



# COMPARING MILITARY AND CIVILIAN DENTISTS' TREATMENT PLANNING DECISIONS: PILOT STUDY

KELLY J. BUCKSHIRE, DMD, MPH, CAPT, USAF, DC

RESEARCH PROPOSAL

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# CO-CONTRIBUTORS



- Scott Irwin, DDS, MPH, Col, USAF, DC
- Amar Kosaraju, DMD, MSed, Col, USAF, DC
- Christina Schiltz, DDS, Maj, USAF, DC
- Kraig Vandewalle, DDS, MS, Col (ret), USAF, DC

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# OUTLINE

- Background
- Objective
- Materials and Methods
- Results
- Discussion
- Conclusion

## NEED FOR CLINICAL DECISION-MAKING EVALUATION

- Considerable variation exists among dentists' diagnosis and treatment planning decisions
- Concerns in era of evidence based dentistry
  - Appropriate level and amount of treatment
  - Cost
  - Public trust
  - Best interest of patients
- Potential ramifications for outsourcing dental care to the civilian sector.

## “RECRUIT ORAL HEALTH STUDY”

- Periodic Department of Defense sponsored collection of information pertaining to the oral health perceptions, conditions, and needs of military enlistees
  - 1994
  - 2000
  - 2008
  - **2018**
- Data on oral health status and dental treatment needs of Air Force recruits for readiness planning purposes

# BADER'S MODEL – RESEARCH FRAMEWORK

- 1) Diagnostic Phase
- 2) Decision to Treat
- 3) Treatment Selection

## OBJECTIVE

Compare clinical decision-making for both diagnosis and dental treatment planning between civilian and military providers.

## MATERIALS AND METHODS

- 1500 Randomly selected recruits to the U.S. Air Force were asked if they would participate in the 2018 Air Force Recruit Oral Health Study
  - A clinical exam was a component of this study
  - Dental treatment needs identified have already been anonymized and compiled by the Tri Service Center for Oral Health Studies (TSCOHS)

## MATERIALS AND METHODS

- Two civilian dentists and seven military dentists served as clinical examiners for data collection during the course of the study
- Treatment planning outcomes (dependent variables) gathered using patient level data from the 1,208 clinical exams

# DIAGNOSTIC AND TREATMENT PLANNING OUTCOMES

## Treatment Planning Outcomes

### Conservative Treatment Required

**Sealant**

Remineralization

### Oral Surgery Required

**None**

Simple + Complex + Impacted

### Operative Treatment Required

**3 + 4 + 5 surfaces posterior teeth**

Crowns posterior teeth

### Orthodontic Referrals

**None**

Referral

# DATA ANALYSIS

- Descriptive statistics from 2018 Air Force Oral Health Surveillance
- Descriptive and inferential statistics
  - Bivariate regression and chi-squared analyses were performed with each patient demographic variable and each outcome variable of interest to identify significant independent variables, which subsequently were used to develop the most parsimonious models.
  - Descriptive and inferential statistics were completed using logistic regression for dichotomous patient level outcomes (e.g. orthodontic treatment; TMD referral)
  - Poisson regression for categorical count outcomes (e.g.. sealant vs remineralization; restorative vs. crown).
  - Alpha level of 0.05 was used to determine significance

# RESULTS

**Table I. Provider Type and Examined Patients**

<b>Provider Type</b>	<b>Number of Examined Patients</b>	<b>Percent of Examined Patients</b>
<b>Civilian</b>	958	79.30
<b>Military</b>	250	20.70

# RESULTS

**Table 2. Patient Demographics**

Education Level		Frequency	Percent
	Less than or High School	566	46.89
	Some technical/college or Tech school graduate	463	38.36
	2-year college graduate	75	6.21
	4-year college graduate or more	103	8.53
		Frequency Missing = 1	
Gender			
	Male	825	68.29
	Female	383	31.71
Race			
	White	721	59.69
	Black	233	19.29
	Asian	33	2.73
	Hispanic	173	14.32
	Other	48	3.97
Military Status			
	Active Duty	606	50.17
	Reserves	291	24.09
	National Guard	311	25.75

# RESULTS

<b>Condition, Treatment plan</b>	<b>Total Frequency, # of Patients</b>	<b>Percent (%) of Patients</b>
<b>Ortho Referral</b>	184	15.31
<b>Sound tooth, sealant</b>	220	18.21
<b>Sound tooth, remineralize</b>	621	51.41
<b>Incipient caries, sealant</b>	3	0.25
<b>Incipient caries, remineralization</b>	483	39.98
<b>Carious teeth, sealants</b>	46	3.81
<b>Carious teeth, remineralization</b>	219	18.13
<b>3-5 surfaces caries, direct restorations</b>	95	7.86
<b>Single crowns</b>	8	0.66
<b>Extractions</b>	673	55.71

# RESULTS

**Table 4. Treatment Plan Outcomes Civilian vs. Military Providers – Odds Ratios**

<b>Condition, Treatment plan</b>	<b>OR</b>	<b>CI</b>
<b>Ortho Referral (adjusted for education)</b>	<b>2.7</b>	<b>1.6 – 4.40</b>
<b>Extract Third Molars</b>	<b>1.88</b>	<b>1.24 – 2.85</b>

# RESULTS

Table 5. Treatment Plan Recommendations Based on Specific Conditions and the Provider Type Most Likely to Recommend Them

Provider Type More Likely to Recommend	Treatment Recommendation	Condition(s)	B	CI	Significant Variables Controlled For
Civilian	Remineralization	Sound tooth	0.664	0.4907 - 0.8381	Race
Civilian	Remineralization	Incipient caries	0.8441	0.6263 - 1.0619	Gender, education, race
Civilian	Remineralization	Caries	0.8118	0.4611 - 1.1625	Education, race
Military	Sealant	Sound tooth	-1.145	-1.322 - -0.968	Gender, status, age
N/A	Sealant	Incipient caries	-0.6502	-3.0507 - 1.7502	None
Military	Sealant	Caries	-1.4753	-1.9138 - -1.0323	Status, race
Military	Direct Restorations	3-5 carious posterior surfaces	0.4793	0.0039- 0.9548	Status, race
N/A	Single Crown	3-5 carious posterior surfaces	-1.0613	-2.5105 - 0.3878	Education, race
N/A	Extraction	3rd molar (impacted, sound or unable to be scored)	0.8539	0.5401 - 1.1676	Education, status, race

## DISCUSSION

- Civilian dentists (compared to military dentists) were more likely to:
  - Refer patients for orthodontic treatment
  - Prescribe remineralization for sound tooth surfaces, incipient caries, and carious teeth
  - Prescribe direct restorations for teeth with 3-5 carious surfaces instead of single crowns

## DISCUSSION

- Civilian dentists (compared to military dentists) were less likely to:
  - Prescribe sealants for sound tooth surfaces or carious teeth

# DISCUSSION

- No statistically significant difference in treatment planning outcomes observed between civilian and military dentists for:
  - Sealants for incipient caries
  - Single crowns
  - Extraction of third molars

# CONCLUSION

- Patient demographic factors were also correlated with likelihood of prescription of certain treatments in this study
- Statistically significant differences were found for multiple treatment planning outcomes for all patient demographic variables