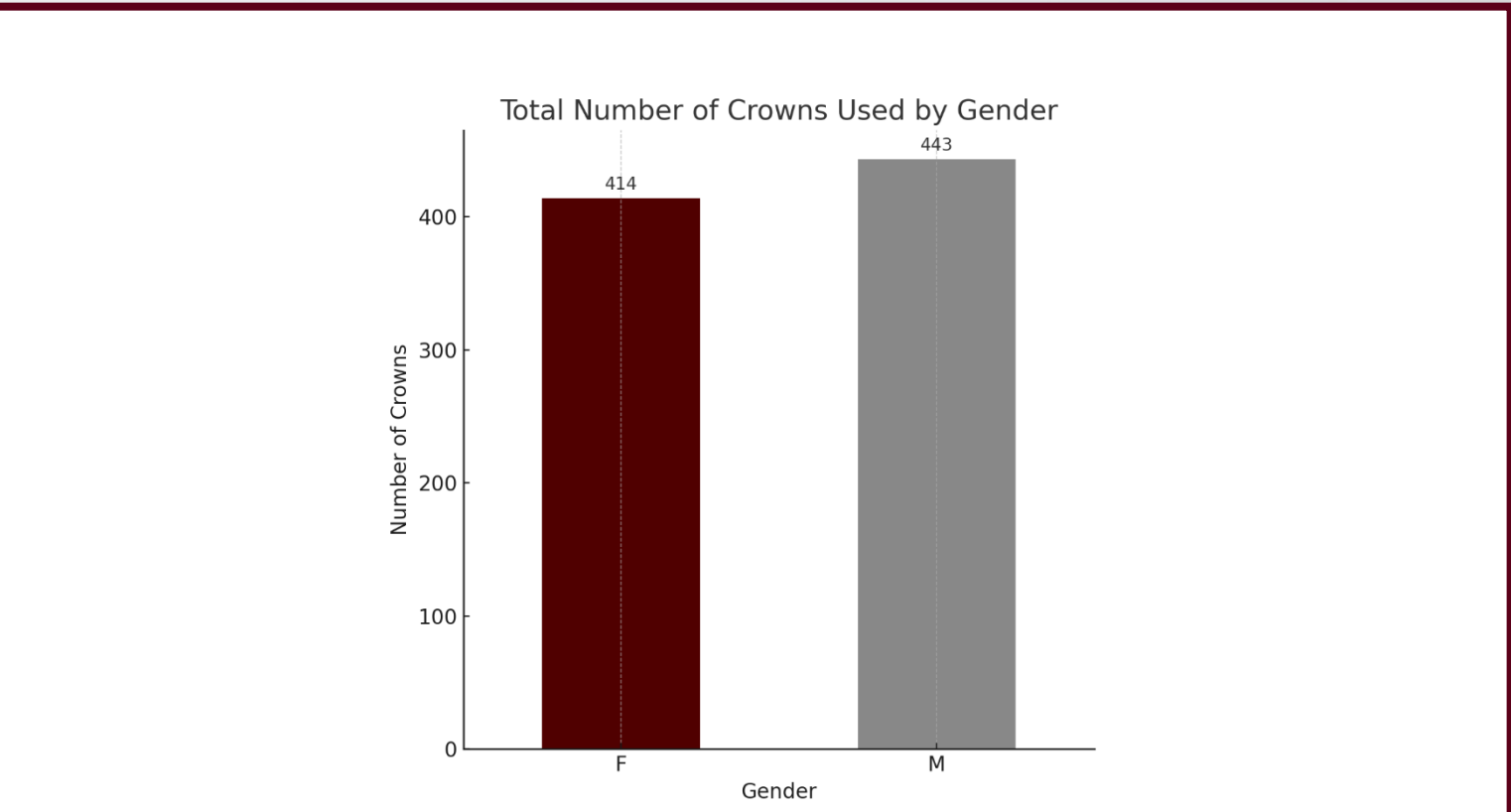
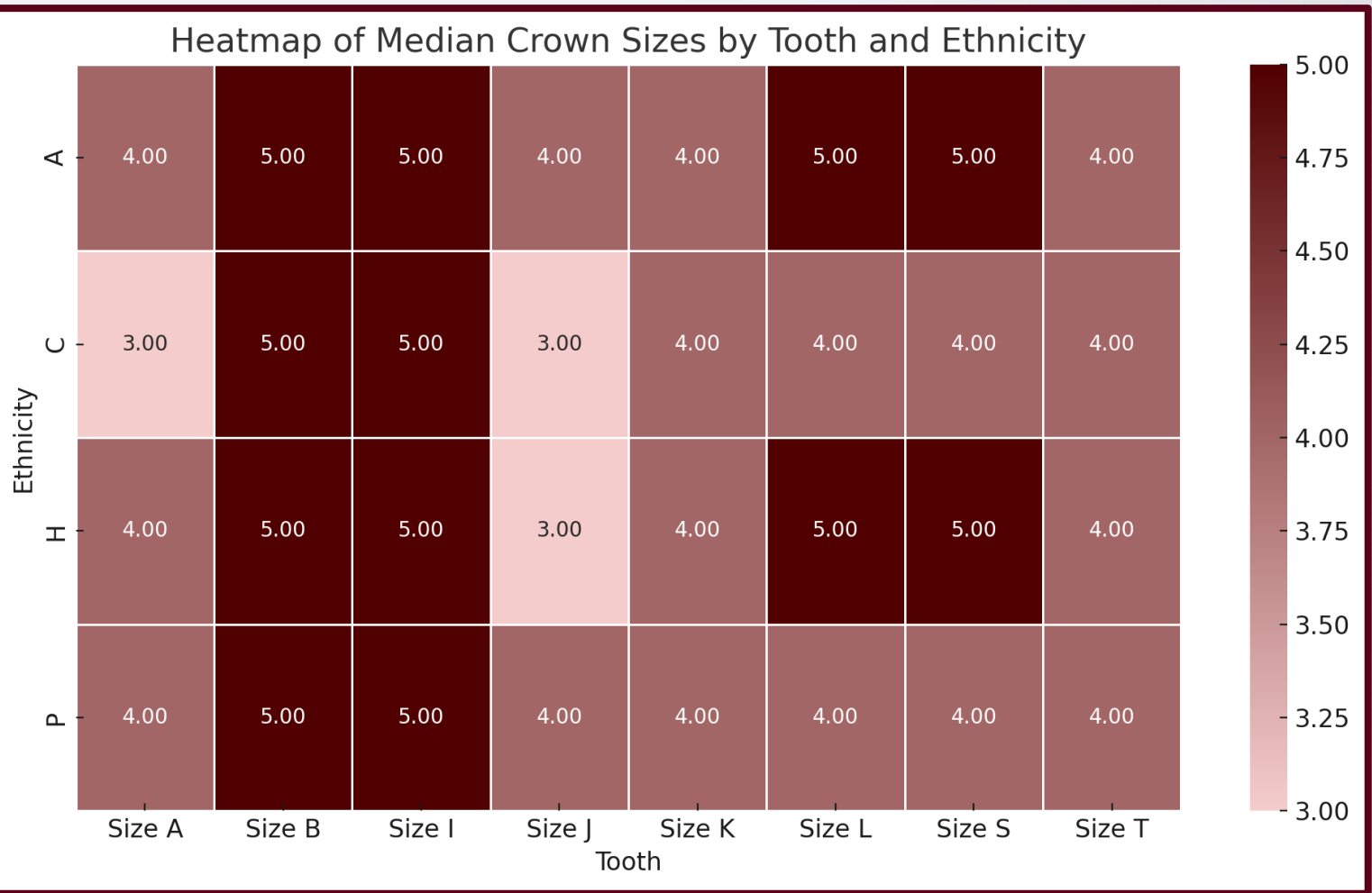
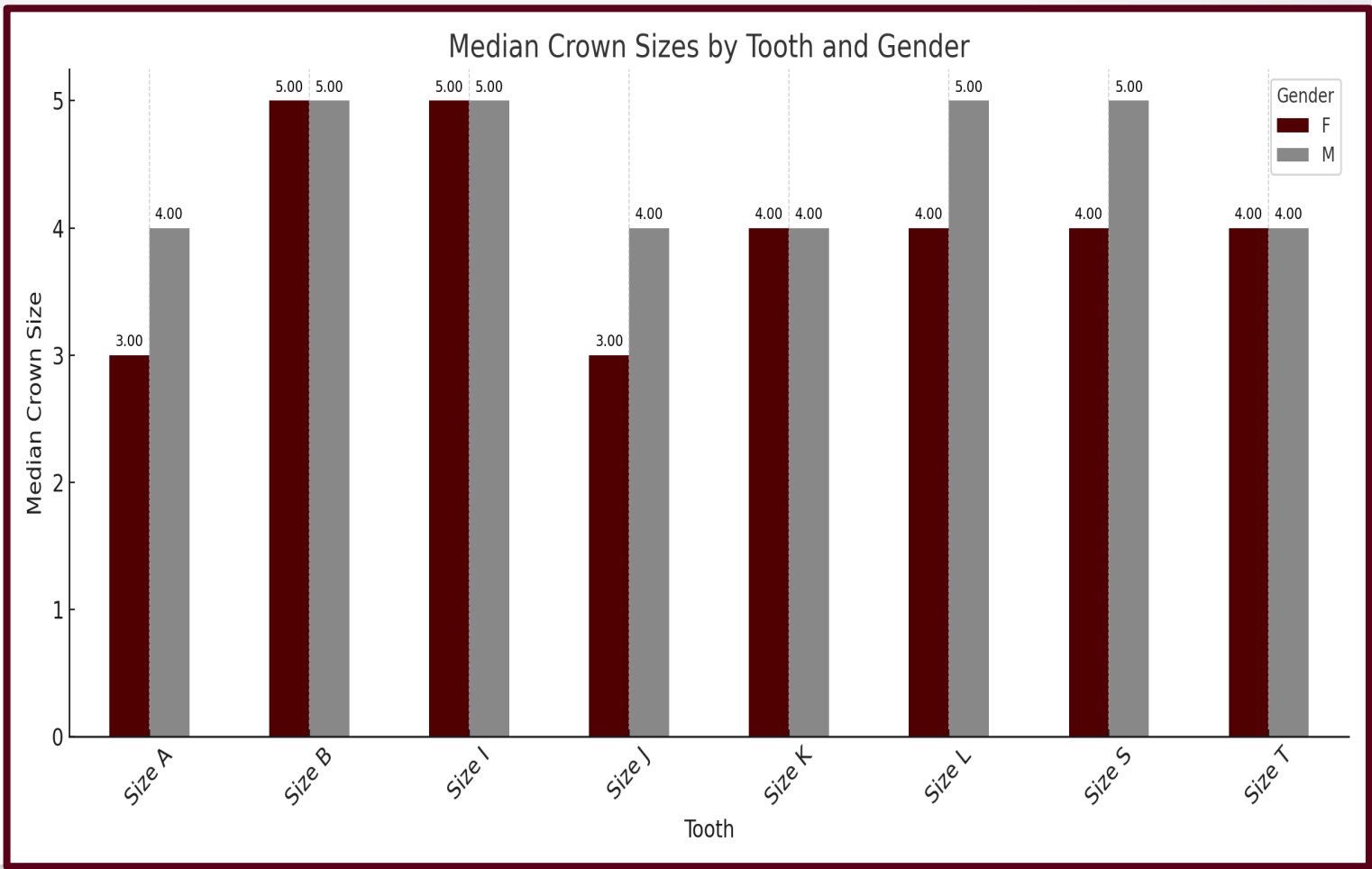
Initial data resulted in 1433 cases that were treated for Full Mouth Dental Rehabilitation at Children’s Medical Center Main OR or Pavilion Surgical Center in Dallas, TX. After incorporating the inclusion and exclusion criteria, 185 patients and 857 teeth were included in the analysis.

