

# **Data Mining the Corporate Dental System of USA DENTAC Fort Bragg**

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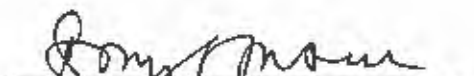
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## ABSTRACT

Statement of the problem: Dental wellness has not reached optimum levels at Fort Bragg after implementation of the Go First Class Program.

Purpose: To examine the Go First Class Program's influence upon dental wellness and readiness.

Materials and Methods: The present study collected data from the Corporate Dental System encompassing the time period between October 2014 and October 2015. Patient appointment data were queried for active duty Soldiers assigned to Fort Bragg, NC. All data were analyzed by using SPSS version 22.0 (SPSS, Chicago, IL USA).

Results: It was found that there were no significant differences in dental readiness and wellness after implementation of the program.

Conclusion: Additional studies will be needed to clarify the programs contribution to dental readiness and wellness.

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## INTRODUCTION

Two years ago, the U.S. Army Dental Command (DENCOM) implemented the Go First Class (GFC) program in an effort to improve dental wellness and readiness for the U.S. Army. By combining dental exams, cleanings, and routine fillings into a single appointment, significant time and cost savings could be achieved versus treatment over multiple appointments (Tempel, 2013).

The Army Dental Corps' primary database to record and store patient information is the Corporate Dental System (CDS). This database was created in 1999 and implemented throughout DENCOM dental treatment facilities (DTFs) to record dental workload information. It was later expanded to record treatment notes, treatment plans, and other information noted on paper dental records (Eikenburg, 2011). Examining patient data from CDS could determine if the GFC Program has improved the dental wellness/readiness of Soldiers at Fort Bragg, NC.

Conducting thorough oral exams is pivotal to the accurate documentation of dental readiness (Colthirst, DeNicolo, Will, & Simecek, 2012). The department of defense requires military personnel to undergo an annual dental examination (HA 98-021, 1998). Upon completion of the examination, the patient dental classification is based on treatment needs. This classification has set parameters by regulation, but tends to be subjective between different practitioners (Chaffin & Horning, 1998).

## DENTAL CLASSIFICATION

Dental readiness classification (DRC) 1 patients have a current dental examination, and do not require dental treatment or reevaluation. DRC 2 patients have a current dental examination, but require non-urgent dental treatment or reevaluation for oral conditions which are unlikely to result in dental emergencies within 12 months. DRC 3 patients require urgent dental treatment and they're not considered to be worldwide deployable. DRC 4 Soldiers are those that require a periodic dental examination (Army Regulation 40-35, 2004).

Dental readiness is the percentage of Soldiers in DRC 1 and DRC 2. The goal of the department of defense is to achieve 95 percent dental readiness for all active duty personnel (HA Policy 96-024, 1998). The Army defines dental wellness as the total amount of Soldiers in DRC 1 with the current goal of achieving 60% wellness for all active duty personnel (Kalish, 2015).

## GO FIRST CLASS PROGRAM

The Army Medical Department established the Army Medicine 2020 Campaign Plan to ensure the force remains ready to meet current and emerging Medical Support requirements to Combatant Commanders and CONUS Sustaining Bases (Horoho, 2013). In support of the campaign plan, DENCOM implemented the Go First Class Program for all dental treatment facilities to improve dental wellness/readiness (Tempel, 2013). The program was implemented in two phases. During phase one (pre-implementation), leadership introduced GFC to staff members and patients with new

procedures put in place to schedule appointments. DTF's introduced six key processes to the dental staff during this phase: population management based on DTF-supported population, appointment scheduling, pre-appointment dental record scrub, day of appointment patient handling, hygiene-exam (HE) treatment, and hygiene-exam-restorative (HER) treatment. Phase two of the program (full implementation) required DTF's to schedule Soldiers in dental classification 4 for HE or HER appointments based on past dental history.

## PURPOSE

The purpose of this study is to examine the influence of GFC on dental wellness and readiness at Fort Bragg's Dental Activity.

## MATERIALS AND METHODS

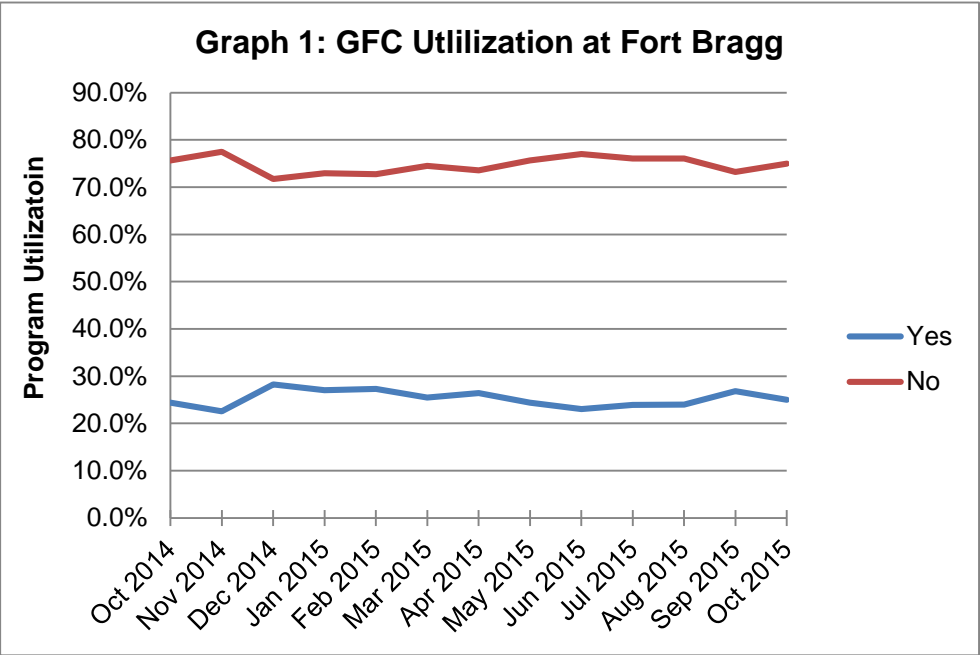
The present study collected data from the CDS system encompassing the time period between October 2014 and October 2015. Patient appointment data were queried for active duty Soldiers treated at any of five dental clinics on Fort Bragg. These clinics included Davis Dental Clinic, Joel Dental Clinic, LaFlamme Dental Clinic, Pope Dental Clinic, and Smoke Bomb Hill Dental Clinic. For each appointment the appointment type, date, and dental wellness classification were retained for analysis. For the purposes of this study, appointments listed as exam or hygiene were considered non-Go First Class; whereas, appointments listed as Hygiene/Exam or Hygiene/Exam/Rest were considered part of the Go First Class program.

The analysis was split into multiple phases, beginning with a chi-square test for trend to evaluate whether or not there was a significant change in participation in the Go First Class

Program. Secondly, we examined overall dental readiness for trends as well as each dental classification separately for evidence of improving or worsening trends. P-values < 0.05 were considered statistically significant. All data were analyzed by using SPSS version 22.0 (SPSS, Chicago, IL USA).