A Kruskal-Wallis Test was used to determine if the median crown size in the sample was different for the four ethnic groups when confounding for gender.

Results showed that there were *statistically significant* differences in ethnic group median crown sizes for teeth #A, I, J, and T for male children only.

There were no statistically significant differences among the ethnic groups for female children

Running a Mann-Whitney Test, there were statistically different SSC sizes between males and females for teeth #B, I, J, L, S, T.



DISCUSSION

While it was anticipated there would be more statistically significant differences between certain ethnicities and genders, only male children showed differences among the ethnic groups for teeth #A, I, J, and T. No differences were seen among the females.

When comparing males and females, all primary molars for the exception of #A, K showed statistically significant differences. In all cases, males had larger crown sizes than females, as expected.

Based on the heatmap provided, there is observable differences in crown sizes between teeth #B and I among all the ethnicities, where they are larger than other teeth studied.

While not statistically analyzed, based on the heatmap, Caucasians had the smallest crown sizes among all the ethnicities.

CONCLUSION

1. Males have larger crown sizes than females for all primary molars
2. Median crown sizes for teeth #A, I, J, T for the four ethnicities were statistically significant among male children.
3. We were unable to statistically determine if there were differences between certain ethnicities and crown sizes.

REFERENCES

Tzu Ting Chao, Hung Huey Tsai. Comparison of the morphology of the primary first molars and the forms of stainless steel crowns used in clinical practice. Journal of Clinical Pediatric Dentistry. 2023; 47(3): 71-83. doi: 10.22514/jocpd.2023.025.
Lee J, Shin TJ, Kim YJ, Kim JW, Jang KT, Lee SH, *et al.* A morphometric study on stainless steel crowns of the primary first molar using a three dimensional scanner. The Journal of the Korean Dental Association. 2016; 54: 414–428.