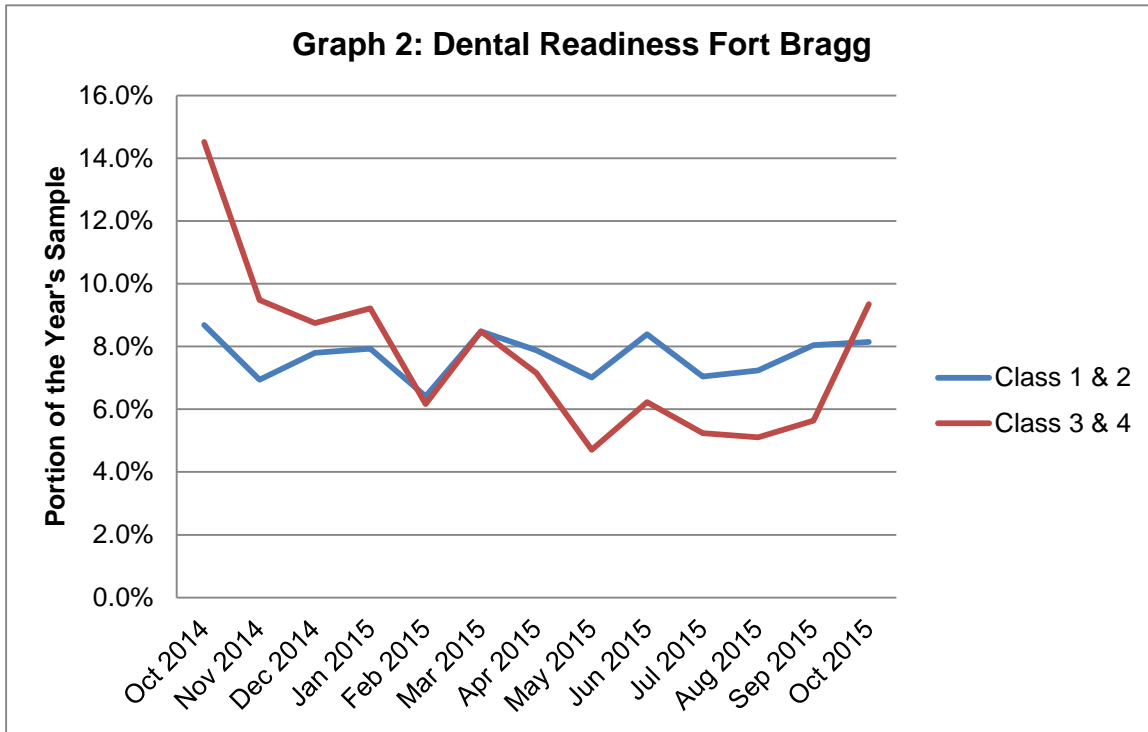
## RESULTS

The CDS data query resulted in data from 76,850 patient appointments. Of the appointments examined 19,428 (25.3%) were Go First Class compliant, leaving 57,422 (74.7%) as single purpose appointments (Exam or Hygiene) (see Table 1). The number of active duty patients in each dental wellness class for each of the clinics can be seen in the appendix. A chi-square test for trend was performed to examine the utilization of the Go First Class Program. There was no evidence for a significant increasing or decreasing trend in utilization of the Go First Class Program,  $(1, N = 76850) = 1.95, p = .16$  (see Graph 1).

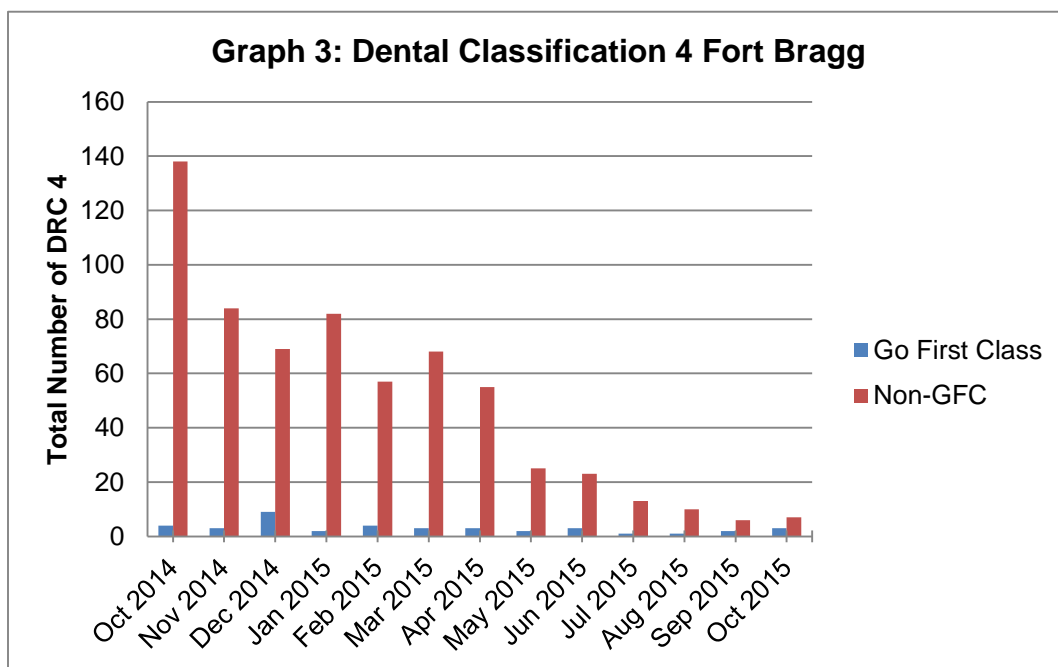


Additionally, there was no evidence for a significant trend in dental readiness. However, a negligible yet statistically significant decrease was found among those in dental readiness class 3 and 4,  $(1, N = 76850) = 66.55, p < .001, r_T = -0.009, p < .001$  (see Graph 2).

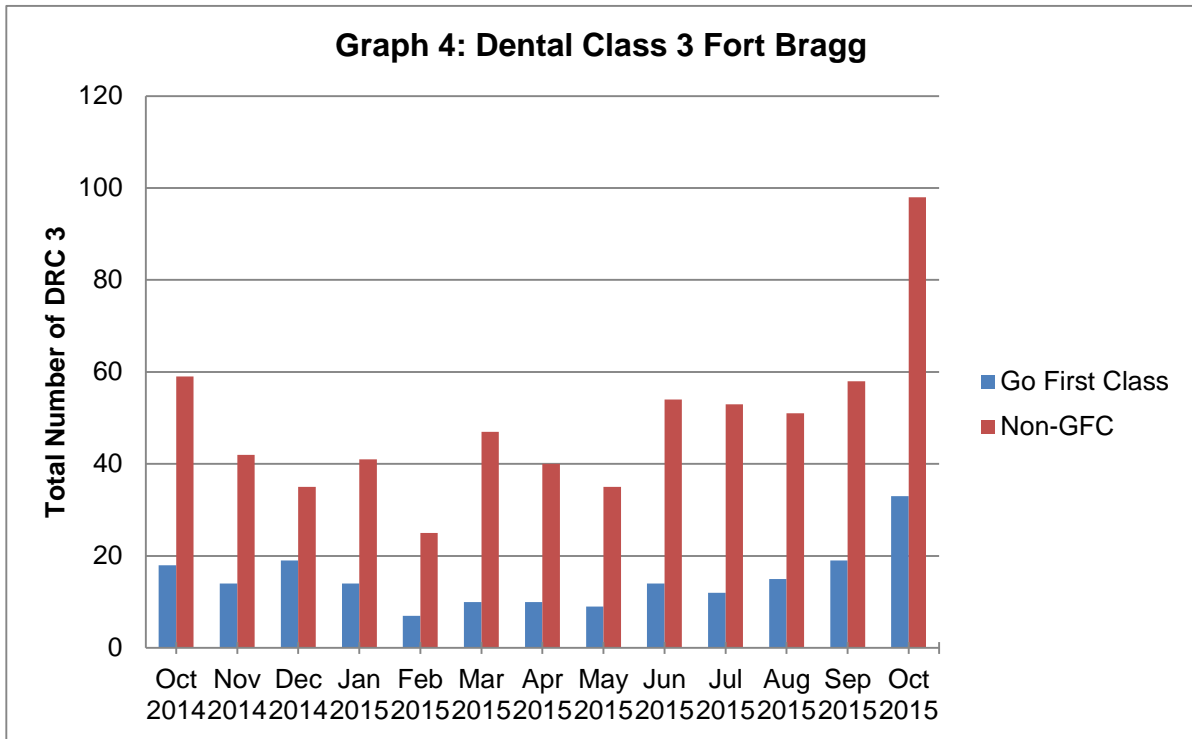




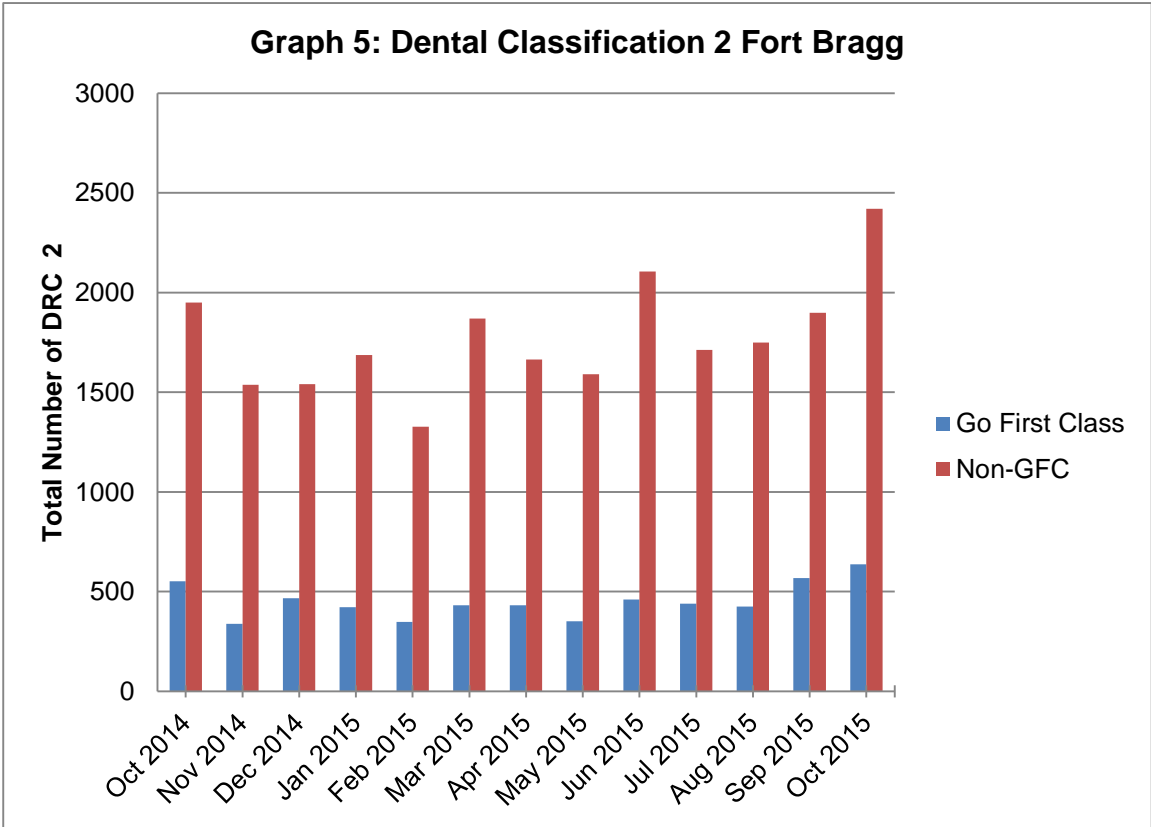
Further examination by classification revealed a decrease in dental class 4 individuals not participating in the Go First Class Program,  $(1, N = 76850) = 9.55, p = .002, r_T = -0.05, p = .02$  (see Graph 3).



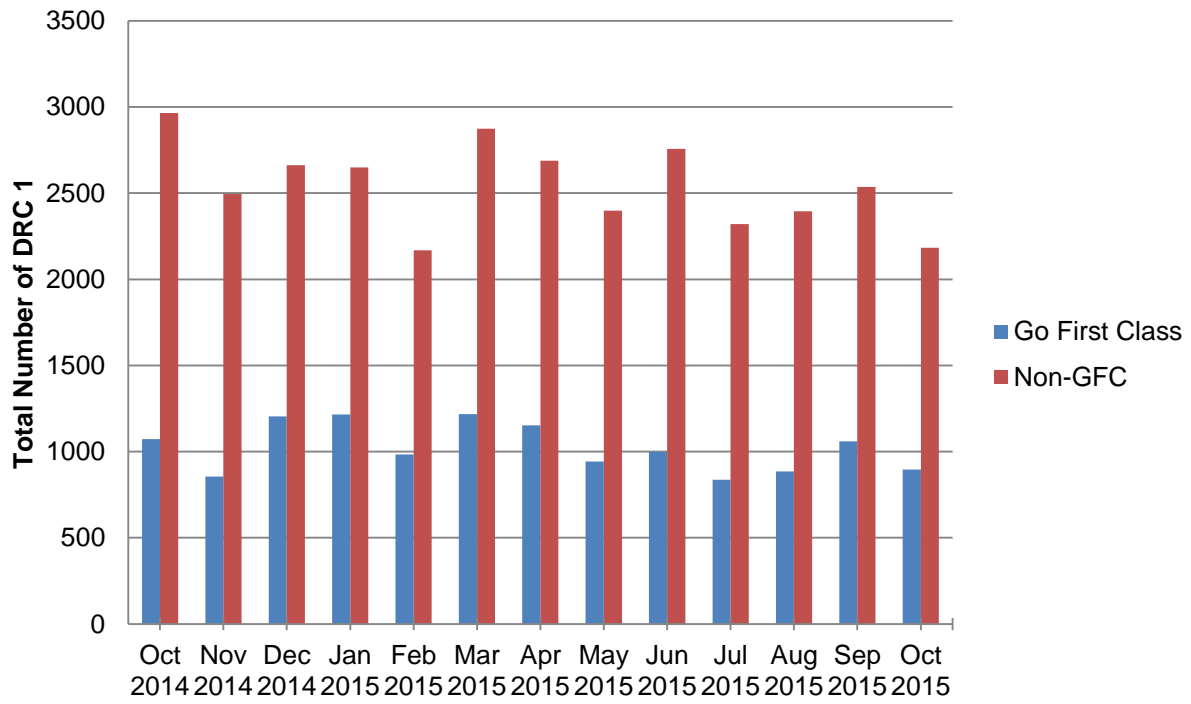
No significant trend was found among individuals in dental class 1, 2, or 3 (see Graphs 4-6). Lastly, the data were examined to determine if dental wellness was correlated with the Go First Class Program. Data revealed that the two variables were correlated albeit very weakly,  $r(76850) = -0.10, p < .001$ .



**Graph 5: Dental Classification 2 Fort Bragg**



**Graph 6: Dental Classification 1 Fort Bragg**



			Time Point												Total	
			Oct 2014	Nov 2014	Dec 2014	Jan 2015	Feb 2015	Mar 2015	Apr 2015	May 2015	Jun 2015	Jul 2015	Aug 2015	Sep 2015		Oct 2015
Go First Class	Yes	Count	1647	1211	1699	1654	1343	1662	1597	1305	1477	1289	1326	1648	1570	19428
		% within Time Point	24.4%	22.6%	28.3%	27.1%	27.3%	25.5%	26.4%	24.4%	23.0%	23.9%	24.0%	26.8%	25.0%	25.3%
	No	Count	5112	4158	4308	4459	3579	4858	4447	4049	4940	4099	4206	4498	4709	57422
		% within Time Point	75.6%	77.4%	71.7%	72.9%	72.7%	74.5%	73.6%	75.6%	77.0%	76.1%	76.0%	73.2%	75.0%	74.7%
Total		Count	6759	5369	6007	6113	4922	6520	6044	5354	6417	5388	5532	6146	6279	76850
		% within Time Point	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

**Table 1: Go First Class Compliance USA DENTAC Fort Bragg**

			Time Point												Total	
			Oct 2014	Nov 2014	Dec 2014	Jan 2015	Feb 2015	Mar 2015	Apr 2015	May 2015	Jun 2015	Jul 2015	Aug 2015	Sep 2015		Oct 2015
Readiness	Yes	Count	6540	5226	5875	5974	4829	6392	5936	5283	6323	5309	5455	6061	6138	75341
		% within Readiness	8.7%	6.9%	7.8%	7.9%	6.4%	8.5%	7.9%	7.0%	8.4%	7.0%	7.2%	8.0%	8.1%	100.0%
	No	Count	219	143	132	139	93	128	108	71	94	79	77	85	141	1509
		% within Readiness	14.5%	9.5%	8.7%	9.2%	6.2%	8.5%	7.2%	4.7%	6.2%	5.2%	5.1%	5.6%	9.3%	100.0%
Total		Count	6759	5369	6007	6113	4922	6520	6044	5354	6417	5388	5532	6146	6279	76850
		% within Readiness	8.8%	7.0%	7.8%	8.0%	6.4%	8.5%	7.9%	7.0%	8.4%	7.0%	7.2%	8.0%	8.2%	100.0%

**Table 2: Readiness USA DENTAC Fort Bragg**

## DISCUSSION

The purpose of this study was to investigate the Go First Class Program's influence on dental wellness and readiness at Fort Bragg's Dental Activity. The results of this study do not confirm the effectiveness of the program. Over 65% of all exams conducted in Army Dental Clinics are now combined with a cleaning (Kalish, 2015). This is not the case at Fort Bragg (See Table 1). Its GFC participation is below average and has remained stagnant over the past year. A variety of reasons may explain this: not enough staffing to perform GFC, unit commanders who refuse to participate, lack of command influence within the DENTAC, high deployment rates, not enough resources, and high participation in the Active Duty Dental Program which allow Soldiers to receive treatment from civilian providers off base.

An interesting find was a decrease in dental class 4 Soldiers among those not participating in GFC. This may be attributed to a greater focus on readiness rather than wellness. A Soldier in DRC 4 is non-deployable, therefore it's a priority to get him or her out of this classification as soon as possible. The clinic can increase readiness instantly by performing an exam only appointment and bypassing the GFC requirement that includes a hygiene appointment. This does not encourage program participation.

Several limitations exist in this study. The data extracted from the corporate dental system is based on workload submissions from dental providers. Incorrect entries could result in errors. Additionally, a Comprehensive Dentistry Residency Program is located at Smoke Bomb Hill Dental Clinic. The residents do not participate in the GFC program but were included in the data collection.

Despite the limitations, this study can be useful to Fort Bragg's Leadership. Therefore, I would like to provide recommendations that might increase GFC participation at Fort Bragg:

1. Educate unit commanders and senior non-commissioned (NCO) officers on the benefits of the program.
2. Request dental liaisons from each unit down to company level. These liaisons will be the primary point of contact for the GFC NCO. It is also their responsibility to track dental wellness/readiness within the unit.
3. Grant liaisons limited access to CDS in order to schedule and review appointments for assigned personnel. Units will be more likely to participate if dental appointments do not coincide with training schedules. Furthermore, the ability to review appointments will allow the leadership to track completed, cancelled, and failed appointments.
4. In addition to the DENTAC GFC Officer, appoint a GFC Officer/NCO at each dental clinic to manage the program.
5. Ensure leaders are held accountable for not participating the program.

## CONCLUSION

GFC cannot be adequately assessed for success or failure if it isn't implemented properly. Fort Bragg's participation rate in the GFC program averaged 25 percent. It was found that there were no significant differences in dental readiness/wellness after implementation of the GFC program. Additional studies of DENTAC's with high GFC participation might clarify the programs contribution to the dental wellness/readiness of our fighting force.

## ACKNOWLEDGMENTS

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